

**REQUEST FOR PROPOSALS
FOR DESIGN-BUILD SERVICES CONTRACT
FOR PROJECT NO. 81001018 - CONTRACT NUMBER 1715
WASTEWATER BACKUP GENERATORS PROJECT
WATER SERVICES DEPARTMENT
CITY OF KANSAS CITY, MISSOURI**

1. **Purpose.** This is a Request for Proposals (“RFP”) issued by the City of Kansas City, Missouri (“City” or “Owner”) acting through its Water Services Department (WSD) for Design-Build services including design, construction, startup, and extended commissioning for the Wastewater Backup Generators Project (Project).

The City will use Fixed-Price Design-Build (FPDB) contracting method to deliver the Project, and is utilizing a two-step procurement process for selecting the entity that will provide best value as the Design-Builder for the Project. This RFP represents the second step of the procurement process and establishes the process for soliciting and evaluating Technical and Cost Proposals (Proposal) from those entities shortlisted as part of the Statement of Qualifications (SOQ) process. Only those Respondents identified in Paragraph 2 below are invited to submit a Proposal in response to the RFP. The City will review and evaluate Proposals in accordance with this RFP and select the Design-Builder.

The execution of a Contract will be subject to the terms and conditions of the RFP. This RFP is not a tender or an offer. Respondents must be thoroughly familiar with the scope of work and performance requirements discussed in this RFP. The City may reject any Proposal that fails to demonstrate such familiarity. In no event will the City be liable for any costs incurred by any Respondent or any other party in developing or submitting a Proposal, except as described in Section 3.10, below.

The Proposals must be submitted in accordance with the requirements set forth in this document.

2. **Definition of Request for Proposals.** This RFP is an invitation by the City to Design-Build Professionals soliciting Proposals from the following entities ("Shortlisted Respondents", "Respondents", or "Bidders"), listed in alphabetical order:

- Goodwin Brothers
- Hartline Construction
- Mega KC

Selected Respondents were shortlisted based on the qualifications of the Project Team that were submitted in their SOQs and are invited to submit their proposal for performing the services specified in this RFP.

Selection will be based upon the judgment of the City in obtaining a Design-Builder Professional that will be in the best interests of the City. Respondent’s submittal of a proposal in response to this RFP does not create any right in or expectation to a contract with the City.

3. **Submittal Date.** Sealed Proposals are due by **December 2024**. Proposals shall be sent to Delois Moore, Procurement Manager, Procurement Services, General Services Department, 4800 East 63rd, Kansas City, MO 64130. Respondents should submit three (3) paper documents (one original and two [2] copies) as well as one electronic version of the **Technical Proposal** on a USB flash drive (in searchable PDF format). **One (1)** paper document (one original) of the **Cost Proposal**, as well as one electronic version of the **Cost Proposal** on a USB flash drive (in searchable PDF format), must be submitted in a single, sealed envelope or package separate from the Respondent's Technical Proposal.

Both Technical and Cost Proposals must be submitted in separate, sealed envelope or box and shall not be opened until after the due date. Each Technical and Cost Proposal document package shall be plainly labeled with the words “TECHNIAL PROPOSAL FOR WASTEWATER BACKUP GENERATORS PROJECT – PROJECT NO. 81001018” and “COST PROPOSAL FOR WASTEWATER BACKUP GENERATORS PROJECT – PROJECT NO. 81001018,” respectively, along with Proposer name and identification. The City reserves the right at any time to change or extend the due date and time for any reason.

Each Respondent assumes full responsibility for the timely delivery of its Proposals at the required location. Proposals received after the Submittal Date may be deemed non-responsive and be excluded from consideration. A delivery acknowledgement will be issued upon receipt of the Proposal package and will be provided to the Respondent via e-mail by the City’s Project Manager.

Only written responses will be considered. All materials submitted will become part of the response and may be incorporated into any subsequent contract(s) between the City and the selected Respondent.

4. **RFP Package.** The RFP package for this project contains the following:

- Section 1: Project Overview
- Section 2: Fixed-Price Design-Build Services
- Section 3: Procurement Process
- Section 4: Proposal Submission Requirements
- Section 5: Final Proposal Evaluation and Selection
- Section 6: Conditions for Respondents

Attachments:

- Attachment A: Definition of Terms
- Attachment B: Scope of Design-Build Services
- Attachment C: Draft Contract for Design-Build Services
- Attachment D: Project Background Documents (under separate cover)
- Attachment E: Project Technical Requirements (under separate cover)
- Attachment F: Technical Proposal Forms
 - (1) Form F-1. Project Design Criteria Checklist

Attachment G: Cost Proposal Forms

- (1) DB 00410 Design-Build Bid Form/Affidavit of Intended Utilization
- (2) 00430 Bid Bond
- (3) 00435 Alternative Technical Concepts

Attachment H: Submission Forms including Civil Rights and Equal Opportunity Department (CREO) Documents (To be submitted within 48 hours of Public Bid Opening, in accordance with Section 5.5.1)

- (1) CREO Form 06: Design-Builder Contract Instructions
- (2) CREO Form 8A: Contractor Utilization Plan/Request for Waiver
- (3) CREO Form 10: Timetable for MBE/WBE Utilization
- (4) CREO Form 11: Request for Modification or Substitution
- (5) 00450.01 Letter of Intent to Subcontract
- (6) 00515.01 Employee Eligibility Verification Affidavit
- (7) 01290.14 Contractor Affidavit for Final Payment
- (8) 01290.15 Subcontractor Affidavit for Final Payment
- (9) CREO Employee Identification Report Form
- (10) CREO Affidavit of Training Program
- (11) Best Faith Efforts, if MBE/WBE goals are not met.
- (12) Proposal Development Stipend Agreement Form

Attachment I: General & Supplemental Design Build Conditions

5. Questions. Forward all questions by email to both the following Project Manager and Procurement Manager. Questions received after the Deadline for Receipt of Written Questions (Section 3.2 Procurement Schedule) may not be answered. Interpretations or clarifications considered necessary by the Project Manager in response to such questions will be issued by Addenda to all Respondents. Oral or other interpretations or clarifications shall be without legal effect, even if made during formal meetings.

Morris Ross, Project Manager
4800 East 63rd Street,
Kansas City, MO 64130
Phone: (816) 513-0361
E-mail: morris.ross@kcmo.org

Delois Moore, Procurement Manager
Procurement Services Department
4800 East 63rd Street Kansas City, MO 64130
(816) 513-0358 Phone
Email: delois.moore@kcmo.org



For persons with disabilities needing reasonable accommodations please contact the City's ADA Specialist at 816-513-6589.

SECTION 1: PROJECT OVERVIEW

1.1 Project Background

This is important for the city to keep improving services for more reliable services to the residents of Kansas City. Moreover, the Missouri department of Natural resources also emphasizes the continuous availability of the power more efficiently to the critical pumping facilities. The clause is as follows:

“Division 20- Clean Water Commission, Chapter 8- Minimum Design Clause no.10 CSR 20-9.140 section 7 for emergency power facilities demands ‘All wastewater treatment facilities shall be provided with an alternate source of electric power or pumping capability to allow continuity of operation during failures’”.

1.2 Project Scope

This RFP is to provide Design-Builder Services for design, construction, and commissioning the following scope of work as defined in the Project Technical Requirements (Attachment E), within the City’s Budget and Scopes (not limited to) Rank Ordered as follows:

Rank Order

- 1) Design
- 2) Purchasing of Generators /Storage and transportation.
- 3) Site Surveys.
- 4) Generator Pads.
- 5) Evaluation and design of Diesel or Natural gas connection.
- 6) Placement of generators.
- 7) Installation with SCADA connection and ATS.
- 8) Testing and Inspection.
- 9) Commissioning.

For full scope of services, refer to Section 01110 – Summary of Work

Under the FPDB method, the Design-Builder's scope of work for the Project will be performed in two (2) phases under a single Contract for Design-Build Services between the City and Design-Builder.

These phases may run concurrently. The Project phases are generally described as follows:

- **Design Phase** services performed under the Contract for Design-Build Services include completing the entirety of the Project’s final design and pre-construction activities.
- **Construction Phase** services performed under the Contract for Design-Build Services includes performing construction; performing post-construction tasks, such as commissioning and initial performance testing; and performing warranty and other work required.

1.2.1 Project Technical Requirements

The Project Technical Requirements, as provided in Attachment E (Project Technical Requirements), are considered Contract Documents and define the basis of project design and definition as developed to-date for this RFP. Technical Proposals must incorporate all Project Technical Requirements. Attachment E (Project Technical Requirements) includes the native files for the Respondents to use in developing Proposals. Project Technical Requirements are included within:

- Basis of Design Report
- Preliminary Drawings
- Technical Specifications

The Project Technical Requirements describe the “Representative Project.” Respondents may deviate from the Representative Project (“Respondent’s Proposed Modified Project”), if justified and approved by the City. **All Technical Proposals and Cost Proposals must be based on either the Representative Project or the approved Proposed Modified Project.** The Project Technical Requirements (Attachment E) are available on a USB flash drive or eBuilder for Shortlisted Respondents.

Proposed Modified Project. The Project Technical Requirements identify both Fixed Design Criteria, Indicative Design Criteria, and Preferred Indicative Design Criteria for the Representative Project. Fixed Design Criteria must be adhered to and followed by the Respondent unless an exception is made to all Respondents by addendum. However, because the City would like to promote innovation and encourage best value, the City will consider technical alternatives that are, in City's sole determination, a betterment to the Indicative and Preferred Indicative Design Criteria. Proposed variances from Indicative and/or Preferred Indicative Design Criteria must be requested in writing and approved by City. Recommended variances will be discussed between the City and the Respondent, and the City will determine if the variation is “approved” or “not approved” in writing. City will endeavor to inform Proposer of its decision within one week after a.) submission by a Respondent b.) discussion during confidential meeting. Respondent recommendations (both “approved” and “not approved” variances) for Indicative Design Criteria and Preferred Indicative Design Criteria will be considered proprietary and will be kept confidential. Once approved, variance(s) will be considered an Alternative Technical Concept (ATC). If used in its approach, Respondent must document the ATC in its Technical Proposal and the Cost Proposal shall be based on the Proposed Modified Project.

1.3 City's Objectives

The City's objectives for delivery of the Project are as follows:

- **Quality:** Provide treatment facilities and equipment that will be sustainable and will reliably produce required quantities of Class A biosolids in full compliance with federal and state regulations and contractual standards for the full range of the sludge conditions set forth in this RFP.
- **Cost:** Minimize capital cost with consideration of optimizing life-cycle cost.
- **Schedule:** Achieve the scheduled completion dates for design, construction and performance testing of the Project.
- **Risk:** Achieve an optimal balance of risk allocation between the City and the Design-Builder. In general, the party best suited to manage the risk owns the risk
- **Safety:** Implement an effective safety program incorporating best industry practices.
- **Operations and Maintenance (O&M):** Optimize operating and maintenance requirements so that the facility is capable of reliably and continuously operating in a cost-effective manner over the long-term. Develop and deliver, in conjunction with City and WSD management, a program that provides effective class room and hands on training for WSD staff to transition to full-time operation and maintenance of new facilities, electronic O&M manuals, and Standard Operating Procedures.
- **Accountability:** Provide for Design-Builder assumption of single point of accountability for performance of all services under the Contract for Design-Builder Services.
- **Smooth Transition:** Smooth transition of design deliverables (i.e. as-builts, building information models [BIM]), electronic O&M Manuals, etc. from the Design-Builder to the City for use in the City's O&M systems, such as maintenance management and asset management. Smooth transition of facility operations following commissioning activities between the Design-Builder and the City.
- **Collaboration:** Provide for coordinated design development with City input in a manner that preserves Design-Builder's sole responsibility for the achievement of Project performance objectives while meeting City objectives associated with cost, quality, aesthetics, and long-term operability.
- **Sustainability:** Per Section 1.6, all solutions identified to improve the quality of life of facility personnel, reduce labor usage, reduce material usage, and reduce waste created after construction is completed.

By selecting the FPDB delivery method for the Project, the City is committed to working in close collaboration with the Design-Builder.

1.4 Project Funding

The cost for design and construction of the Project is currently estimated at **\$13.5 million**. This budget does not include the City's other Project costs, such as professional advisory services, site investigations, environmental studies, certain governmental approvals, taxes, and other related costs.

The Project may be financed through a combination of City municipal revenue bonds and cash. The City desires for the DBs to bid within the prospective of budget and has ranked the sites by priority for project inclusion as follows:

1) 682 Lake Waukomis	10) 677 Lawndale	19) 745 KCI Airport Deicing	28) 609 Milwaukee Flood
2) 697 Platte Woods	11) 694 Mace Rd.	20) 720 Fishing River Treatment	29) 612 Blue Banks Flood
3) 856 (4800) KC Water HQ	12) 692 83rd. St.	21) 718 Rocky Branch	30) 610 Truman Flood
4) 693 Birmingham Pumping	13) 676 S. Airport PS	22) 600 S.W. Boulevard Flood	31) 699 Kemper Flood
5) 661 Turkey Creek	14) 637 S. Airport Relief Wells	23) 601 25th St. Flood	32) 603 Broadway Flood
6) 652 Buckeye Creek PS	15) 619 N. Church Estates	24) 604 N. Airport Flood	
7) 632 Second Creek	16) 643 KCI Ind Pump	25) 606 Gillis Flood	
8) 684 White Aloe	17) 686 Brush Creek	26) 607 Lydia Flood	
9) 642 Wildwood West	18) 688 Harlem	27) 608 Prospect Flood	

1.5 Project Schedule

The Project schedule is anticipated as follows:

• Design-Builder Notice-to-Proceed	May 2025
• Facility Commissioning	N/A
• Substantial Completion	May 2028
• Final Completion	June 2028

1.6 Sustainability

The City has adopted an overall policy supporting a greater use of “green solutions” or enhanced sustainability measures that consider environmental quality, social equity and economic vitality. In order to minimize waste, enhance efficiencies, and achieve multiple benefits and project synergies, all City projects must identify opportunities for sustainability improvements and implement those improvements when financially reasonable and operationally practical.

The EnvisionTM rating system is used by WSD to promote sustainability in a variety of infrastructure projects and to encourage sustainable approaches as an important part of project design. EnvisionTM will also be used to evaluate and grade the sustainability of Project components as they are developed.

City also desires for all City of Kansas City, MO services to be carbon neutral by the year, 2030.

SECTION 2: FIXED-PRICE DESIGN-BUILD SERVICES

2.1 General

The services to be undertaken by the Design-Builder include all Work defined in the Contract, including all Design Professional Services, Construction Services, and other obligations to be performed by Design/Builder under the Contract Documents, including without limitation project management, supervision, training, testing, permitting, commissioning, and all other services and deliverables required by Contractor to achieve Final Acceptance of the Project in accordance with the Contract Documents.

Design-Builder services are as noted in Section 1 and more fully described in Attachment B (Scope of Design-Builder Services).

2.2 Roles and Responsibilities

City: The City will cooperate with the Design-Builder and will fulfill its responsibilities in a timely manner to facilitate the Design-Builder's timely and efficient performance of services. The City's responsibilities include:

- Review submissions and provide comments to Design-Builder in a timely manner.
- Furnish existing studies and provide complete, accurate, and reliable data and information regarding the Project, including record drawings, preliminary studies, environmental impact assessments, Preliminary Design BIM models, Site plans, etc.
- Provide information and provide (or engage Design-Builder to perform) additional studies that may be necessary to complete the Project.
- Provide adequate funding.
- Provide access to the Project site and any necessary easements.
- Obtain the governmental approvals and permits the City is responsible for and assist Design-Builder in obtaining governmental approvals and permits Design-Builder is responsible for.
- Provide necessary data and inputs, characteristics and ranges (e.g., power demand, station capacity, fuel source) for Project start-up and performance testing.

Design-Builder: The Design-Builder will cooperate with the City and will provide in a timely manner the services, as described in Section 2.1, necessary to complete the general Project scope specified in Attachment B (Scope of Design-Build Services).

The roles and responsibilities of the City and the Design-Builder are more fully described Attachments B (Scope of Design-Build Services) and C (Draft Contract for Design-Build Services) in the RFP.

SECTION 3: PROCUREMENT PROCESS

3.1 Communications and City Contact

On behalf of the City, **Delois Moore, Procurement Services Department** will act as the Procurement Manager and as the sole point of contact (City Contact) and administrator for the RFP process. All communications shall be submitted in writing by email, sent to the procurement manager, carbon copy the Project Manager, and shall specifically reference this RFP. All questions or comments should be directed to the Procurement Manager as identified under Paragraph 5 of this RFP. All communications and questions regarding the Project shall only be made through the City Contact with the exception of City-certified Disadvantaged Business Enterprises, Minority Business Enterprises, and Women Business Enterprises (D/M/WBE) and of Respondents contacting the Civil Rights and Equal Opportunity Department to assist in meeting MBE/WBE goals. D/M/WBEs may contact WSD, General Services, and CREO staff directly regarding the Project.

No oral communication from the City Contact or any other individual is binding. Oral or written contact with other City staff, WSD staff, the Owner's Advisor, or any public official specific to the Project during the RFP/Design-Builder Selection process is prohibited. A violation of this provision may result in disqualification of the Respondent from the RFP/Design-Builder Selection process.

3.2 Procurement Schedule

The procurement process includes several confidential meetings which are discussed in further detail in Section 3.4 Confidential Meetings. The approximate procurement schedule is as follows:

• Issuance of RFP	October 2024
• Confidential Meeting (1)	November 2024
• Site visits	November 2024
• Deadline for Receipt of Written Questions	November 2025
• Issuance of Final Addendum	TBD
• Proposal (Technical and Cost) Submission	December 2025
• Interviews (Provisional)	January 2025

- Public Bid Opening Date January 2025
- Notice of Intent to Contract February 2025

3.3 Confidential Meetings

Following the issuance of the RFP, the Owner intends to conduct **one (1)** confidential individual meetings with each Respondent during various times of the RFP Period as listed in Section 3.2 Procurement Schedule and as described in the following Sections 3.4.1 through 3.4.3.

All information discussed in these meetings will remain confidential with the exception of clarifications to the RFP made by the City, which will be issued by addenda. The City anticipates that the confidential meetings will be held at **TBD**. The City will advise each Respondent of its proposed meeting time for Confidential Meeting #1 no later than one week prior to meeting. The City may hold further confidential meetings at its sole discretion upon notice to the Respondents.

The meetings are intended to provide additional information about the Project, the RFP, Project Technical Requirements, Preliminary Design Contract Documents, technical questions/clarifications, scope of services, and the Draft Contract. The City's commitment to confidentiality is subject to applicable law. The City reserves the right to determine whether any element or feature of the preliminary technical concepts is objectionable or non-objectionable for any reason. The RFP will be amended as necessary to preclude the use of any elements or features determined to be objectionable by the City. The meetings will be conducted to allow:

- a) Respondents to present the concepts to the City and convey to the City the value and benefit of the Respondent's approach to meeting the City's Project requirements as defined in the RFP;
- b) The City to understand each Respondent's technical approach/concepts and to review the approach/concepts for compliance with the City's Project requirements as defined in this RFP;
- c) The City to evaluate any alternative technologies and variances, and to inform Respondents if any are found to be objectionable;
- d) Clarification of the City's Project Technical Requirements through addenda to the RFP; and
- e) Respondents to comment on the RFP, including the Draft Contract for Design-Build Services, and the City to clarify the Draft Contract for Design-Build Services after consideration of Respondent comments.

The City plans to conduct such informational meetings in a responsive manner, affording comparable opportunities for discussion to each Respondent.

Except as expressly provided otherwise in this RFP, the confidential meetings are subject to the following rules:

- a) The City will not discuss with any Respondent any information submitted as part of this

procurement other than its own;

- b) Respondents shall not seek to obtain commitments from the City in the meetings or otherwise seek to obtain an unfair competitive advantage over any other Respondent;
- c) No aspect of these meetings is intended to provide any Respondent with access to information that is not similarly available to other Respondents. Accordingly, material information about the Project or procurement that the City reveals or discusses in response to questions raised in a confidential meeting will be revealed to the other Respondents unless the City, in its sole discretion, determines that disclosure (i) would (a) impair the confidentiality of information submitted as part of this procurement or (b) reveal a Respondent's confidential business strategies; (ii) is not necessary in order to address an error in the RFP Documents, (iii) is not necessary for purposes of fairness and transparency; and (iv) is not required by the Public Records Act;
- d) The content or discussions that occur during confidential meetings will not be considered in Proposal evaluations; and
- e) A non-disclosure agreement will be signed by each meeting attendee, including City staff and others attending on the City's behalf, prior to the start of each confidential meeting.

During confidential meetings, Respondents may ask questions, and the City may provide responses. Responses provided by the City during meetings may not be relied upon unless such questions are submitted in writing and the City provides written responses by an addendum to this RFP.

3.4.1 Confidential Meeting #1 (Mandatory)

Confidential Meeting #1 will occur as scheduled in Section 3.2, after the issuance of the RFP with the purpose of reviewing with the Respondent's the RFP, procurement process, and RFP documents. The Respondent may discuss technical ideas with the City during this meeting. The City Contacts will initiate scheduling the optional meeting with Respondents upon issuance of the RFP.

The duration for this meeting will be up to two (2) hours and attendance from the Respondent's team shall be limited to two (2) hours and attendance from the Respondent's team shall be limited to Key Personnel as identified in Respondent's SOQ and/or proposed replacements/additions.

3.4 Interviews

The City may conduct an interview/oral presentation with each Respondent after proposals are submitted. The interviews may consist of an oral presentation by the Respondent, as well as a questions and answers portion administered by the City. An agenda for the interview/oral presentation will be sent to each Respondent prior to the interview.

The purpose of the interview is to enable each Respondent to: (a) demonstrate Proposal clarity of expression and thoroughness; (b) demonstrate a strong understanding of Project issues; (c) articulate its thoughts and ideas in a logical and factual manner; (d) demonstrate communication between team members and impressions of ability to work cohesively; (e) confirm Respondent's key personnel commitments; (f) provide direct, clear, thorough and insightful answers to

questions; and (g) clarify the City's understanding of the proposal and what is covered by it.

3.5 Withdrawal from Proposing

A Respondent may withdraw from submitting a Proposal by providing a written request, duly executed by an authorized representative, and delivered to the City Contact at any time prior to the Proposal Submittal Due Date. Individuals making the withdrawal will be required to provide evidence of authorization to represent the Respondent. After the Proposal Submittal Due Date, Proposals shall not be withdrawn or modified except to the extent agreed to by the City. If a Respondent withdraws from submitting a Proposal, a Stipend from the City will not be paid to that Respondent.

3.6 Validity of Proposal

The offer represented by each Proposal will remain in full force and effect after the Proposal Submittal Due Date and cannot be withdrawn for a period of 180 days unless:

- The City has cancelled the RFP;
- The City has awarded the Contract to another Respondent and Contract execution has occurred; or
- The City, in its sole discretion, allows a Respondent to withdraw its Proposal prior to such deadline.

The City and the Respondent may mutually agree, in writing, to extend the validity of a Proposal beyond the validity period. If a Respondent agrees to extend the validity of its Proposal beyond the validity period, the Proposal Security (see Section 3.7 Proposal Bid Security) shall also be extended and/or replaced with compliant Proposal Security.

3.7 Addenda

This RFP is subject to revision after the date of issuance via written addenda until the Issuance of Final Addendum date in Section 3.2 Procurement Schedule . The City may extend the Submittal Due Date (and any dates in the Procurement Schedule) via addendum at any time. A copy of all such written addenda will be posted at the Kansas City, Missouri Plan Room, <http://www.kcmoplanroom.org>. All addenda will be posted at this location. Any document or plan may be viewed or downloaded from this location.

The following documents will be made available for download: (1) the RFP (including all Attachments) and (2) addenda to the RFP. It is each Respondent's responsibility to obtain all RFP addenda prior to submitting its Proposal.

If the Respondent has any doubt as to the true meaning of any part of this RFP, or if any discrepancies in or omissions from this RFP are discovered by Respondent, a written request for an interpretation or correction may be submitted to the City Contact (see Section 3.1) for response. The Respondent submitting the request will be responsible for delivery no later than the Deadline for Receipt of Written Questions. The City will not be responsible for any other explanation or

interpretations of the documents.

It is the responsibility of all Respondents to ascertain whether any addenda have been issued before the Submittal Due Date by checking the Kansas City, Missouri Plan Room. If an Addendum is issued, Respondent must acknowledge receipt of Addendum on the DB 00410 Design-Build Bid Form submitted with the Cost Proposal (see Section 4.3.11 Cost Proposal).

3.8 Inclusion of Proposal in the Contract

Portions of the successful Respondent's Proposal will be used to complete various Contract provisions and Exhibits and will therefore become part of the Contract. All other information is for evaluation purposes only and will not become part of the Contract.

3.9 Reimbursement for Proposal Submitted

For those Respondents that submit a responsive Proposal and are not awarded the Contract, the City will reimburse each unsuccessful Respondent for Proposal preparation costs with a not-to-exceed value of \$50,000. The City will have no further obligation for cost reimbursement. All work performed by a Respondent pursuant to submitting a Proposal, shall be considered works for hire and shall become the property of the City without restriction or limitation on the City's use. Payment of reimbursement shall be made within sixty (60) days after receipt of invoice from Respondent for reimbursement. The Respondent's invoice should include documentation that supports the actual costs incurred for approval of goods and services, providing the Notice of Intent to Award for this project's FPDB Contract has been issued to the successful Respondent. **The Respondent shall complete the Proposal Development Stipend Agreement Form included in Attachment H (Submission Forms) as acknowledgement that the Respondent will accept the reimbursement and that the Respondent agrees with the terms and conditions associated with the reimbursement. If the Respondent chooses not to accept reimbursement, then Respondent shall provide a copy of the Proposal Development Stipend Agreement Form, unsigned, accompanied with a brief statement that the Respondent chooses not to accept Reimbursement.** The completed Proposal Development Stipend Agreement Form shall serve as the legal agreement between the City and Respondent as it specifically relates to the reimbursement.

The stipend shall be paid to the Respondent(s) following the council approval of the ordinance of the Construction contract with the selected Design Builder. Design-Builders are encouraged to become City vendor prior to proposal submission for the Project. Upon such payment, the City shall acquire from the Respondent perpetual, nonexclusive, royalty-free licenses to allow the City to use the design, or any part thereof, any ideas and/or information contained in the Proposal and to use such design, or any part thereof, any ideas and/or information in this Project or in connection with other projects. In order to receive a stipend, a Respondent must obtain a Vendor Number from

the City. Respondents can obtain the necessary forms for obtaining a Vendor Number by calling CREO at (816) 513-1836.

3.10 Site Access Period

The City will provide Respondents scheduled access, during periods shown in Section 3.2, to Project sites by appointment. Each site will only be made to each Team once. Multiple sites will be included in each tour. Each Respondent shall contact the City Contact to schedule a date and time to tour the Facilities. The City will provide up to four (4) hours of site access for each Respondent. City staff will accompany the Respondent in touring the Facilities, however, staff will not be allowed to answer procurement or Proposal-related questions. Site access will be granted approximately one (1) week after the Request for Proposal is provided.

Respondents visiting the Project sites shall be responsible for their own safety including equipment and safety procedures. No information conveyed by the City to Respondent resulting from these site tours shall act to modify the RFP unless such modifications are made by Addendum.

SECTION 4: PROPOSAL SUBMISSION REQUIREMENTS

4.1 Submittal Due Date

Refer to Paragraph 3 above for submittal location and due date.

4.2 Submission Format

Except as expressly provided in this Section, the Technical Proposal must not exceed **twenty-five (25)** total narrative pages (most or all 8½ x 11 inch with 1-inch or greater margins), excluding the transmittal letter, index or table of contents, front and back covers, title pages/separation tabs, and appendices. A maximum of **five (5)** of the total pages may be 11 x 17-inch z-fold format. Eleven (11) point font or larger must be used in Parts 1 and 2 of the Technical Proposal. The Technical Proposal shall be typed or printed double-sided to the extent possible, with each double-sided page counting as two pages, on recycled and recyclable paper, and shall be continuously numbered. Each Technical Proposal Part and Appendix shall be labeled with title headers.

The Technical Proposal submission envelope or box shall include Respondent's name and address and shall be labeled "TECHNICAL PROPOSAL FOR WASTEWATER BACKUP GENERATORS PROJECT – PROJECT NO. 81001018".

The Cost Proposal submission envelope or box shall include the completed Cost Proposal submission forms in Attachment G (Cost Proposal Forms) and any supporting documentation requested in this RFP. Cost Proposal must be accompanied by Proposal bid security in accordance with Section 3.8 Proposal Bid Security.

The Cost Proposal envelope shall include Respondent's name and address and shall be labeled "COST PROPOSAL FOR WASTEWATER BACKUP GENERATORS PROJECT – PROJECT NO. 81001018".

Drawings shall be half-size versions (11" x 17") of ANSI 22" x 34" sheets. The set shall include a cover sheet and index of all drawings included in the set. Drawings are excluded from the page limit of the Technical Proposal.

4.3 Submission Content

4.3.1 General Outline

The **Technical Proposal** must include the following in the order listed:

- Transmittal Letter
- Part 1 – Project Plans/Management Approach
 - Project Team/SOQ Confirmation

- Design-Build Coordination and Management
- Quality Control and Management
- Safety Plan
- Permitting
- Self-Performance and Subcontracting
- Part 2 – Technical Proposal
 - Project Understanding
 - Technical Narratives
 - Including variances from Indicative Design Criteria
 - Technical Drawings (reference Appendix B)
 - Equipment Information (reference Appendix C)
- Part 3 – Construction Schedule, Planning and Sequencing (reference Appendix D)
- Part 4 – MBE/WBE Utilization
- Appendix A – Forms for Affirmation and Compliance (not included in page count)
 - Copies of Missouri Construction and Engineering Licenses for Lead Contractor, Design Manager, and Engineer of Record
 - Bonding Capacity
 - Declaration of Insurance
 - Form 00515.01 Employee Eligibility Verification Affidavit
- Appendix B – Design Drawings (not included in page count)
- Appendix C – Equipment Forms (not included in page count)
- Appendix D – Project Schedule (not included in page count)

The content requirements set forth in this RFP represent the minimum content requirements for the Technical Proposal. It is the Respondent's responsibility to present all relevant information and

other materials in its Technical Proposal. The Technical Proposal, however, should not contain standard marketing or other general materials. It is the Respondent's responsibility to modify such materials so that only directly relevant information is included in the Technical Proposal.

Per Section 2-1585, City Code of Ordinances, the Technical Proposal may not contain any reference to the cost of the Project.

The **Cost Proposal** must include the following:

- Cost Proposal
 - DB 00410 Design-Build Bid Form/Affidavit of Intended Utilization
 - 00430 Bid Bond

4.3.2 Transmittal Letter

Each Respondent must provide a Transmittal Letter following the Proposal cover that formally conveys the Proposal to the City. The letter must be signed by an authorized representative of the Respondent who is empowered to sign such material and to commit the Respondent to the obligations contained in the Proposal. If Respondent is a corporation or an LLC, an authorized officer shall sign his/her name and indicate his/her title beneath the full corporate name. If Respondent is a joint venture, an authorized representative for each member of the joint venture shall sign the letter, and specifically state that, if the joint venture is selected as the Design-Builder entity, each member will be jointly and severally liable to the City for the obligations arising out of the contract between the joint venture and the City.

The Transmittal Letter may include any information deemed relevant to the Respondent, but must include the following:

1. An identification of the Respondent's Point of Contact, including name, address, phone number, and email address, and must specify who would be the Design-Builder's signatory to any contract documents executed with the City.
2. An Executive Summary of the Proposal, with no references whatsoever to the Cost Proposal.
3. A declaration of the Respondent's intent, if selected, to enter into a contract with the City for the Project in accordance with the terms of this RFP;
4. An affirmation that all professional and business registrations and licenses required for the Project have been obtained or will be obtained prior to award of the Contract for Design-Build Services. This includes, but is not limited to the registrations/licenses for the members of the Respondent's team that are professional engineers and will be the Engineer-of-Record for the Project;
5. A statement of the Respondent's intent to provide Performance and Payment Bonds and all insurance required under the Contract for Design-Build Services, respectively by the date of award of the Contract.
6. An affirmation that the representations made in the Proposal will remain in force and effect for one hundred and eighty (180) days from the Proposal Submission Due Date.

7. An affirmation that the Respondent has completed and included in either Appendix A (Forms for Affirmation of Compliance), Appendix C (Equipment Forms), or in Part 5 – Cost Proposal all required submission forms provided in Attachment F (Technical Proposal Forms), Attachment G (Cost Proposal Forms), and Attachment H (Submission Forms including CREO Documents).

The Transmittal Letter shall be limited to three (3), 8 ½ x 11 inch pages.

4.3.3 Part 1 – Project Plans/Management Approach

The Respondent shall use Part 1 of the Technical Proposal to demonstrate their approach for managing the Project from Design Phase through Extended Commissioning Phase. It is not expected that the Respondent will include specific and developed plans, but should concisely demonstrate how the project will be executed with regards to project management, controls, quality, safety, permitting, and self-performing/subcontracting. The approaches should discuss who will manage the plan, how it will be assured/ensured, and provide a summary of the plan including discussion on how they comply with the City's practices.

Project Team/SOQ Confirmation. The purpose of this subsection of the Proposal is for the Respondent to confirm that the Project team submitted in its SOQ has not changed; or to provide information and an explanation regarding any changes to its Project Team differing from that submitted in its SOQ. Any changes to the Respondent's Project Team from the SOQ are subject to acceptance or rejection by the City, at its sole discretion. If the Respondent's Project Team has not changed from the SOQ, the Respondent shall include the following statement in this section of its Proposal:

“_____ (Name of Respondent's Team or Organization) confirms that all qualifications and experience information, including the members and composition of our Project Team, provided in our Statement of Qualifications previously submitted to the City for the Wastewater Backup Generators Project has not changed, and is valid, true, and accurate.”

No changes of the primary member organizations that comprise the Project Team (Lead Designer and Lead Contractor) are allowed, and no changes to the Key Personnel as represented in the Respondent's SOQ are allowed. If extenuating circumstances require a change to any of the primary member organizations or Key Personnel, the Respondent shall provide an explanation for the change and present qualifications and experience information for the new team member(s) for the City to evaluate. The City reserves the right to reject as non-responsive the Proposal of a Respondent that changes primary member organizations or Key Personnel from that indicated in the SOQ.

Respondent shall identify the Lead Operations Coordinator, an additional role in Key Personnel, in this section and provide the information required below in the following section for this additional Key Personnel and verify proposed Staffing in RFQ.

Change in Key Personnel. Respondent shall identify any Key Personnel, as defined in Section 01420 found in RFP Attachment A, that have changed from what was previously provided in the Respondent's SOQ. The City expects Key Personnel named in this Proposal to remain on the

Project Team for the duration of the Project unless changes are beyond the Respondents control and approved by the City.

For any additions or changes that have occurred to the Respondent's Project Team, the Respondent shall provide the following information relative to the assignments and qualifications of the Respondent's team:

- For any new personnel, provide sufficient reasoning and detail for the City to understand how such personnel would enhance the Respondent's ability to deliver the Project and to provide value to the City.
- Proposal Appendix A (Forms for Affirmation of Compliance) should include resumes (see RFQ for resume format and requirements), copies of licenses or registrations, and project references for any additional or new personnel that the Respondent proposes as part of its Project Team that were not identified in the SOQ.

Design-Build Coordination and Management Plan. The Respondent shall demonstrate that: (a) its coordination and management approach during design and construction includes specific measures to control budget, documentation, and schedule; and (b) it will implement policies and procedures to facilitate communication and input from members of the Project Team and City. At a minimum, Respondent shall:

- Describe the roles and responsibilities of the Project Team members, and how the Project Team is going to function to benefit the Project. Include an organization chart of the Project Team to illustrate its functionality, team reporting structure, etc.
- Describe the Respondent's concepts for managing the design, construction, and commissioning phases of the Project and how the Respondent intends to control budget, documentation, and schedule.
- Describe how the Respondent intends to control and coordinate the flow of information between design and construction teams, and how the Respondent plans to interface with the City and permitting agencies.
- Describe the communications methods for facilitating City review during all phases of the Project, including but not be limited to meetings, progress reports, submission of BIM updates, and document management tools.
- Describe Respondent's design process, including procedures for equipment selection, constructability reviews by the Lead Contractor, obtaining City input and Lead Designer's involvement in oversight of construction. Describe where the design team will be geographically located and how operations team members will be involved in design and construction. Describe how Respondent will leverage Project Team's experience and expertise, including Lead Operations Coordinator, that is specifically applicable to this Project, including expertise related to Headworks Operations.

- Describe the Respondents approach to involving City staff in the operations and maintenance of the facilities during the Construction and Extended Commissioning Phases, the training of City staff, and other activities to efficiently transfer operations and maintenance responsibilities to the City following the completion of the Extended Commissioning Phase. Describe Respondent's approach for development of standard operating procedures (SOPs), maintenance verification systems, and how the Respondent will work with the City's existing computerized maintenance management system.

Quality Control and Management. Respondent shall demonstrate: (a) clear and comprehensive quality assurance and control procedures during both design and construction; and extended commissioning (b) the availability and proposed utilization of established quality management procedures previously implemented on other similar projects. At a minimum, Respondent shall:

- Describe the Respondent's quality control and management methods, policies, and procedures during design. This shall include a description of Respondent's approach for monitoring and managing the quality of its work from initiation to completion of the Project, including but not limited to checking of all calculations, discipline design checklists, interdisciplinary design checklists, and standardized comment forms that document all check comments and responses for each design submittal. Use of the Revit-based BIM is required for design purposes.
- Provide a summary of quality control procedures to be utilized during construction, which includes but is not limited to materials testing for concrete and soils at a minimum, and independent special inspections.

Safety Plan. Respondent shall demonstrate that its proposed safety measures, policies, and procedures will maintain a safe construction site and will consider public safety. At a minimum, Respondent shall:

- Submit a summary description of the corporate safety program that has been established by the Lead Contractor.
- Provide a description of safety programs or procedures that would be specifically applicable to and utilized for the Project. Include how Respondent proposes to address any unique safety issues for the Project.
- Provide experience, training, and qualifications of onsite safety supervisor.

Permitting. Respondent shall describe its specific approach to the permitting and regulatory requirements anticipated for the Project. In conjunction with the Project Technical Requirements and assignments of permit responsibilities, Respondent shall identify any additional anticipated permits, special considerations for obtaining permits and compliance, approach to coordinating with regulatory agencies and City, and proposed strategies to obtaining permits to minimize the influence on project schedule.

Self-Performance and Subcontracting. The selected Design-Builder shall perform with its own organization not less than twenty five-percent (25%) of the total contract price. The dollar value included in this percentage performed by the Design-Builder shall include the value of labor, materials and equipment directly performed or procured by the Design-Builder and shall not include the value of work performed or provided by subcontractors.

Respondent shall provide a description of the general delivery approach of the Project, including use of subcontractors and proposed approach for self-performance. Identify proposed components Respondent would self-perform and the Respondent's approach to managing this work and subcontracted work.

4.3.4 Part 2 – Technical Approach

Part 2 of the Technical Proposal will be used by the City to understand and evaluate the Proposer's: (a) approach to meeting/exceeding the RFP Technical Requirements; (b) incorporation of innovative ideas and cost savings measures; and (c) incorporation of quality materials/equipment that will provide the City with cost effective operations and maintenance.

Project Understanding. Respondent shall discuss generally the tasks involved in the Project to demonstrate its knowledge of the overall Project and Project requirements and needs. Identify and describe how the Respondent would define and approach key Project challenges. Describe how the Respondent would be structured to best manage its activities and satisfy the needs of the Project, including the Lead Contractor's involvement/role during design, the Lead Designer's involvement/role during construction. Include the following discussions regarding the Respondent's project understanding:

- Define 5 key issues and challenges in both the design and construction of the Project. Describe how to mitigate potential negative impacts (i.e., risk mitigation strategy) of each key issue and any unique approaches or strengths the Respondent may have relative to the issues and challenges. Describe Respondent's contingency plans for various performance issues that might be encountered on the Project.
- Discuss any innovative ideas and approaches to completing the design and construction of the Project. Demonstrate the Respondent's ingenuity through design concepts, construction materials, and construction methods to achieve the most efficient and long-lasting treatment facility.
- Discuss any prominent concerns with the Respondent's capacity to meet the Project's schedule and budget and how the Respondent will manage budget and schedule requirements. The Respondent may provide situations and examples where its approach to managing the schedule and budget has been successful, but may not include any specific cost information in the Technical Proposal.
- Describe how the Respondent will approach start-up and commissioning including the key tasks the Respondent would recommend for achieving compliance with the Project

requirements. Identify concerns and challenges with commissioning and how Respondent's team will address the risks. Respondent shall present an approach to start-up and commissioning with the key tasks the Respondent would recommend. Identify future start-up and commissioning plans that will be developed and approved by the Owner and indicate when they will be developed and submitted.

- Describe how the Respondent shall describe its ability and approach to providing Extended Commissioning Phase services for an initial one-year period with optional one-year extension. Respondent shall provide a description of its staffing plan and organization chart; and its approach to assisting the City in the necessary operations and maintenance activities. The Respondent is expected to conform to City standard operating procedures in completing its operations and maintenance duties.

Technical Approach Narratives. Proposer shall provide a Technical Approach Narrative that clearly describes its specific technical approach to the Project with respect to the Project Areas and major Project elements as listed below. The intent of the technical approach narratives is to identify areas of compliance with the Fixed Design Criteria, as defined in the Project Technical Requirements, identify the Respondent's approach for the Indicative Design Criteria, and to provide justification for the approved design criteria variances as proposed in the Interim Deliverable submittal.

The organization of the Technical Approach Narrative shall follow the organization and content of the Project Design Criteria:

Performance Requirements

Project Site and Existing Facilities

Discipline Design Criteria:

C – Civil

S – Structural

E – Electrical

IC – Instrumentation and Controls

Within major Project elements describe the approach to each of the following technical aspects:

1. Design criteria used and comparison to Project Technical Requirements (Fixed and Indicative Design Criteria). Indicate approach for the Fixed Design Criteria and any deviations from the Indicative Design Criteria using Form F-1 Project Design Criteria.
2. Operational strategies for unit process and equipment.
3. Construction sequence narrative including identifying shut-downs and temporary facilities (electricity, water, conveyance or others).
4. List required standard operating procedures and operating manuals to be provided.

Drawings. Respondent shall include drawings in Appendix B (Design Drawings) to illustrate and document its proposed technical design approach for the Representative Project (or approved Proposed Modified Project) and to complement the technical narrative. Reference shall be made to drawings within the major element narratives.

Organization. Drawings shall be organized first by area and then by discipline matching the organization of the Preliminary Drawings as provided in Attachment E (Project Technical Requirements)

Content. Naming convention shall be consistent with the drawing list provided as part of the Project Technical Requirements. At a minimum, the following drawings shall be prepared and submitted by the Shortlisted Respondent, with the drawings being 11" x 17" size, indicate north on layouts, and use 1/4" or 1/8" scale (facility and layout drawings):

General

- Cover sheet
- Index of Drawings
- Legend, abbreviations and general notes

Civil

- Existing conditions and demolition plan
- Site Plans showing any routing of gas lines.

Structural

Identify types foundations and extent

Electrical

- Overall building-wide single line diagram
- Basic layout of power supply and distribution routing
- Site Plan
- Show proposed power distribution wiring, and instrumentation and communication wiring
- Show proposed layout of spaces that includes electrical space, control space and communications space

Instrumentation and Controls:

- Station SCADA system architecture diagram
- Basic floor plans showing proposed control panels with names and equipment tags

4.3.5 Part 3 – Construction Schedule, Planning and Sequencing

Provide a summary version of the Respondent's proposed project schedule. Summarized schedule will include the Respondents proposed dates for achieving the Design, Construction, and Extended Commissioning milestones - these proposed dates will be included within the Agreement executed by the City and successful Respondent.

Respondents shall: (a) describe construction sequencing of major Project elements and how sequencing may affect the critical path; (b) discuss any concerns with the capacity to meet the Project's schedule and how the Respondent will manage the schedule. Respondent shall describe

how they would approach site logistics and limitations during construction, such as construction staging areas, etc.

Respondent shall develop a detailed Project Schedule and provided within Appendix D (Construction Schedule) of its Proposal. The detailed Project Schedule shall be a preliminary resource-loaded CPM construction schedule without any reference to cost, prepared using Microsoft Project 2007 or later format. Include no more than three hundred (300) individual activities, for identifying tasks, durations, and key milestones during the design, construction, and commissioning phases. Show milestones for key decision points, milestones, shutdown periods, OCCP and permit review periods for WSD and AHJs, approvals, purchasing and testing dates associated with Schedule based upon the City's anticipated award date. Include time for permit or regulatory approval processes required prior and during construction. Include schedule for start-up and commissioning period and performance verification testing.

4.3.6 Part 4 – MBE/WBE Utilization

City desires that Minority Business Enterprises (MBE) and Women's Business Enterprises (WBE) have a maximum opportunity to participate in the performance of City contracts. The goals for this specific Project are 14% MBE participation and 14% WBE participation. The Respondent shall

identify any MBE/WBE subconsultants or subcontractors that are part of the Respondent's Project Team.

The City's CREO Forms and CREO Instructions for Construction Projects are incorporated into this RFP and the Contract Documents. The MBE/WBE Directory is available on the City's website at www.kcmo.org. Please call the Civil Rights and Equal Opportunity Department at (816) 513-1836 for assistance.

Waiver of MBE/WBE Requirements. The City Council may waive any and all MBE/WBE requirements imposed by any Bidding Document or the MBE/WBE Ordinance and Contract with the lowest and best Bidder if the City Council determines a waiver is in the best interests of the City.

Workforce Program Requirements. City desires that minorities and women have a maximum opportunity to practice their trades on city construction projects. The minimum company-wide goals are a ten percent (10%) minority workforce and two percent (2%) women workforce. The City's CREO Forms and CREO Instructions for Construction Projects are incorporated into this RFP and the Contract Documents.

4.3.7 Appendix A - Forms for Affirmation of Compliance

Include in Appendix A of the Proposal the completed forms provided in RFP Attachment H (Submission Forms including CREO Documents).

In accordance with Section 4.3.3 of this RFP, for any new Key Personnel that the Respondent intends to use that are not identified in its SOQ and for the Lead Operations Coordinator, Respondent shall provide resumes for such individuals within Appendix A. Provide certifications and licenses for the Lead Operations Coordinator and any new Key Personnel (if applicable), and otherwise required by Section 4.3.3.

4.3.8 Appendix B – Design Drawings

In accordance with Section 4.3.4 of this RFP, Respondent shall provide in Appendix B all design drawings necessary to support the Representative Project (or approved Proposed Modified Project).

4.3.9 Appendix C – Equipment Forms

In accordance with Section 4.3.4 of this RFP, Respondent shall provide in Appendix C all equipment forms necessary to support the Representative Project (or approved Proposed Modified Project).

4.3.10 Appendix D – Project Schedule

In accordance with Section 4.3.5 of this RFP, Respondent shall provide in Appendix D a detailed-level schedule for the Project. The schedule shall identify critical path, proposed early work packages, and projected float.

4.3.11 Part 5 - Cost Proposal

A Proposal submitted in response to this RFP must contain a Cost Proposal that fully conforms with and satisfies the format and content requirements described herein, and sets forth the Respondent's proposed Fixed Price Design-Build to perform the Design-Build Contract services. In evaluating the Cost Proposal, the City will apply the price evaluation criteria set forth in Section 5 of this RFP. Accordingly, Respondents are required to complete and submit all forms provided in Attachment G (Cost Proposal Forms) and include in their Cost Proposal all other information necessary to permit the City to perform informed evaluation.

DB 00410 Design-Build Bid Form. This form must be completed in its entirety and submitted with the Cost Proposal. Respondent shall provide a price for Design Services and Construction Services, the sum of which comprises the "Base Bid." The Base Bid is the Cost of Work for the Representative Project (or approved Proposed Modified Project), including allowances as described below. Variations or deviations from the Representative Project that do not have City approval shall be excluded.

Additionally, Respondent shall provide as supplemental to the Cost Proposal the Vendor's Proposals for the below-listed equipment as listed in Form F.1, clearly indicating what is included in the scope.

- Generators
- Instrumentation and Controls

Scoring of the Cost Proposal will be based on the Base Bid.

THE COST PROPOSAL SHALL BE SUBMITTED, IN A SEPARATE SEALED ENVELOPE OR PACKAGE CLEARLY MARKED "COST PROPOSAL."

ALL PRICE AND COST INFORMATION SHALL BE INCLUDED ONLY IN THE COST PROPOSAL. NO PRICE INFORMATION SHALL BE INCLUDED IN THE OTHER PARTS OF THE PROPOSAL (INCLUDING THE TRANSMITTAL LETTER AND APPENDICES). IF ANY PRICE INFORMATION IS INCLUDED IN THE OTHER PARTS OF THE PROPOSAL, THE ENTIRE PROPOSAL MAY BE REJECTED.

SECTION 5: FINAL PROPOSAL EVALUATION AND SELECTION

5.1 Selection Committee

The City will appoint a committee (“Selection Committee”) consisting of no more than five (5) members, which will include staff designated by the WSD Director per Ordinance No. 190622, as deemed necessary, with the expertise appropriate for the evaluation of all technical aspects of the Project. Copies of Proposals will be distributed to the Selection Committee members who will rely on the contents for scoring purposes. The Selection Committee will review the Proposals, excluding the Cost Proposal.

5.2 General Evaluation Procedure

The submission of a Proposal by Respondents shall constitute acknowledgement of acceptance of all terms and conditions set forth in this RFP unless otherwise expressly stated herein. All Proposals must be submitted in writing and must include all required documents including forms, appendices, and other information requested in this RFP.

All Technical Proposals and documents, and meetings related thereto, shall be considered to be "closed records" and "closed meetings," respectively, as defined in Chapter 610, RSMo (the "Missouri Sunshine Law") and therefore protected from disclosure until the Public Bid Opening Date (Section 3.2).

In general, the procedure for evaluation of Proposals and selecting a Design-Builder will consist of the following:

- Selection Committee will open Technical Proposals.
- Selection Committee will review the Technical Proposals (with assistance provided by outside advisors if desired by City) to determine if Responsiveness Requirements and Mandatory (Pass/Fail) Requirements are met.
- City staff may conduct interviews for any or all submitted Proposals.
- Selection Committee will score Technical Proposals based on evaluation criteria described in Section 5.4.
- For those Proposals that meet the Responsiveness Requirements and Mandatory (Pass/Fail) Requirements, the Cost Proposal will be opened publicly as described in Section 5.5.1 Public Bid Opening.
- The ranking of Respondents and the Successful Shortlisted Respondent will be publicly posted of the City’s Plan Room Website which will begin the five (5) day appeal period.
- After the five (5) day appeal period has expired and no appeals have been recorded, contract negotiations will begin with the Successful Shortlisted Respondent.

- Award of the Contract for Design-Build Services will be made only after the successful negotiation of the Contract and the City Council's ordinance adopting the Contract for Design-Build Services takes effect.

During the Proposal evaluation process, written questions or requests for clarifications may be submitted to one or more Respondents regarding its Proposal or related matters. Failure to respond in a timely manner to any such questions or requests may be grounds for elimination of the Respondent from further consideration. Respondent is responsible for the accuracy of its Proposals. Discrepancies between words and figures will be resolved in favor of the words.

5.3 Responsiveness Requirements

Each Proposal will be reviewed to determine whether it is responsive to the RFP. Respondents must comply with all terms and conditions of this RFP, including, without limitation, the requirement to provide all documentation requested in this RFP. Failure to comply with the requirements of this RFP may result in a Proposal being rejected as non-responsive. Each Proposal shall be reviewed for responsiveness in accordance with the following conditions:

1. Timely submittal (refer to Section 4.1 of RFP for the Submittal Due Date).
2. Compliance with submittal requirements in accordance with Section 4 of RFP, including submittal of all information and documentation required in Section 4.

If a Respondent fails to satisfy these conditions, the Proposal may be deemed non-responsive by the City and not considered for further review.

At its sole discretion at any time, however, the City Manager or his delegate may waive any requirements imposed by this solicitation or by any City regulation when failure to grant the waiver will result in an increased cost to the City and the requirement waived would be waived for all Respondents for this solicitation and it is in the best interest of the City to grant the waiver. The City Council at any time may waive any requirements imposed in this solicitation by the City's Code of Ordinances when it finds failure to grant the waiver will result in an increased cost to the City and the waived requirement would be waived for all Respondents for this solicitation and it is in the best interest of the City to grant the waiver. The City reserves the right to waive any irregularities and/or formalities as deemed appropriate.

The City Council may waive any and all D/M/WBE requirements imposed by any SOQ or Proposal document or the MBE/WBE Ordinance and award the Contract to the most qualified Design-Builder if the City Council determines a waiver is in the best interests of the City.

5.4 Evaluation Criteria

The City will evaluate and rank the responsive Proposals by applying the weighted evaluation criteria set forth below to determine the Successful Respondent. The total number of points that will be used in evaluating all of the factors for a Proposal is 200, allocated as illustrated in the following table:

Criterion	Maximum Score Possible (Points)
Part 1. Project Plans/Management Approach	30
Part 2. Technical Approach	60
Part 3. Construction Schedule, Planning and Sequencing	10
Part 4. MBE/WBE Utilization	Pass/Fail
Cost Proposal	100
Total Possible Score	200

The highest Technical Proposal will be awarded 100 points. Points will be added to each of the other Technical Proposals corresponding to the 100 points and the original points earned by that Proposal. For example:

Technical Proposal	Number of Points	Score
Highest	94	100 pts.
2nd Highest	87 (94-87=7)	93 pts. (100-7 points)
3rd Highest	84 (94-84=10)	90 pts. (100-10 points)

5.5 Cost Proposal Evaluation

The Cost Proposal with the lowest Base Bid will be awarded 100 points.

One (1) point will be deducted from each of the other Cost Proposals for each percentage that the Base Bid exceeds the lowest Base Bid using the following formula:

$$1 - \frac{\text{Proposer's Bid} - \text{Lowest Bid}}{\text{Lowest Bid}} \times 100$$

5.5.1 Public Bid Opening

Cost Proposals will be opened publicly on at 2:00 PM on the Public Bid Opening Date (Section 3.2). The City will publicly announce the scores earned by each Technical Proposal, and then will publicly open and read aloud the corresponding Cost Proposal. Cost Proposal scores will be calculated and added to previously determined Proposal scores. Proposals and corresponding Respondents will be ranked based upon the Proposal scores.

The 48-hour period for providing CREO documents (e.g., CREO Form 8, Contractor Utilization Plan/Request for Waiver) shall begin to run as of this date and time.

5.6 Final Selection

The lowest and best Bid is that Proposal with the highest combined points for the Technical Proposal and Cost Proposal, and that has been determined by the City to be responsive. Respondent agrees that all representations made in its SOQ, its Technical Proposal, and its Cost Proposal shall

continue to be binding on Respondent if it is the successful Respondent on the Project, and that this RFP, the RFQ, Respondent's Technical Proposal, Respondent's Cost Proposal, and Respondent's SOQ shall be deemed incorporated into any Contract issued to Respondent for the Project.

After the evaluation process is complete, the City will notify Respondents of the rankings. The top-ranked Respondent will be selected to serve as the Design-Builder and to begin negotiations with the City for the Contract for Design-Build Services award. If negotiations with the top-ranked Respondent are not successful, the City will select the next-ranked Respondent for award and negotiate the final terms of the Contract.

SECTION 6: CONDITIONS FOR RESPONDENTS

1.1 City Policies and Ordinances

The City will administer the RFP process under competitive proposal policies. The following is a summary of some of the policies and ordinance packages to be followed and completed as part of the RFP process. The City encourages and expects Proposers to pursue subcontracting, mentoring, joint venturing, teaming and partnering opportunities with the types of firms described in this Section in the ordinary course of its teaming/business strategies for all aspects of the Project. Additional policies and ordinances otherwise not specifically listed below may also apply at time of the Proposal.

- Code of Ordinances, Sections 3-501 through 3-525, also known as the “Workforce Program.”

1.2 Prohibited Activities by Former City Employees and Officials

Section 2-2044 of the City’s Code prohibits former elected City officials and former executive or administrative employees of the City from trying to influence a decision of the City on behalf of an employer or client for one year after that former employee or official leaves the City’s employ. By submitting an RFP, the Design-Builder affirms that Design-Builder and its team members and employees are in compliance with the requirements of Section 2-2044. Failure to comply with the requirements of Section 2-1018 may cause the SOQ and Proposal to be rejected.

1.3 Change in RFP, Contract and Additional Work

The City reserves the right to add to, delete, modify or enlarge this RFP, including any specifications and/or statement of work, the proposed contract, the terms and conditions, and any subsequently executed contract. The City reserves the right to award additional contracts for related work or subsequent Project phases to the selected Design-Builder.

1.4 Late Proposals

Proposals and modifications of proposals received after the exact hour and date specified for receipt will not be considered unless: (1) they are sent via the U.S. Postal Service, common carrier or contract carrier, by a delivery method that guarantees the proposal will be delivered to the City prior to the submission deadline; or (2) if submitted by mail, common carrier or contract carrier it is determined by the City that the late receipt was due solely to an error by the US Postal Service, common carrier or contract carrier; or (3) the Proposal is timely delivered to the City but is at a different City location than that specified in this RFP; or (4) the City extends the time after the deadline for a force majeure event that could potentially affect any or all Respondents meeting the deadline.

1.5 Interviews, Discussions and Negotiations with Design-Builders

The Respondent's Proposals, including any proposed personnel and any other required proposal documents may be subject to negotiation by the City at any time. The City may interview none, one, some or all of the Respondents that submit Proposals. Proposals may be evaluated and award made with or without, discussions and/or negotiations with the Respondent. The City reserves the right to request additional information from any or all Respondents. Negotiations by the City will not be deemed a counter offer or a rejection of any original SOQ or Proposal.

1.6 Rejection of Proposals

If the City rejects all Proposals, the City may re-solicit Proposals only from those Respondents who submitted a Proposal pursuant to this RFP and/or use an expedited Bid submission schedule with or without re-advertising or issuing any other public notice when the City determines, in its sole discretion, that the delay due to the normal solicitation procedures would not be in the City's best interests.

1.7 Disclosure of Proprietary Information

A Respondent may restrict the disclosure of scientific and technological innovations in which it has a proprietary interest, or other information that is protected from public disclosure by law, which is contained in any portion of its Proposal by:

- a. Marking each page of each such document in at least 16-point font with the words "Proprietary Information"; and
- b. Printing each page of such document on a different color paper than the paper on which the remainder of the Proposal is printed; and
- c. Segregating each page of each such portion of its Technical Proposal in a sealed envelope/package, which shall prominently display, on the outside, the words "Proprietary Information" in at least 16-point font, along with the name and address of the Respondent; and
- d. After either the Public Bid Opening Date or the rejection of all Proposals, if a request is made under the Missouri Sunshine Law for access to portion(s) of a Respondent's Technical Proposal that has been marked "Proprietary Information," as provided above, the City will notify that Respondent of the request, and it shall be the burden of that Respondent to establish that such documents are exempt from disclosure under the law.

1.8 Contract Information Management System

The selected Design-Builder shall be required to use City's Internet web based Contract Information Management System/Project Management Communications Tool provided by City and protocols included in that software during the term of this Contract. The selected Design-Builder shall submit user applications to City's provided Contract Information Management

System for all personnel, subcontractors or suppliers as applicable. The City will use e-Builder (by Trimble) for document control and workflows.

1.9 Affirmative Action

It is the policy of the City that any person or entity entering into a contract with the City, will employ applicants and treat employees equally without regard to their race, color, sex, religion, national origin or ancestry, disability, sexual orientation, gender identity or age. The City's Affirmative Action ordinance requires that any person or entity who employs fifty (50) or more persons and is awarded a contract from the City totaling more than \$300,000.00 must:

- Execute and submit an affidavit, in a form prescribed by the City, warranting that the contractor has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the contract.
- Submit, in print or electronic format, a copy of the contractor's current certificate of compliance to the City's CREO prior to receiving the first payment under the contract, unless a copy has already been submitted to CREO at any point within the previous two calendar years. If, and only if, contractor does not possess a current certification of compliance, contractor shall submit, in print or electronic format, a copy of its affirmative action program to CREO prior to receiving the first payment under the contract, unless a copy has already been submitted to CREO at any point within the previous two calendar years.
- Require any subcontractor awarded a subcontract exceeding \$300,000.00 to affirm that subcontractor has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the subcontract.
- Obtain from any subcontractor awarded a subcontract exceeding \$300,000.00 a copy of the subcontractor's current certificate of compliance and tender a copy of the same, in print or electronic format, to CREO within thirty (30) days from the date the subcontract is executed. If, and only if, subcontractor does not possess a current certificate of compliance, contractor shall obtain a copy of the subcontractor's affirmative action program and tender a copy of the same, in print or electronic format, to CREO within thirty (30) days from the date the subcontract is executed.
- If you have any questions regarding the City's Affirmative Action requirements, please contact CREO at (816) 513-1836 or visit the City's website at www.kcmo.org.

1.10 American with Disabilities Act (ADA) Standards

It is the policy of the City and required by law that any new or renovated facility meet the scoping and technical requirements of the 2010 ADA Standards for newly designed and constructed or altered local government facilities, public accommodations, and facilities. The selected Design-Builder shall design the project so it conforms to the 2010 ADA Standards, as applicable and as amended from time to time, and is readily accessible to and usable by individuals with disabilities.

The City will make available to the selected Design-Builder the City's ADA Compliance Manager, who can facilitate interaction with advocates in the disability community.

1.11 Design-Builder Conflict of Interest

A conflict of interest situation may disqualify an organization. If the Design-Builder believes there may be a conflict of interest, it must list the organizations and the names of entities or persons associated with the Design-Builder who may have a conflict of interest, or appearance of a conflict of interest, with the City.

Details of the potential conflict of interest must also be included. Names of entities associated with the Design-Builder who may have a conflict of interest with any activity of this Project should be included in the Proposal. Provide details and reasons. Design-Builders are subject to disqualification on the basis of conflict of interest as determined by the City.

1.12 Additional Information

The City reserves the right, in its sole discretion, to request additional information or documents from any or all Respondents, including supplements or corrections to the Proposals.

1.13 City's Buy American and Missouri Preference Policies

It is the policy of the City that any manufactured goods or commodities used or supplied in the performance of any City contract or any subcontract thereto shall be manufactured or produced in the United States whenever possible. When Bids offer quality, price, conformity with specifications, term of delivery and other conditions imposed in the specifications that are equal, the City shall select the Bid that uses manufactured goods or commodities that are manufactured or produced in the United States. The City shall give preference to all commodities manufactured, produced, or grown within the State of Missouri and to all firms, corporations, or individuals doing business as Missouri firms, corporations or individuals, when quality is equal or better and delivered price is the same or less. It is the bidder's responsibility to claim these preferences.

1.14 Tax Clearance

Respondent will be required to furnish to Owner sufficient proof from City's Commissioner of Revenue, verifying that Respondent is in compliance with the license and tax ordinances administered by City's Revenue Division as a precondition to Owner making its first payment under any Contract over \$50,000.00. Respondent will also be required to obtain proof of City tax compliance from all of its Subcontractors prior to the Subcontractors performing any Work.

1.15 Prevailing Wage Requirements

The successful Respondent shall pay the prevailing hourly rate of wages as determined by the Missouri Annual Wage Order and/or Federal Wage Determination set forth in the Project Manual. In case of a conflict between Missouri and Federal wage rates, the higher rate shall apply.

1.16 Indemnification – City of Kansas City

The contract documents contains a requirement that Contractor shall indemnify, defend and hold harmless the City and any of its agencies, officials, officers, or employees from and against all claims, damages, liability, losses, costs, and expenses, including reasonable attorneys' fees, arising out of or resulting from any acts or omissions in connection with the contract, caused in whole or in part by Contractor, its employees, agents, or Subcontractors, or caused by others for whom Contractor is liable, including negligent acts or omissions of the City, its agencies, officials, officers, or employees. The contract requires Contractor to obtain specified limits of insurance to insure the indemnity obligation. Contractor has the opportunity to recover the cost of the required insurance in the Contract Price by including the cost of that insurance in the Bid amount.

1.17 Indemnification – State of Missouri

The contract documents contains a requirement that Contractor shall indemnify, defend and hold harmless the Missouri Highways and Transportation Commission (MHTC) and the Missouri Department of Transportation (MoDOT) and their respective employees from and against all claims, damages, liability, losses, costs, and expenses, including reasonable attorneys' fees, arising out of or resulting from any acts or omissions in connection with the contract, caused in whole or in part by Contractor, its employees, agents, or Subcontractors, or caused by others for whom Contractor is liable. The contract requires Contractor to obtain specified limits of insurance to insure the indemnity obligation. Contractor has the opportunity to recover the cost of the required insurance in the Contract Price by including the cost of that insurance in the Bid amount.

SECTION 01420 – DEFINITIONS AND ACRONYMS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section covers all definitions and acronyms for terms used throughout Division 01 Sections of Contract Documents and as required for software integrations.

1.02 RELATED SECTIONS

- A. Section 00700 – General Conditions
- B. Section 01020 – Record Documents_Facilities
- C. Section 01300 – Submittals_Facilities
- D. Section 01320 – Construction Progress Documentation
- E. Section 01352 – Selective Alterations and Demolition
- F. Section 01354 – Hazardous Material Procedures
- G. Section 01433 – Manufacturer’s Field Service
- H. Section 01480 – Water Tightness
- I. Section 01600 – Product Delivery Storage and Handling
- J. Section 01615 – Equipment Identification and Tagging
- K. Section 13500 – SCADA Software Standards and Conventions

1.03 DEFINITIONS

- A. Any definitions listed herein shall be superceded by any definitions listed in Section 00700 - Construction General Conditions.
- B. **Contract Definitions**
 - 1. **City** – The City of Kansas City, Missouri. Also “Owner”
 - 2. **Contract for Design-Build Services** – The entire agreement between the City and the Design-Builder, including all amendments, which will establish the terms and conditions for the performance of the design-build services for the Project.
 - 3. **Design-Builder** – The entity that will serve as the Project developer and enter into a contractual relationship with the City, and that will be the single point of accountability to the City for delivery of the services and the Project. The entity is required to be a licensed contractor in Missouri. The builder will be responsible for both Designing and Building the Project.
 - 4. **Design Manager** – Engineer employeeed by the Lead Designer or Lead Contractor who will manage all the design work on this project.
 - 5. **Discipline Design Lead(s)/Manager(s)** – Engineers leading the effort to design specific disciplines.
 - 6. **Headworks** – Preliminary systems for wastewater treatment plants including wastewater coarse screens, fine screens, and grit removal for the purpose of removing trash, debris, or other large solids from influent flow.

7. **Key Personnel** – The individuals, employed by Design-Builder or other firm included on the Project Team, who would fill certain key roles in delivery of the Project and related services if Design-Builder is chosen and may not be removed or substituted without City’s written consent, including the following positions:
 - a. Design-Build Principal-in-Charge
 - b. Design-Build Project Manager
 - c. General Contractor’s Project Manager or Construction Manager (if different than Design-Build Project Manager)
 - d. Design Manager (if different than Design-Build Project Manager)
 - e. Discipline Design Leads/Managers
 - f. Process Engineering Lead/Manager
 - g. On-Site Field Superintendent(s)
 - h. Quality Control/Quality Assessment Manager
 - i. Safety Officer
 - j. Commissioning Manager for Design and Construction
 - k. Envision™ Sustainability Professional (ENV SP)
8. **Lead Contractor** – The member of the Project Team that is licensed as a Missouri general contractor and that has primary responsibility for construction services for the Project.
9. **Lead Designer** – The member of the Project Team that employs professional engineers licensed in Missouri and that has primary responsibility for design services for the Project.
10. **Mandatory (Pass/Fail) Requirements** – The requirements set forth in RFQs/RFPs that, at a minimum, must be satisfied (or waived by the City) in order for the SOQ to be evaluated and ranked according to the comparative evaluation criteria.
11. **On-Site Field Superintendent(s)** – Contractor or Sub-Contractor staff that will be leading the construction effort in specific disciplines.
12. **Owner’s Advisor** – The firm retained by the City to provide assistance with design review and Construction Phase oversight. The Owner’s Advisor may fill the role of Resident Project Representative during Construction and will be further defined in the RFP. The Owner’s Advisor will not serve as Designer of Record.
13. **Process Engineering Lead/Manager** – Engineer leading the processing design effort for the thermal hydrolysis process.
14. **Project** – As defined in Section 01110 – Summary of Work
15. **Project Team** – The Design-Builder; the Lead Contractor, and the Lead Designer; and Key Personnel.
16. **Responsiveness Requirements** – The requirements set forth in the Solicitation that, at a minimum, must be satisfied (or waived by the City) in order for the

SOQ to be evaluated and ranked according to the comparative evaluation criteria.

17. **Shortlist** – A limited list of Design-Builders selected by the City to compete in the RFP process.
18. **Shortlisted Design-Builder(s)** – Those entities who submit a SOQ in response to the RFQ and are invited to submit proposals in response to a City RFP. The RFP is the second step in the City’s two-step procurement process employed to procure a Design-Builder for the Project.

C. **Asset Identification and Tagging Definitions**

1. **Asset Tags** – (may also be known as CMMS tags) A tag/identifier for KC Water Assets. Each level within the identifier has a list of options indicating to the reader where the asset is located within the Department. The form of the identifier is given as (*Level 1 – Level 2 – Level 3 – Level 4 – Level 6 – Level 7 – Level 8*) whereas:
 - a. Level 1 Component – City of Kansas City, MO Department
 - b. Level 2 Component – Division
 - c. Level 3 Component – Section
 - d. Level 4 Component – Facility/SubArea
 - e. Level 5 Component – System
 - f. Level 6 Component – Subsystem
 - g. Level 7 Component – Equipment
 - h. Level 8 Component – Equipment number

Example:

- (i) (*Water Services Department–Wastewater–Treatment–P711–PRE–GRSC–GRIT–06400*)
- (ii) Tag Meaning: This asset is Grit Removal Equipment used for screening during preliminary treatment at the Birmingham Wastewater Treatment Plant.
- (iii) For KC Water Facility projects, it may be commonly shorthand abbreviated using Levels 4-8)

Refer to CITY’s tag generator spreadsheet for a full list of assets needing this type of tag.

2. **PLC Shortcuts** – Shortcuts used in the Operator Interface Terminal/Human Machine Interface to establish a path from the HMI to the PLC and is used to identify and label PLCs.
3. **P&ID Tags** – Identifiers used to label equipment and instruments on Process and Instrumentation Diagrams. Each one is composed of 3-5 digit equipment or instrument code followed by a 5 digit loop number. See CITY P&ID tagging standards for more details.

4. **PlantPax Tags** – Identifiers in the PLC software program as object names for all standard PlantPax objects. Tagging Convention is based on ANSI/ISA Table 4.1 and the P&ID Tag loop numbers.
5. **NonPlantPax Tags** – Identifiers not found in standard PlantPax library of objects. This includes objects vendor has created or possibly objects that local integrator needs to create for specialty equipment without a preexisting object type in standard PlantPax library.
6. **Other Tags** – As defined by Section 13500 – SCADA Software Standards and Conventions.

D. **BIM Definitions**

1. **BIM** – Building Information Model
2. **Modeled Object** – An equipment asset created in BIM. Modeled objects are tagged using a parent-child-grandchild data structure.
3. **Overlay** – Placing an object over the surface of another object thus allowing the object to be visible on drawings or other deliverables by viewer.
4. **Revit** – Autodesk BIM software used for Building design, Foundation design, Structural design, and MEP design.
5. **Standard Component** – Any valve, pipe, duct, fitting, cable, cable tray, conduit, wiring, or structural member where aforementioned component is dimensionally defined in a Design Standard.

E. **Construction Progress Definitions**

1. **Activity** - A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - a. **Critical activity** – Activity on the critical path. They must start and finish on the planned start and finish times.
 - b. **Predecessor activity** – Activity that must start or complete before a given activity can be started. No negative lag is allowed.
 - c. **Successor activity** – Activity that can not start until the predecessor activity allows it. No negative lag is allowed.
2. **Cost Loading** – All WBS summary activities are cost loaded. The sum total of all cost loaded activities shall equal the total Contract Price of the Contract, including Owner-approved change orders. This shall be equivalent to the total of the Schedule of Values for the Project.
3. **CPM (Critical Path Method)** – A schedule network analysis technique used to determine the amount of scheduling flexibility (the amount of float) on various logical network paths in the project schedule network, and to determine the minimum total project duration. Start and finish dates are calculated by means of a forward pass, using a specified start date. Late start and finish dates are calculated by means of a backward pass, starting from a

specified completion date, which sometimes is the project early finish date determined during the forward pass.

4. **Critical Path** – Generally, but not always, the sequence of schedule activities determining the duration of the project. Generally, it is the longest path through the project. However, a critical path can end, as an example, on a schedule milestone that is in the middle of the schedule model and that has a finish-on-or-before imposed date schedule constraint.
5. **Event** – The starting or ending point of an activity.
6. **Float** – The measure of leeway in starting and completing an activity. Float time is not for the exclusive use or benefit of either City or Contractor or Design-Builder, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
7. **Fragnet** – A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
8. **Gantt Chart** – A graphic display of schedule-related information. In the typical Gantt chart, schedule activities or work breakdown structure components are listed down the left side of the chart, dates are shown across the top and activity durations are shown as date-placed horizontal bars. Also known as a Bar chart.
9. **Lag** – An offset or delay from an activity to its successor. It is based on the calendar of the successor activity.
10. **Major Area** – A significant construction element.
11. **Major Procurement** – As discussed in Section 00700, paragraph 2.07.B.1, Major Procurement shall further defined as any materials that fall within the critical path and/or have a lead time of 30 days or greater.
12. **Milestone** – A key or critical point in time for reference or measurement.
13. **Network Diagram** – A graphic diagram of a network schedule, showing activities and activity relationships.
14. **Schedule Level** – Detailed Schedule by Task – This level of detail will support the short-term planning for the field, normally for those activities of less than 1-week duration. It is used for workforce supervisors to plan and coordinate work at the detail level. City must approve of any activities greater than 1 week duration.
15. **WBS (Work Breakdown Structure)** – A deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables. It organizes and defines the total scope of the project. Each descending level represents an

increasingly detailed definition of the project work. The WBS is decomposed into work packages. The deliverable orientation of the hierarchy includes both internal and external deliverables. See also Schedule Levels.

16. **Work Package** – A deliverable or project work component at the lowest level of each branch of the WBS. The work package includes the schedule activities and schedule milestones required to complete the work package deliverable or project work component.
17. **Resource Loading** – WBS activities has the allocated resources necessary to complete the WBS.
18. **Schedule of Monthly Payments** – Estimated monthly progress payments based on Baseline Schedule and Schedule of Values for each Month for the duration of the project.
19. **City Activity** – An activity required by the project that will be performed by the City or their designee outside the contract.

F. **Hazardous Material Procedure Definitions**

1. **Asbestos-Containing Material (ACM)** – Mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovation operations, this term also includes regulated asbestos-containing material waste and materials contaminated with asbestos including disposable equipment and clothing.
2. **Adequately Wet** – Sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material (ACM), then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wetted.
3. **Competent Person** – A trained worker capable of identifying existing and predictable asbestos hazards, perform exposure assessment and monitoring, is qualified to train other workers, and has the authority to take immediate corrective action to eliminate a hazardous exposure.
4. **Friable ACM (FACM)** – Any material containing more than 1 percent asbestos, that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
5. **Hazardous materials** – As defined by 40 CFR 261 and State-specific codes.
6. **Lead** – As defined by 29 CFR 1926.62, lead means metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

7. **Non-friable ACM (NACM)** – Any material containing more than 1 percent asbestos, that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
 - a. **Category I NACM** – Asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos.
 - b. **Category II NACM** – Any material, excluding Category I NACM, containing more than 1 percent asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
 8. **Regulated ACM (RACM)** – Any material that contains (a) FACM, (b) Category I non-NACM that has become friable, (c) Category I NACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II NACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material over the course of demolition or renovation operations. Category II NACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder in the course of work.
- G. **Manufacturer’s Field Service Definitions**
1. **Work-day** – One person’s labor for 8 hours of work within the City and the Contractor or Design-Builder’s working hours.
 2. **Systems Integrator** – A contractor specializing in bringing together automation hardware and software subsystems into one system.
- H. **Product Delivery Storage and Handling Definitions**
1. **Products** – Inclusive of raw materials, finished goods, equipment, systems, and shop fabrications.
 2. **Special tools** – Tools that have been specifically made for use on a product for assembly, disassembly, repair, or maintenance.
- I. **Record Definitions**
1. **Drawings** – As defined by Section 00700 – General Conditions
 2. **Approved for Construction Drawings** – Any drawing or sketch that has been issued to the Contractor or Design-Builder by the City for the purposes of constructing the Work. These include, but are not limited to, the following: Drawings, revisions to the Drawings, information issued as part of change orders and information issued as part of work change directives.
 3. **Field-Marked Drawings (Red Line Markups)** – A copy of the Approved for Construction Drawings that is maintained and updated daily by the Contractor or Design-Builder during construction clearly detailing all work completed and depicting all changes made to the Work during construction.
 4. **As-Built Drawings** – The completed Field-Marked Drawings that include the signed certification language from both the Contractor or Design-Builder and Surveyor.
 5. **Conforming to Construction Drawings** – The Approved for Construction Drawings that have been revised to reflect the changes noted on the As-Built

Drawings. For these drawings, the CAD files are updated, revision block is updated, and a new set of drawings is created.

6. **Record Model** – The building information model (BIM) that documents the work completed.
7. **Record Drawings** – All drawings used or developed as part of the Work. Record Drawings include, but are not limited to, the following: Approved for Construction Drawings, Field-Marked Drawings, As-Built Drawings and Conforming to Construction Drawings.
8. **Record GIS** – GIS files containing the site piping work completed in this project that has been created per KC Water Standards.
9. **Record Documents** – As defined by this Section, Section 01015 and Section 00700 – General Conditions, Article 6 Contractor or Design-Builder's Responsibilities including but not limited to updated BIM, Electronic O&M Manual, OEM O&M, Record Photos, Final Submittals, SOPs, SIs, and any other specified submittals.

J. **Selective Alterations and Demolition Definitions**

1. **Chipping hammer** – A hand-operated electrical or pneumatic demolition device for removal of hardened concrete or masonry materials having a weight of less than 15 pounds and an impact frequency of greater than 2,000 blows/minute.
2. **Concrete breaker** – A hand-operated electrical or pneumatic demolition device for removal of hardened concrete or masonry materials having a weight greater or impact frequency less than the limits defined for a chipping hammer.
3. **Coring equipment** – Non-impact rotary drill with diamond cutting edges.
4. **Heavy abrasive blast** – Cleaning procedure by which various abrasives materials, or steel shot, are forcibly propelled by high pressure against a surface to remove loose material and produce a concrete surface roughened to ICRI Surface Profile CSP-7, or higher, as specified in ICRI 301.3R.
5. **Salvage materials** – Materials removed from existing facility.

K. **Software Definitions**

1. **Computerized Maintenance Management System (CMMS)** – Facilitates process of predicted maintenance, scheduled maintenance, unscheduled maintenance, and emergency maintenance
2. **Dynamic** – Any attribute, field, item, parameter, or other component which receives an active input from a source other than by manual user.
3. **Enterprise Data Management System (EDMS)** – Inventory and management of record information kept by City.
4. **Geographic Information System (GIS)** – System that analyzes and displays geographically reference information

5. **Static** – Any attribute, field, item, parameter, or other component which requires manual edit to change its value.
6. **Supervisory Control and Data Acquisition (SCADA)** – System utilized to monitor and control processes locally and/or remotely in real time.

L. **Submittal Definitions**

1. **Shop Drawings, Product Data, and Samples** – Technical Submittals prepared by the Contractor or Design-Builder, Subcontractor, Manufacturer or Supplier and submitted by Contractor or Design-Builder to the City for review and comment as a basis of the use of Equipment and Materials proposed for incorporation in the Work or needed to describe installation, operation, maintenance or technical properties, as specified in each Division of the Specifications:
 - a. Shop Drawings include custom-prepared data of all types including drawings, diagrams, performance curves, material schedules, templates, instructions and similar information.
 - b. Product data includes standard printed information on materials, products and systems; not custom-prepared for this Project, other than the designation of selections from available choices.
 - c. Samples include both fabricated and physical examples of materials, products and Work; both as complete units and as smaller portions of units of Work; either for limited visual inspection or (where indicated) for more detailed testing and analysis. Mock-ups are a special form of Samples which are too large to be handled in the specified manner for transmittal of Sample Submittals.
 - d. Spare parts – Describe spare parts necessary for the Owner's use in facility operation and maintenance; identify the type and quantity, but include the actual characteristics of the spare parts in Product as part of the specification of the product.
 - e. Tools – Tools are generally defined as items such as special wrenches, gauges, circuit setters, and other similar devices required for the proper operation or maintenance of a system that would not normally be in the Owner's tool kit.
2. **Informational Submittals** – Technical reports, administrative submittals, certificates and guarantees not defined as Shop Drawings, Product Data, and Samples.
 - a. Technical reports include laboratory reports, tests, technical procedures, technical records and Contractor or Design-Builder's design analysis.
 - b. Administrative Submittals are those nontechnical Submittals required by the Contract Documents or deemed necessary for administrative records. These Submittals include maintenance agreements, bonds, project photographs, physical work records, statements of applicability, copies of

industry standards, project record data, schedules, security/protection/safety data and similar type Submittals.

- c. Certificates and guarantees are those Submittals on Equipment and Materials where a written certificate or guarantee from the manufacturer or Supplier is required in the Contract Documents.
- d. Manufacturer's Instructions – Instructions, stipulations, directions, and recommendations issued in printed form by the manufacturer of a product addressing handling, installation, erection, and application of the product; manufacturer's instructions are not prepared especially for the Work.

M. Survey Definitions

- 1. **Brownfield** – Project locations with hazardous materials at existing in-use facilities by City.
- 2. **Grayfield** – Project locations with existing in-use facilities by City
- 3. **Greenfield** – Project locations with no in-use facilities by City.
- 4. **LIDAR (Light Detection And Ranging)** – Method of Surveying utilized by measuring distances using laser light and measuring reflection with a sensor. This is also called 3D Laser Scanning.
- 5. **Point Cloud** – A set of data points in space used for capturing existing conditions of any site.
- 6. **State Plane Coordinate System** – U.S. Coordinate system used by each U.S. state and has between one to six zones depending on size and shape.

N. Water Tightness Definitions

- 1. **Damp spots** – Surfaces where visible moisture can be picked up by a dry hand.
- 2. **Containment structure lined** – Liquid-containing structure with barrier coating or membrane applied to the inside surfaces to prevent leaking of contents to the outside.
- 3. **Containment structure, unlined** – Liquid containing structure where only the concrete structure itself is used to prevent leaking of contents to the outside.

1.04 ABBREVIATIONS

A. Permit Abbreviations

- 1. **MODNR** – Missouri Department of Natural Resources
- 2. **MS4** – Municipal Separate Storm Sewer System
- 3. **NPDES** – National Pollutant Discharge Elimination System
- 4. **OCCP** – Operational Change Control Procedure

B. Construction Progress Abbreviations

- 1. **WBS** – Work Breakdown Structure
- 2. **CPM** – Critical Path Method

C. Asset Taxonomy

1. Level 1 components through Level 3 components do not contain any abbreviations to select from.
2. **Level 4 – Facility / SubArea Abbreviations**
 - a. **P600** – Southwest Boulevard
 - b. **P601** – 25th Street Flood Station
 - c. **P602** – Santa Fe Flood Station
 - d. **P603** – Broadway Flood Station
 - e. **P604** – North Airport Flood Station
 - f. **P606** – Gillis Flood Station
 - g. **P607** – Lydia Flood Station
 - h. **P608** – Prospect Flood Station
 - i. **P609** – Milwaukee Flood Station
 - j. **P610** – Truman Flood Station
 - k. **P611** – Hawthorne Flood Station
 - l. **P612** – Blue Banks Flood Station
 - m. **P613** – Gardner Sewage Pump Station (Out Of Service)
 - n. **P614** – South Airport Flood Station
 - o. **P616** – Westside Effluent Pump Station
 - p. **P617** – Santa Fe Pump Station
 - q. **P618** – Swope Industrial Pump Station
 - r. **P619** – North Church Estates Pump Station
 - s. **P620** – Blue River Effluent Pump Station
 - t. **P621** – Secondary Flood Pump Station
 - u. **P622** – Little Shoal Creek Pump Station
 - v. **P623** – Pied Creek Pump Station
 - w. **P626** – 50 Highway Pump Station (Out Of Service)
 - x. **P627** – First Creek Pump Station
 - y. **P628** – Second Creek Pump Station
 - z. **P629** – Quail Run Pump Station
 - aa. **P630** – Tiffany Green Pump Station
 - bb. **P631** – First Creek Pump Station
 - cc. **P632** – Second Creek Interim ForceMain
 - dd. **P633** – North Bristol Pump Station
 - ee. **P635** – Gooseneck Pump Station
 - ff. **P637** – South Airport Relief Wells
 - gg. **P640** – South Bristol Pump Station
 - hh. **P641** – Tiffany Lakes Pump Station
 - ii. **P642** – Wildwood West Pump Station
 - jj. **P643** – New KCI Sewage Pump Station
 - kk. **P646** – Briarcliff West Pump Station
 - ll. **P647** – 15th Street Sewage Pump Station

mm.	P648	– Line Creek Pump Station
nn.	P649	– Riverside Sewage Pump Station
oo.	P651	– Blue River Screening/Pumping
pp.	P652	– Buckeye Pump Station
qq.	P657	– Northland Mobile Home Pump Station
rr.	P658	– NEID Pump Station
ss.	P659	– Chouteau Pump Station
tt.	P661	– Turkey Creek Pump Station
uu.	P661A	– OK Creek Gates
vv.	P662	– Riverside Horizons Pump Station
ww.	P663	– Birchwood Pump Station
xx.	P667	– 12 th Street Sewage Pump Station
yy.	P668	– Old Line Creek
zz.	P669	– Round Grove Pump Station
aaa.	P671	– Gregory Pump Station (Out Of Service)
bbb.	P673	– Green Hills Pump Station
ccc.	P674	– Trolley Trail Basin
ddd.	P676	– South Airport Pump Station
eee.	P677	– Lawndale Pump Station
fff.	P678	– 87 th Street Pump Station
ggg.	P679	– Delaware Diversion Structure
hhh.	P680	– Main Street Diversion Structure
iii.	P681	– Winner Road Diversion Structure
jjj.	P682	– Lake Waukomis Pump Station
kkk.	P683	– Thornhill Pump Station
lll.	P684	– White Aloe Pump Station
mmm.	P686	– Brush Creek Pump Station
nnn.	P687	– Upper Rush Pump Station
ooo.	P688	– Harlem Pump Station
ppp.	P691	– Burlington Creek Pump Station
qqq.	P692	– 83 rd Street Pump Station
rrr.	P693	– Birmingham Pump Station
sss.	P694	– Mace Road Pump Station
ttt.	P696	– Weatherby Lake 2 Pump Station
uuu.	P697	– Platte Woods Pump Station
vvv.	P699	– Kemper Flood Station
www.	P701	– Blue River Primary
xxx.	P702	– Blue River Secondary
yyy.	P710	– Blue River Solids Handling
zzz.	P711	– Birmingham Wastewater Treatment Plant
aaaa.	P712	– Westside Wastewater Treatment Plant

- bbbb. **P715** – Todd Creek Wastewater Treatment Plant
- cccc. **P715P** – Todd Creek Wastewater Treatment Plant Pumping
- dddd. **P718** – Rocky Branch Wastewater Treatment Plant
- eeee. **P720** – Fishing River Wastewater Treatment Plant
- ffff. **P720P** – Fishing River Wastewater Treatment Plant Pumping
- gggg. **P721** – Birmingham Farm Land Application
- hhhh. **P744** – KCI Industrial Park Wastewater Treatment Plant
- iiii. **P745** – KCI Deicing Facility
- jjjj. **P746** – Northland Mobile Homes Wastewater Treatment Plant

3. **Level 5 – System Abbreviations**

- a. **AUX** – Auxiliary
- b. **BLGR** – Buildings and Grounds
- c. **CHEM** – Chemical (Water Division Only)
- d. **DIS** – Disinfection
- e. **FILT** – Filtration/Filter Gallery (Water Division Only)
- f. **FWP** – Finished Water Process / Polishing (Water Division Only)
- g. **PMP** - Pumping
- h. **PRE** – Preliminary Treatment (Wastewater Division Only)
- i. **PRI** – Primary Treatment (Wastewater Division Only)
- j. **RWI** – Raw Water Intake (Water Division Only)
- k. **SEC** – Secondary Treatment
- l. **SOL** – Solids Handling (Wastewater Division Only)
- m. **STO** – Storage (Wastewater Division Only)
- n. **TEST** – Testing
- o. **UT** - Utilities

4. **Level 6 – Subsystem Abbreviations**

- a. **ACS** – Activated Sludge (Wastewater Division Only)
- b. **AND** – Anaerobic Digestion (Wastewater Division Only)
- c. **ARD** – Aerobic Digestion (Wastewater Division Only)
- d. **BIO** – Biotowers (Wastewater Division Only)
- e. **CENT** – Centrifuges (Wastewater Division Only)
- f. **CLA** – Clarification (Wastewater Division Only)
- g. **COM** – Communication (Wastewater Division Only)
- h. **CONV** – Conveyor Systems (Wastewater Division Only)
- i. **ELE** – Electrical (Wastewater Division Only)
- j. **FAC** – Facility (Wastewater Division Only)
- k. **GRSC** – Grit/Screening (Wastewater Division Only)
- l. **HVAC** – HVAC (Wastewater Division Only)
- m. **NaHSO₃** – Sodium Bisulfite (Wastewater Division Only)
- n. **NaOCl** – Sodium Hypochlorite (Wastewater Division Only)
- o. **ODR** – Odor Control (Wastewater Division Only)

- p. **PAC** – Polyaluminum Chloride (Wastewater Division Only)
- q. **POL** – Polymer (Wastewater Division Only)
- r. **PD** – Process Drain (Wastewater Division Only)
- s. **PS** – Pumping (Wastewater Division Only)
- t. **RAS** – Return Activated Sludge (Wastewater Division Only)
- u. **SCADA** – Supervisory Control and Data Acquisition (Wastewater Division Only)
- v. **SC** – Scum (Wastewater Division Only)
- w. **SW** – Service Water (Wastewater Division Only)
- x. **SDST** – Sidestream (Wastewater Division Only)
- y. **SCIN** – Sludge Holding Cells (Wastewater Division Only)
- z. **STM** – Steam Generation (Wastewater Division Only)
- aa. **THP** – Thermal Hydrolysis (Wastewater Division Only)
- bb. **UV** – Ultraviolet (Wastewater Division Only)
- cc. **WAS** – Waste Activated Sludge (Wastewater Division Only)

5. **Level 7 – Equipment Abbreviations**

- a. **ACTU** – Actuator
- b. **AER** – Aerator
- c. **AIRC** – Air Compressor
- d. **BAS** – Basin
- e. **BB** – Battery Bank
- f. **BBC** – Battery Charger
- g. **BELTPR** – Belt Press
- h. **BIO** – Biogas Treatment
- i. **BLDG** – Building
- j. **BLOW** – Blower
- k. **BP** – Backflow Preventor
- l. **CAMSEC** – Cameras/Security/Monitor
- m. **CHMF** – Chemical Feed
- n. **CSILO** – Chemical Silo/Storage
- o. **CHMUN** – Chemical Unloading
- p. **CLAR** – Clarifier
- q. **CLARM** – Clarifier Mechanism
- r. **COMM** – Communication
- s. **CMP** – Computer/System
- t. **CONT** – Containment Chemicals or Oils
- u. **CONV** – Conveyor
- v. **CR** – Chart Recorder
- w. **CRN** – Crane
- x. **DHAD** – Dehumidifier/Air Dryer
- y. **DGST** – Digestor

z.	DIF – Diffusers
aa.	DIST – Distribution (Wiring, etc.)
bb.	EDCD – Eddy Current Drives
cc.	ELEV – Elevator
dd.	FILT – Filter
ee.	FLOC – Flocculator
ff.	GATE – Gate-Process
gg.	GEN – Generator
hh.	GRIT – Grit Removal Equipment
ii.	GRND – Grounds
jj.	HOIST – Hoist
kk.	HVAC – HVAC Heating and Cooling
ll.	HVACN – HVAC Conveyance
mm.	LAB – Laboratory Equipment
nn.	LIGHT – Lighting
oo.	MACHFX – Machinery/Tools-Fixed
pp.	MH – Manhole structure
qq.	MIX – Mixer
rr.	MRAIL – Monorail
ss.	MTR – Motor
tt.	MTRNE – Motor (Non-Electrical)
uu.	MCC – Motor Control Center
vv.	OHD – Overhead Doors (Truckbay)
ww.	OIT – Operator Interface Terminal / Field Controls
xx.	PIPAB – Piping-Aboveground
yy.	PIPCH – Piping-Site/Channels
zz.	PLBG – Plumbing
aaa.	PLC – Programmable Logic Controller
bbb.	PORTEQ – Portable/Mobile Equipment
ccc.	PMP – Pump
ddd.	PMPMB – Pumps-Mobile
eee.	PUNIT – Pumping Unit
fff.	ROOF – Roof
ggg.	SAFE – Safety-Life
hhh.	SAMPLE – Sampler
iii.	SCALE – Scale Sensor
jjj.	SCRAIR – Scrubber-Air
kkk.	SECPR – Security/Process Alarm
lll.	SENS – Sensor/Meter
mmm.	SLGCOL – SLG Collector/Sweep Assembly
nnn.	SFTST – Soft Starts

ooo. **SUBST** – Substations-Electrical
ppp. **SG** – Switchgear
qqq. **SWS** – Seal Water System
rrr. **TANK** -Tank
sss. **TFIL** – Trickling Filter
ttt. **TFILAR** – Trickling Filter Distribution Assembly
uuu. **TOOLPW** – Tools – Power Hand
vvv. **TRAN** – Transformer
www. **UPS** – Uninterruptible Power Supply
xxx. **UV** – Ultraviolet Equipment
yyy. **VLV** – Valve
zzz. **VFD** – Variable Frequency Drive
aaaa. **VIBRAT** – Vibrator
bbbb. **WELTNK** – Water Elevated Tank
cccc. **WRES** – Water Reservoir
dddd. **WELL** – Water Wells

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

ATTACHMENT A: Definition of Terms

The definitions of some of the capitalized terms used in this RFQ are presented below:

- **City** – The City of Kansas City, Missouri. Also “Owner.”
- **Contract for Design-Build Services** – The entire agreement between the City and the Design-Builder, including all amendments, which will establish the terms and conditions for the performance of the design-build services for the Project.
- **Design-Builder** – The entity that will serve as the Project developer and enter into a contractual relationship with the City, and that will be the single point of accountability to the City for delivery of the services and the Project. The entity is required to be a licensed contractor in Missouri.
- **Design Manager**- Engineer employed by the Leader Designer or Lead Contractor who will manage all the design work on this project.
- **Discipline Design Lead(s)/Manager(s)**- Engineers leading the effort to design specific disciplines.
- **Key Personnel** – The individuals, employed by Design-Builder or other firm included on the Project Team, who would fill certain key roles in delivery of the Project and related services if Design-Builder is chosen and may not be removed or substituted without City’s written consent, including the following positions:
 - Design-Build Principal-in-Charge
 - Design-Build Project Manager
 - General Contractor’s Project Manager or Construction Manager (if different than Design-Build Project Manager)
 - Design Manager (if different than Design-Build Project Manager)
 - Electrical Contractor (Project Manager, Foreman)
 - Project Electrical Engineer
 - Systems Integrator
 - Discipline Design Leads/Managers
 - On-Site Field Superintendent(s)
 - Quality Control/Quality Assessment Manager

- Safety Officer
- Commissioning Manager for Design and Construction

- EnvisionTM Sustainability Professional (ENV SP) (if different from other roles identified)
- **Lead Contractor** – The member of the Project Team that is licensed as a Missouri general contractor and that has primary responsibility for construction services for the Project.
- **Lead Designer** – The member of the Project Team that employs professional engineers licensed in Missouri and that has primary responsibility for design services for the Project.
- **Mandatory (Pass/Fail) Requirements** – The requirements set forth in Section 5.3 of this RFQ that, at a minimum, must be satisfied (or waived by the City) for the SOQ to be evaluated and ranked according to the comparative evaluation criteria.
- **On-Site Field Superintendent(s)** – Contractor or Sub-Contractor staff that will be leading the construction effort in specific disciplines.
- **Project** – WW Backup Generators (Project)
- **Project Team** – The Design-Builder; the Lead Contractor, and the Lead Designer; and Key Personnel.
- **Responsiveness Requirements** – The requirements set forth in Subsection 5.2 of this Solicitation that, at a minimum, must be satisfied (or waived by the City) in order for the SOQ to be evaluated and ranked according to the comparative evaluation criteria.
- **Shortlist** – A limited list of Design-Builders selected by the City to compete in the RFP process.
- **Shortlisted Design-Builder(s)** – Those entities who submit a SOQ in response to the RFQ and are invited to submit proposals in response to a City RFP. The RFP is the second step in the City's two-step procurement process employed to procure a Design-Builder for the Project.

ATTACHMENT A: Definition of Terms

The definitions for all phases of the Design-Build Services is described in Section 01420 – Definitions and Acronyms.

SECTION 01000 – GENERAL PROJECT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. This section covers the general project requirements for all projects.
- B. The work to be performed under these Contract Documents shall be consistent with Section 0700-General Conditions in the construction, installation, and completion of all work required in connection with the Blue River Screen House Project, in Kansas City, Jackson County, Missouri.

1.02 RELATED SECTIONS

- A. Section 00700 – General Conditions.
- B. Section 00800 – Supplementary Conditions.
- C. Section 01015 – Specific Project Requirements.
- D. Section 01020 – Record Documents.
- E. Section 01300 – Submittals.
- F. Section 01329 - Safety Plan
- G. Section 01353 – Selective Alterations and Demolition
- H. Section 01566 – Cleanup Operations.
- I. Section 01570 – Temporary Erosion Control.
- J. Section 01580 – Project Signs.
- K. Section 01581 – Public Communications.
- L. Section 02180 – Clearing and Grubbing.
- M. Section 02300 – Earthwork.

1.03 CODES AND STANDARDS

- A. By reference, as applicable for the Work being performed.

1.04 SUBMITTALS

- A. Submit as specified in Section 01300 – Submittals.
- B. Project Communications:
 - 1. Progress Meeting Minutes.
- C. Other:
 - 1. Description and location of offsite storage arrangements.
 - 2. Construction Site Plan.
 - 3. Safety Representative.

1.05 QUALITY ASSURANCE

- A. The Contractor or Design-Builder is responsible for the quality assurance and quality control of the Work.

1.06 MATERIALS SELECTION AND ACQUISITION

- A. The Contractor or Design-Builder shall not use materials or equipment removed from existing premises, except as specifically permitted by the Contract Documents. All products shall be new, never used before, unless otherwise specified.
- B. Provide interchangeable components of the same manufacturer, for similar removable components, such as: T-bolts, glands, gaskets, manhole rings and covers, nuts, wiring, slip rings, conduit, bolts, seals, etc.

1.07 CONSTRUCTION SITE PLAN

- A. The Contractor shall submit a site plan showing the locations and dimensions of temporary facilities which include, but are not limited to, the following layouts and details:
 - 1. Equipment and material storage area on City property and bonded warehouses).
 - 2. Access and traffic routes.
 - 3. Indicate if a supplemental or off-site staging area is being utilized.
 - 4. Show locations of safety and construction fencing, job site trailer, construction entrances, trash dumpsters, temporary sanitary facilities and parking areas for project personnel.
 - 5. Indicate locations of concrete washout facilities.

1.08 EASEMENTS AND RIGHTS-OF-WAY

- A. The City will furnish the Site in accordance with Section 00700 - General Conditions. The Contractor or Design-Builder shall confine construction operations to the immediate vicinity of the Site shown in the Contract Documents and shall use due care in placing construction tools, equipment, excavated materials, construction materials and supplies to cause the least possible damage to public and private property and least possible interference with public traffic.
- B. On Private Property:
 - 1. The permanent easements are as noted in the Contract Documents. No additional temporary construction easements have been obtained, unless otherwise indicated in the Contract Documents. The Contractor or Design-Builder shall set stakes to mark the boundaries of construction easements across each private property. The stakes shall be protected and maintained until completion of the Work. After cleanup has been completed in accordance with Section 01566 – Cleanup Operations, the Contractor or Design-Builder shall remove all construction stakes.
 - 2. The Contractor or Design-Builder shall not enter any private property outside the designated construction easement boundaries without written permission from the owner of the property and notification to the RPR
 - 3. Should it become necessary to use or occupy the land beyond the limits of the Site (as defined by Section 00700 – General Conditions), the Contractor or Design-Builder shall obtain a written agreement with each affected property owner and tenant. Each agreement shall clearly outline the terms for which the Contractor or Design-Builder may utilize the property and shall be fully executed by the Contractor or Design-Builder, the property owner and the tenant (when applicable).
 - 4. Whenever the easement is occupied by crops which will be damaged by construction operations, the Contractor or Design-Builder shall notify the property owner sufficiently in advance so that the crops may be removed before the Work is started. The Contractor is responsible for all damage to crops outside the easement and shall make satisfactory settlement for the damage directly with the property owner.
 - 5. Where the Work impacts fields that are leveled for irrigation or terraced, the Contractor shall relevel irrigated fields and replace all terraces to their original or better condition and to the satisfaction of the property owner.

- C. State Highways:
 - 1. All work within MoDOT right-of-way shall be in conformance with MoDOT regulations. The permit must be secured before any construction is started within MoDOT right-of-way.

1.09 LINES AND GRADES

- A. All Work shall be done to the lines, grades and elevations indicated in the Contract Documents.
- B. Basic horizontal and vertical control points are provided in the Contract Documents. All additional survey, layout and measurement work shall be performed by the Contractor or Design-Builder as a part of the Work.
- C. The Contractor or Design-Builder shall provide an experienced surveyor, competent assistants and all instruments, tools, stakes and other materials required to complete the survey, layout and measurement work.
- D. The Contractor or Design-Builder shall provide qualified personnel, materials and equipment (tools, stakes and other materials) as may be required for the following tasks needed in the Work:
 - 1. Establish or designate control points.
 - 2. Establish construction easement boundaries.
 - 3. Verify survey.
 - 4. Verify layout shown on the Contract Documents.
 - 5. Verify and document work performed by the Contractor or Design-Builder.These efforts shall be included in the Contractor or Design-Builder's bid price and performed at no additional cost to the City.
- E. The Contractor or Design-Builder shall remove and reconstruct, at no additional cost to the City, any Work that was improperly installed or improperly located.
- F. See Section 01020 – Record Documents, paragraph SURVEY REQUIREMENTS for additional requirements.

1.10 CONNECTIONS TO EXISTING FACILITIES

- A. Unless otherwise specified or indicated in the drawings, the Contractor or Design-Builder shall make all necessary connections to existing facilities. This includes, but is not limited to, structures, drain lines, water utilities, sewer utilities, gas utilities, communications utilities and electric utilities. In each case, the Contractor or Design-Builder shall receive permission from the City or the owning utility prior to undertaking a connection or disconnection. The Contractor or Design-Builder shall protect facilities against deleterious substances and damage.
- B. Connections to existing facilities that are in service shall be thoroughly planned in advance. See 01140, 01140.01 01140.02 All required equipment, material and labor shall be on hand at the time of undertaking the connections.

1.11 UNFAVORABLE CONSTRUCTION CONDITIONS.

- A. During unfavorable weather, wet ground, or other unsuitable construction conditions, the Contractor shall confine operations to Work that will not be adversely affected by such conditions.
- B. No portion of the Work shall be constructed under conditions that would adversely affect the quality or efficiency thereof, unless special means or precautions are taken by the Contractor or Design-Builder to perform the Work in a manner acceptable to the City.

1.12 UNDERGROUND FACILITIES AND ASSOCIATED RESTORATION

- A. As provided in Section 00700, paragraph 4.04 of the General Conditions, the Contractor shall perform all cutting and patching required for the Work and as may be necessary in connection with locating all underground facilities, installation of Work, uncovering Work for inspection or for the correction of defective Work.
- B. The Contractor or Design-Builder shall perform all cutting and patching required for and in connection with the Work, including but not limited to the following:
 - 1. Removal of improperly timed Work.
 - 2. Removal of samples of installed materials for testing.
 - 3. Alteration of existing facilities.
 - 4. Installation of new Work.
- C. The Contractor or Design-Builder shall provide all shoring, bracing, supports and protective devices necessary to safeguard all Work and existing facilities during cutting and patching operations. The Contractor or Design-Builder shall not undertake any cutting or demolition that may affect the structural stability of the Work or existing facilities without City's approval.
- D. Materials shall be cut and removed as required to complete the Work. Materials shall be removed in a careful manner, with no damage to adjacent facilities or materials. The Contractor or Design-Builder shall remove all excavated materials from the site that cannot be incorporated in the Work.
- E. All Work and existing facilities affected by cutting operations shall be restored with new materials, or with salvaged materials acceptable to City, to obtain a finished installation with strength, appearance and functional capacity required to match the existing area. If necessary, entire surfaces shall be patched and refinished.
- F. The Contractor or Design-Builder, at no extra cost to the City, shall replace all surface features damaged, removed or so designated to be replaced.
- G. Contractor or Design-Builder shall at no cost provide photographic documentation of all exposed work after excavation prior to additional underground work and prior to backfill. Photos shall be taken from as many angles as possible.

1.13 ENVIRONMENTAL PROTECTION

- A. Laws and Regulations:
 - 1. The Contractor or Design-Builder shall conform to all laws and regulations as required by Section 00700 – General Conditions, Article 6 – Contractor or Design-Builder's Responsibilities.
- B. Storm Water Runoff:
 - 1. Storm Water Pollution Prevention Plan (SWPPP): As required by Section 00700 – General Conditions, Article 6 – Contractor or Design-Builder's Responsibilities.
 - 2. Erosion Sediment Control: See Paragraph 1.25.
 - 3. The Contractor or Design-Builder shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris and other substances resulting from construction activities. See paragraph 1.38.
 - 4. Dewatering: As required by Section 02200 – Earthwork.
 - 5. Concrete Washout Facilities: As required by Section 01566 – Cleanup Operations.
- C. Air Pollution:

1. Burning: No open burning will be permitted.
 2. Dust Control: See paragraph 1.37.
 - D. Other Construction Activities:
 1. Disposal of Demolition Material: As required by Section 01352 – Selective Alterations and Demolition.
 2. Disposal of Debris: Section 02180 – Clearing and Grubbing and Section 02300 – Earthwork.
 3. Protection of Wetlands: As shown on the Drawings or Section 01140 Work Restrictions
 4. Floodplains: As shown on the Drawings or Section 01140 Work Restrictions
 5. Cleanup and Site Maintenance: As required by Section 01566 – Cleanup Operations.
- 1.14 LICENSES, PERMITS, AND CERTIFICATES
- A. Requirements for licenses, permits and certificates are provided in Section 00700 – General Conditions, paragraph 6.09.
 - B. Permitting exceptions (if any) are noted in Section 00800 – Supplementary Conditions.
- 1.15 APPLICABLE CODES
- A. Standard specifications of the Kansas City, Missouri Department of Public Works are, by reference, hereby made a part of this contract specifications
- 1.16 REFERENCE STANDARDS
- A. See Section 00700 – General Conditions, paragraph 3.02 for references to standards and specifications of technical societies.
- 1.17 PRECONSTRUCTION CONFERENCE
- A. A Preconstruction Conference will be held in accordance with Article 2 of the General Conditions. The conference will be held at a mutually agreed time and location. The conference shall be attended by:
 1. Contractor or Design-Builder and the project superintendent(s).
 2. Design Professional(s) (Engineer of Record) and Owner’s Advisor if applicable
 3. Resident Project Representative(s).
 4. City’s Representative
 5. Other City Staff (Engineering, Operations, etc...)
 - B. Other participants as requested by the Contractor, Design-Builder, or City; such as the following:
 1. Principal Subcontractors such as Systems Integrator, Electrical, shoring, Mechanical, concrete etc..
 2. Representative of principal suppliers and manufacturers as appropriate.
 3. Utility Company representatives.
 4. Affected Property Owners and other stakeholders
 5. Governmental representatives as appropriate.
 6. The Contractor or Design-Builder shall bring to the conference the Preliminary Schedules described in Article 2 of the General Conditions (Preliminary Project Schedule, Preliminary Schedule of Values, Preliminary Schedule of Shop Drawings and Samples), major outages, OCCPs, suggested communication routes, a draft risk register, and list of project goals.

- C. The purpose of the conference is to designate responsible personnel and to establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda shall include, but not limited to, the following:
 - 1. Contractor or Design-Builder's Preliminary Schedules.
 - 2. Document Management
 - 3. Timing the Monthly Schedule Update
 - 4. Processing Applications for Payment.
 - 5. Commissioning Plan including the Commissioning Manager
 - 6. Maintaining record documents
 - 7. electronic data requirements including Electronic O&M manuals and BIM (if applicable)
 - 8. Critical Work sequences
 - 9. Field decisions and Change Orders.
 - 10. Use of premises, field office, material storage areas, security, housekeeping, and City's needs.
 - 11. Major equipment deliveries and priorities.
 - 12. Contractor or Design-Builder's assignment for Safety Representative.
 - 13. Discussion of the Safety Plan (See Section 01329 –Safety Plan)
 - 14. Expectations and the Contractor or Design-Builder's plan for Environmental Protection.
- D. Contractor or Design-Builder will preside at the conference, will arrange for keeping the minutes and will distribute draft minutes to all persons in attendance within one business day.

1.18 PROGRESS MEETINGS

- A. The Contractor or Design-Builder shall schedule and hold progress meetings weekly unless mutually agreed upon, and, at other times as requested by the City or as needed by the progress of the Work. The duration of the weekly meetings will mutually agree upon by the City and Contractor or Design-Builder. The Contractor or Design-Builder, City, Design Professional, and all Subcontractors active on the Site shall be represented at each meeting. The Contractor or Design-Builder may, at their discretion, request attendance of their suppliers, manufacturers or other utilities.
- B. The Contractor or Design-Builder shall preside at the meeting. Meeting minutes shall be prepared and distributed by the Contractor or Design-Builder after review by the City or Design Professional. The purpose of the meetings will be to review the progress of the Work, maintain coordination of efforts, discuss changes in scheduling and resolve problems which may have developed on the project.
- C. Draft meeting minutes will be distributed within one business day.

1.19 SAFETY REPRESENTATIVE

- A. In accordance with Section 00700 – General Conditions, Article 6 – Contractor or Design-Builder's Responsibilities, the Contractor or Design-Builder shall submit the name and complete contact information for the person designated as the Safety Representative for the Project.
- B. In accordance with Section 01300 – Submittals, This information shall be submitted prior to the Preconstruction Conference.

- C. If the Safety Representative changes during the Project, the Contractor or Design-Builder shall designate a new person to fulfill the role and submit their name and complete contact information.
- 1.20 SAFETY PLAN
- A. See Section 01329 – Safety Plan.
- 1.21 SITE ADMINISTRATION
- A. The Contractor or Design-Builder is responsible for all areas of the site used by their personnel and all Subcontractors in the performance of the Work. The Contractor will exert full control over the actions of all employees and other persons with respect to the use and preservation of property and existing facilities, except such controls as may be specifically reserved to Owner or others. The Contractor or Design-Builder has the right to exclude from the site all persons who have no purpose related to the Work or its inspection and may require all persons on the site to observe the same regulations as their personnel.
- 1.22 CLEAN-UP
- A. The Contractor or Design-Builder shall conduct cleanup operations in accordance with Section 01566 – Project Cleanup.
- 1.23 SUBSTANTIAL COMPLETION WALKTHROUGH
- A. See Section -00700 – General Condition Article 14.04.
- B. Walkthrough will also include City Employees from the operating division as designed by their Division Manager.
- 1.24 FINAL ACCEPTANCE
- A. Final Acceptance of the Work shall be in accordance with Section 00700 – General Conditions, Article 14.
- 1.25 EROSION AND SEDIMENT CONTROL
- A. Work associated with erosion and sedimentation control shall be done in accordance with Section 01570 – Temporary Erosion and Sediment Control.
- 1.26 STREET LIGHTS AND SITE LIGHTING
- A. Relocation or restoration of streetlights and Site lighting due to construction interference shall be included in the Contractor or Design-Builder's Bid Price. No separate measurement and payment will be made. The Contractor or Design-Builder shall notify and coordinate street light relocations with the Public Works Department:
- Street Lights Division
Phone: (816) 513-9500.
- 1.27 PROJECT SIGNS
- A. Work associated with Project signs shall be done in accordance with Section 01580 – Project Signs.
- 1.28 RESTORATION
- A. The Contractor or Design-Builder shall replace all surface material and shall restore all paving, curbs, gutters, sidewalks, driveways, shrubbery, fences, sod, walls, floors,

roofs, piping, conduit, cable trays, HVAC equipment, architecture features, drains, gravel, coating systems, fences, furniture, tiling, fixtures, masonry, structural supports, doors, windows, skylights and all other features disturbed to a condition of equal to or better than before the work began, furnishing all material, labor and equipment incidental thereto.

1.29 WATER

- A. The City will furnish, without charge, all water necessary for the Work (i.e., filling, flushing, testing and disinfecting completed water lines). The Contractor or Design-Builder shall make arrangements with the City for all water used.
- B. Use of the City's water facilities shall be at the direction of the Water Services Department so that water is not wasted and service to customers is not impaired.
- C. Any water furnished by the City must be obtained from an existing City main.
- D. The Contractor or Design-Builder shall use a Reduced Pressure Zone (R.P.Z.) Backflow Preventer and meter when connected to the City's water system.
- E. When utilizing public hydrants, The Contractor or Design-Builder shall contact the Kansas City Fire Department (KCFD) at (816) 513-4645 to purchase a hydrant meter permit. After securing a hydrant meter permit from KCFD, the Contractor or Design-Builder shall present the permit to the Consumer Services desk located at Water Services Department headquarters, 4800 E. 63rd Street, KCMO. The Contractor or Design-Builder shall apply for and pay Consumer Services the refundable security deposit. If approved, the Contractor or Design-Builder shall contact the Water Services Backflow Department at (816) 513-4797 to schedule the installation of the R.P.Z./Meter (hydrant meter). The Contractor or Design-Builder shall provide the location of the hydrant where the R.P.Z./Meter is to be installed. The Contractor or Design-Builder shall contact the Backflow Department to have the R.P.Z./Meter moved or returned to Water Services. Jetting and Vacuum trucks with approved backflow prevention devices or air gap separation are not required to utilize a R.P.Z. backflow preventer; however, a meter to track water usage shall be used at all times. The Jetter/Vac Contractor or Design-Builder shall contact the Water Services Backflow Department for issuance of the meter and pay the associated refundable security deposit. In all cases, the Contractor or Design-Builder is solely responsible for any and all damage to the equipment issued by the Water Services Backflow Department. The cost to repair the damage or the cost of complete replacement of the unit shall be deducted from the security deposit.
- F. When utilizing hydrants on City projects after the facility's water meter, Contractor or Design-Builder shall utilize an RPZ/Meter that is pre-approved by the City. The location and duration for the connection must be submitted 15 days prior to the proposed connection. Any unapproved connections will be grounds for removal from the Site(s) by the connecting Contractor or Subcontractor.

1.30 G. ALL COSTS FOR LABOR, MATERIAL, EQUIPMENT AND SERVICES NEEDED TO OBTAIN WATER FOR CONSTRUCTION PURPOSES SHALL BE INCLUDED IN THE BID. NO SEPARATE MEASUREMENT OR PAYMENT

WILL BE MADE TO MAKE CONNECTIONS. OPERATION OF EXISTING VALVES

- A. The Contractor or Design-Builder shall not operate any valves on the City's system outside the fence line without direct supervision from a Water Services Department representative.
- B. OCCP may allow for the contractor to operate valves and equipment.
- C. If the Contractor or Design-Builder needs valves operated, the request shall be made at least five (5) days in advance to Water Services for such operation, also giving notice to any affected customers/properties in accordance with the notification requirements outlined in Section 01581 – Public Communications.
- D. All fire hydrants and water valves shall be kept free from obstruction and available for use at all times.

1.31 BARRICADES AND LIGHTS

- A. All streets, roads, highways, facility roads, and other public thoroughfares which are closed to traffic shall be protected by effective barricades and acceptable warning signs. Barricades shall be located per the approved traffic control plan and associated permit. RPR will approve the barricades for facility roads.
- B. All trenches and other excavations shall be covered and shall have suitable barricades, signs and lights to provide adequate protection to the public and City Staff. Obstructions such as material piles and equipment shall be provided with similar warning signs and lights in roads.

All barricades and obstructions shall be illuminated with warning lights from sunset to sunrise in the public right of way. Material storage and execution of the Work on or alongside public streets and highways shall cause the minimum obstruction and inconvenience to the traveling public.

- C. All barricades, signs, lights and other protective devices shall be installed and maintained in conformity with applicable statutory requirements and as required by the authority having jurisdiction; such as, Work within railroad right-of-way, highway right-of-way, etc.

1.32 EXISTING FENCING

- A. All existing fences affected by the Work shall be maintained by the Contractor or Design-Builder until completion of the Work. Fences which interfere with construction operations shall not be relocated or dismantled until written permission is obtained from the owner of the fence including the City and the period the fence may be left relocated or dismantled has been agreed upon.
- B. Where fences must be maintained across the construction easement or plant site, adequate gates or City approved access shall be installed. Facility Gates and Gates outside facilities shall be kept closed and locked at all times when not in use. Within Facilities, operations staff will determine what gates will need to be close and locked.

1.33 SAFETY FENCING

- A. Provide fencing along the construction site at all open excavations and tunnels to control access if the excavation or tunnel can otherwise be accessed by the public.
- B. Temporary safety fencing must be a high visibility orange colored, high density polyethylene grid or approved equal, a minimum of 48 inches high and maximum mesh size of 2 inches, supported and tightly secured to steel posts located on maximum 10-foot centers, constructed at the approved location.

C. Remove the fence from the work site upon completion of the Work.

1.34 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

- A. The Contractor or Design-Builder shall protect, shore, brace, support, and maintain all underground pipes, conduits, drains and other underground construction uncovered or otherwise affected by the construction operations.
- B. All pavement, surfacing, driveways, curbs, gutters, sidewalks, buildings, utility poles, guy wires, fences, and all other features and structures affected by construction operations, together with all sod and shrubs in yards, parkways, medians and green spaces, shall be restored to their original condition, whether within or outside the right-of-way or easement. All replacements shall be made with new materials.

1.35 DAMAGE TO EXISTING PROPERTY

- A. The Contractor or Design-Builder is solely responsible for any damage to existing features, structures, Work, materials, or equipment because of their operations and shall repair or replace any damaged features, structures, Work, materials, or equipment to the satisfaction of the City and at no additional cost to the City.
- B. The Contractor or Design-Builder shall protect all existing structures and property from damage and shall provide bracing, shoring, or other work necessary for such protection.
- C. The Contractor or Design-Builder is responsible for all damage to streets, roads, curbs, sidewalks, highways, shoulders, ditches, embankments, culverts, bridges, or other public or private property, which may be caused by transporting equipment, materials, or personnel to or from the Work. The Contractor or Design-Builder shall make satisfactory and acceptable arrangements with the agency having jurisdiction over the damaged property concerning its repair or replacement.

1.36 NOISE CONTROL

- A. The Contractor or Design-Builder shall conduct construction operations as described herein and in compliance with the City of Kansas City, Missouri Code of Ordinances, Chapter 46 – NOISE CONTROL.
- B. The Contractor or Design-Builder shall take all reasonable measures to avoid unnecessary noise. Such measures shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound-muffling devices and operated in a manner to cause the least noise, consistent with the efficient performance of the Work.
- C. During construction activities on or adjacent to occupied buildings and when appropriate, the Contractor or Design-Builder shall erect screens or barriers effective in reducing noise in the building and shall conduct their operations to avoid unnecessary noise which might interfere with the activities of the building occupants.
- D. Contractor or Design-Builder shall insure no facilities will have noise levels that prevent a full shift at the facility per OSHA safety standards.
- E. All work including, but not limited to, excavation, demolition, alteration, or repair being performed in or adjacent to a residential area other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays, except in the case of urgent necessity in the interest of public safety, shall require a letter of permission from the Water Services Department of the City of Kansas City, Missouri.

1.37 DUST CONTROL

- A. The Contractor or Design-Builder shall control dust in accordance with Section 01566 – Cleanup Operations, paragraph DUST CONTROL. The Contractor or Design-Builder shall take all reasonable measures to prevent unnecessary dust. Earth surfaces subject to dusting shall be kept moist with water or by the approved application of an approved chemical suppressant. When practicable, dusty materials in piles or in transit shall be covered to prevent blowing.
- B. Buildings or operating facilities which may be affected adversely by dust shall be adequately protected from dust. Existing or new machinery, motors, instrument panels, or similar equipment shall be protected by suitable dust screens. Proper ventilation shall be included with dust screens.

1.38 POLLUTION CONTROL

- A. The Contractor or Design-Builder shall prevent the pollution of drains (Combined Sewer, plant piping, Storm Sewer), and watercourses by sanitary wastes, sediment, debris or other substances resulting from the construction activities. No sanitary wastes will be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris, or other substance will be permitted to enter sanitary sewers and all reasonable measures will be taken to prevent such materials from entering any drain or watercourse.

1.39 SECURITY

- A. The Contractor or Design-Builder is solely responsible for security and protection of the site. This includes protecting all Work, materials, equipment, existing facilities and all temporary facilities against theft, vandals and access by unauthorized persons.
- B. No claim shall be made against the City by reason of an act of an employee or trespasser. The Contractor or Design-Builder shall make good on all damage and theft of property resulting from the Contractor or Design-Builder's failure to provide adequate security measures including City Property. After trespass or theft, the City may direct the Contractor or Design-Builder to provide additional site security at no cost including but not limited to security cameras, on site security, and night security.

1.40 PARKING

- A. The Contractor or Design-Builder shall provide and maintain suitable parking areas for the use of all City personnel, construction workers and others performing work or furnishing services in connection with the Project. Suitable parking is required to avoid the need for parking personal vehicles where they may interfere with traffic, City's operations, or construction activities. Location of the parking within Facilities should be mutually agreed up by the operating division manager and the Contactor or Design-Builder. Operating Division Manager may change parking areas as need to maintain operations

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01019 – Closeout Procedures

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Submittals.
 - 3. Final cleaning.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Section 00700 – General Conditions.
 - 2. Section 01015 – Specific Project Requirements.
 - 3. Section 01020 – Record Documents.
 - 4. Section 01021 – Operation and Maintenance Data.
 - 5. Section 01140 – Work Restrictions.
 - 6. Section 01140.01 - Process and System Shutdown Constraints Schedule.
 - 7. Section 01140.02 - Operation Change Control Plan Documents.
 - 8. Section 01300 – Submittal.
 - 9. Section 01320 – Construction Progress Documentation.
 - 10. Section 01322 – Photographic Documentation
 - 11. Section 01335 – Document Management.
 - 12. Section 01340 – Building Information Modeling (BIM)
 - 13. Section 01433 – Manufacturers’ Field Services
 - 14. Section 01664 – Training
 - 15. Section 01757 – Commissioning

1.03 SUBMITTALS

- A. All Substantial Completion documents shall be submitted at least 14 calendar days prior to Substantial Completion inspection request.
 - 1. Specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 2. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 3. Prepare and submit Project Record Documents, final operation and maintenance manuals, Record Documents, damage or settlement surveys, property surveys, and similar final record information.
 - 4. Submit specific warranties, workmanship bonds, maintenance service agreements, and similar documents in accordance with this Section.
 - 5. Submit all manufacturers’ certificates in accordance with Section 01433 Manufacturers’ Field Services
 - 6. Submit Final Original Equipment Manufacturer Operations & Maintenance (OEM O&M) Manuals for all equipment and materials furnished as part of the Work of the Project.

7. Prepare and submit draft Facility O&M Data and the draft Electronic O&M Manual in accordance with the requirements of this Section.
 8. Submit draft as-built BIM developed in accordance with Section 01340 Building Information Modeling Requirements and updated to include as-built conditions.
 9. Submit training materials and recordings of training sessions as described in Section 01757 Commissioning.
 10. Submit approved Acceptance Test Plan developed in accordance with Section 01757 Commissioning and with this Section.
 11. Deliver tools, spare parts, extra material, and maintenance products in accordance with Section 01600 Product Delivery Storage and Handling.
 12. Submit changeover information related to Owner's use, operation, and maintenance.
 13. Prepare and submit draft Project Record Documents prepared in accordance with Section 01700 Execution Requirements and submitted in accordance with the requirements of this Section.
- B. All Final Completion documents shall be submitted at least 14 calendar days prior to Final Completion inspection request. Before requesting a final inspection to determine the date of Final Completion, complete the following:
1. Submit a certified copy of the City's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by the City. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 2. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 3. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Final operations and maintenance manuals must be provided for the training sessions.
 4. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects. Surfaces which cannot be touched-up or repaired satisfactorily, shall be refinished or replaced.
 5. Submit changeover information related to Owner's use, operation, and maintenance.
 6. Submit final O&M Data, including the final electronic O&M in accordance with the requirements of this Section.
 7. Submit Final Building Information Model incorporating all as-built information in accordance with Section 01340 Building Information Modeling Requirements.
 8. A written request for final inspection for acceptance requirements.
 9. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."

1.04 WARRANTIES

- A. Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Partial Use: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and used by Owner during construction period by separate agreement with Contractor or Design-Builder.
- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or

installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor or Design-Builder.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.
- E. Provide additional copies of each warranty as a separate pdf file.
- F. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1.05 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining the date of Substantial Completion, the Contractor or Design-Builder shall comply with all conditions in Supplementary Conditions and complete the following. List items below that are incomplete in request.
 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 2. Deliver salvaged material and similar items in accordance with Section 01352 Selective Alterations and Demolition to location designated by the Owner. Label with manufacturer's name and model number where applicable.
 3. Complete Installation and Functional Testing of all equipment, systems and subsystems in accordance with Section 01757 Commissioning.
 4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems in accordance with Section 01757 Commissioning.
 5. Clean the project area of construction debris and other construction effects.
 6. Terminate and remove temporary facilities from the Project site, along with mockups, construction tools, and similar elements.
 7. Complete final cleaning requirements, including touchup painting.
 8. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
 9. Prepare and submit all required Submittals as specified herein.
- B. Inspection: Submit a written request for Substantial Completion inspection. On receipt of request, Engineer will either proceed with inspection or notify Contractor or Design-Builder of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor or Design-Builder of items, either on Contractor or Design-Builder's list or additional items identified by Engineer that must be completed or corrected before certificate will be issued.
 1. Request re-inspection when Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for Substantial Completion.
 3. Contractor or Design-Builder shall pay for any re-inspection other than the first re-inspection. The costs of all extra re-inspections, including the cost of Owner's Representative and Engineer will be deducted from the Contractor or Design-Builder's payments.
 4. Following completion of all items above and all requirements for Substantial Completion included in the Supplemental Conditions 008000, Owner will complete Form 01290.2 Certificate of Substantial Completion and distribute to Contractor or Design-Builder.

1.06 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining the date of Final Completion, complete the following:

1. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Final operations and maintenance manuals must be provided for the training sessions.
 2. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects. Surfaces which cannot be touched-up or repaired satisfactorily, shall be refinished or replaced.
 3. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects. Surfaces which cannot be touched-up or repaired satisfactorily, shall be refinished or replaced.
 4. Prepare and submit all required Submittals as specified herein.
- B. A written request for final inspection for acceptance must be provided to the Engineer. Upon receipt of request, Engineer will either proceed with inspection or notify Contractor or Design-Builder of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor or Design-Builder of construction that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected. The Contractor or Design-Builder shall pay for any re-inspection other than the first re-inspection. The costs of all extra re-inspections, including the cost of the Owner's Representative and the Design Professional deducted from the Contractor or Design-Builder's payments.
 2. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."

1.07 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Contractor or Design-Builder shall prepare and submit three copies of punch list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor or Design-Builder that are outside the limits of construction. The Contractor or Design-Builder shall use the standard Water Services form for all items.
1. Organize a list of spaces in sequential order,
 2. Organize items applying to each space by major element, including category equipment, and building systems.
 3. Include the following information at the top of each page:
 - a. Project Number
 - b. Project name.
 - c. Date.
 - d. Name of Contractor or Design-Builder.
 - e. Page number.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with the manufacturer's written instructions.

- C. Complete the following cleaning operations before requesting inspection for certification of Final Completion for entire Project or for a portion of Project:
 - 1. Clean Project site and grounds, in areas disturbed by construction activities, of rubbish, waste material, litter, and other foreign substances.
 - 2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - 3. Remove tools, construction equipment, machinery, and surplus material from the Project site.
 - 4. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, and similar spaces.
 - 5. Sweep concrete floors broom clean in unoccupied spaces.
 - 6. Remove labels that are not permanent.
 - 7. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already shows evidence of repair or restoration.
- D. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - 1. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - 2. Clean ducts and blowers if units were operated without filters during construction.
 - 3. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - 4. Leave Project clean and ready for use.
- E. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the Project site and dispose of lawfully.

END OF SECTION

SECTION 01020 – RECORD DOCUMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Contractor shall maintain, in a safe place at the Site, one updated record copy of all Drawings, Standards and Specifications, Addenda, Shop Drawings, Requests for Interpretation (RFIs), Requests for Proposal (RFPs), Work Change Directives (WCDs), Change Orders, other written interpretations or clarifications of the contract documents, survey information (including approved cut sheets) and all other documents relevant to the Work.
- B. All such documents shall be kept in order, good condition and shall be continuously updated to indicate all work installed and all changes made during construction.
- C. No work shall be allowed in the absence of these record documents.
- D. This document also outlines electronic data requirements and defines the survey requirements for the development of Field-Marked Drawings, As-Built Drawings and Conforming to Construction Drawings.

1.02 RELATED SECTIONS

- A. Section 00700 – General Conditions.
- B. Section 01015 – Specific Project Requirements.
- C. Section 01019 – Closeout Procedures.
- D. Section 01020 – Record Documents.
- E. Section 01021 – Operation and Maintenance Data.
- F. Section 01140 – Work Restrictions.
- G. Section 01140.01 - Process and System Shutdown Constraints Schedule.
- H. Section 01140.02 - Operation Change Control Plan Documents.
- I. Section 01300 – Submittals.
- J. Section 01320 – Construction Progress Documentation.
- K. Section 01322 – Photogram Documentation.
- L. Section 01335 – Document Management.
- M. Section 01340 – Project BIM Coordination
- N. Section 01664 – Training.
- O. Section 01757 – Commissioning.

1.03 CODES AND STANDARDS

- A. CAD Standards – KC Water CAD Standards.

1.04 DEFINITIONS

- A. Refer to Section 01420 – Definitions and Acronyms

1.05 INFORMATION PROVIDED BY THE CITY

- A. The City will provide the Contractor or Design-Builder a border template to be used for all issued Construction Drawings in an electronic/CAD format.

1.06 SUBMITTALS

- A. Submit as specified in Section 01300 – Submittals.
- B. Warranties and Bonds.
- C. For each item of material or equipment furnished under the Contract.
- D. Submittals include, but are not limited to, the following:
 - 1. Warranties as specified herein.
 - 2. As-Built Drawings.
 - 3. Conforming to Construction Drawings.
 - 4. Electronic Submittals:
 - 5. All electronic deliverables (drawings, coordinates table, etc.) shall be made through the approved document management system. See Section 01335 – Document Management.
 - 6. As-Built Drawings:
 - a. One (1) hard copy on paper for review and approval.
 - b. One (1) electronic copy in PDF format.
 - a. One (1) electronic copy in the latest version of AutoCAD® .dwg format.
 - 7. Conforming to Construction Drawings:
 - a. One (1) signed, sealed and certified hard copy on Mylar or Vellum.
 - b. One (1) signed, sealed and certified hard copy on paper.
 - c. One (1) signed, sealed and certified electronic copy in PDF format.
 - d. One (1) signed, sealed and certified electronic copy in the latest version of AutoCAD® .dwg format.
 - 8. All Record Documents including those listed in the referenced Sections:
 - a. Submit Record documents in accordance with Section 00700 – General Conditions, Article 14 – Payments to the Contractor or Design-Builder and Completion.
 - b. The following shall be submitted for Record Documents:
 - i. One (1) hard copy on paper.
 - ii. One (1) electronic copy in PDF format.
 - iii. As specified in other sections.
 - iv. Electronic (PDF) Documents:
 - v. Documents shall be full scale.
 - vi. Markups shall be noted in RED.
 - vii. Minimum resolution shall be 600 dpi.

1.07 WARRANTY

- A. Warranties and Bond are Record Documents.
- B. CITY has the right to reject warranties.
- C. CITY reserves the right to reject Work for the Project if the required warranties have not been provided.
- D. Submit form of manufacturer's warranty prior to fabrication and shipment of the item from the manufacturer's facility.
- E. Submit form of manufacturer's special warranty when specified.
- F. Provide consolidated warranties and bonds within 15 calendar days of Substantial Completion.
- G. Contents:
 - 1. Organize warranty and bond documents:
 - 2. Include Table of Contents organized by specification section number and the name of the product or work item.

3. Include each required warranty and bond in proper form, with full information, are certified manufacturer as required, and are properly executed by Contractor, or subcontractor, supplier, or manufacturer.
4. Provide name, address, phone number, and point of contact of manufacturer, supplier, and installer, as applicable.

H. Warranty submittal format:

1. Submit two (2) hardcopies.
2. Hardcopies shall be assembled in 3 D-side ring binders with durable cover.
3. Identify each binder on the front and spine clearly labeling the following:
 - a. Warranties and Bonds.
 - b. Project Name or Title.
 - c. Name, Address, and Telephone Number of the Contractor.
4. Submit one (1) electronic copy in PDF format.
5. The Record Documents shall be an integral part of the work guaranteed by the Contractor or Design-Builder's Performance and Maintenance Bond. If during the three-year maintenance period the City determines that further revisions or corrections are necessary to make the Record Documents accurate, the Contractor or Design-Builder shall make or cause the revisions or corrections to be made at no additional cost to the City.

1.08 QUALITY ASSURANCE

- A. The Contractor or Design-Builder is responsible for the quality assurance and quality control of the Work.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION

3.01 SURVEY REQUIREMENTS

- A. All field books, notes, videotapes and other data developed by the Contractor or Design-Builder in performing required surveys as part of the Work shall be available to the City for examination throughout the construction period. All such data shall be submitted to the City with the other documentation required for final acceptance of the Work.
- B. General Requirements:
1. The Contractor or Design-Builder shall provide survey grade information for the locations and elevations of the Work as described herein. Surveys shall be conducted by a Professional Land Surveyor, licensed in the State of Missouri.
 2. Vertical Datum – All elevations shall be indicated in North American Vertical Datum of 1988 (NAVD 88) in feet and decimals of a foot.
 3. Horizontal Control – Coordinates shall be referenced to the North American Datum of 1983 (NAD 83), State Plane Missouri West Zone FIPS 2403 US Feet coordinate system, Kansas City Metro Control. Statewide Missouri Geographical Reference System monuments, Project monuments and Certified Land corners shall be used as references to determine State Plane coordinates. All control monuments used in the survey work shall be listed with reference ties and shown on the Record Drawings.

4. Water Systems:
 - a. Fire Hydrant Assemblies – Provide survey point (location and elevation) at the top of the operating nut for each fire hydrant.
 - b. Fittings – Provide survey point (location and elevation) at the center of each fitting (i.e. bends, tees, valves, etc.). Survey shall be taken at the top of the fitting. Provide the elevation of finished grade or improvements at the top of the fitting.
 - c. Pipe Profile – Provide survey points (location and elevation) at the center point of all piping at a maximum spacing of 50 feet. Survey shall be taken on the top of the pipe. At the same location, provide the elevation of finished grade.
 - d. Valves, Valve Vaults, Meter pits and Other Structures – A survey is required to verify the location of all new valves, valve vaults, meter pits or other structures. The survey shall include, but is not limited to, the following:
 - (i) Location of the Structure – Provide coordinates for the center of the access cover.
 - (ii) Top elevation – Provide the top elevation of the structure at the center of the access cover.
5. Wastewater Systems:
 - a. Location – Verify the “Locating Point” shown on the Approved for Construction Drawings or standard detail. Verify all coordinate data shown on the Approved for Construction Drawings. If no such information is provided, the Locating Point shall be the center of the manhole cover.
 - b. Top Elevation. – Provide the elevation of the top of the structure at the Locating Point.
 - c. Pipe Inverts – Provide the invert elevation and flow direction of all pipes that penetrate the structure (flowline in - FL IN) and exit the structure (flowline out - FL OUT).
 - d. Manhole Invert – Provide the elevation of the invert at the center of the manhole if different than the pipe inverts.
6. Existing Manholes – A survey is required to verify the location of all existing manholes that are modified as part of the Work. The survey shall include, but is not limited to, the following:
 - a. Location of the Structure – Verify the “Locating Point” shown on the Approved for Construction Drawings or standard detail. Verify all coordinate data shown on the Approved for Construction Drawings. If no such information is provided, the Location Point shall be the center of the manhole cover.
 - b. Top Elevation – Provide the elevation of the top of the structure at the Locating Point.
 - c. Pipe Inverts – Provide the invert elevation and flow direction of all pipes that penetrate the structure (flowline in - FL IN) and exit the structure (flowline out - FL OUT).
 - d. Manhole Invert – Provide the elevation of the invert at the center of the manhole if different from the pipe inverts.
7. Storm Water and Green Infrastructure Systems
 - a. A survey is required to verify the location of all new Green Infrastructure, Storm Water Structures, Junction Boxes, Manholes, Inlets and all other related structures. The survey shall include, but is not limited to, the following:
 - b. Location of the Structure – Verify the Locating Point shown on the Approved for Construction Drawings or standard detail. Verify all coordinate data shown on the Approved for Construction Drawings. The locating point for curb inlets is center of inside face of inlet wall. If no other locating information is provided for other structures, the Locating Point shall be the center of the access cover.
 - c. Top Elevation – Provide the elevation of the top of the structure at the Locating Point.

- d. Pipe Inverts – Provide the invert elevation and flow direction of all pipes that penetrate the structure (flowline in - FL IN) and exit the structure (flowline out - FL OUT).
 - e. Manhole or Structure Invert – Provide the elevation of the invert at the center of the manhole or structure if different than the pipe inverts.
- 8. Culvert - A survey is required to verify the location of new culverts. The survey shall include, but is not limited to, the following:
 - a. Location – The Locating Points shall be the center line of each culvert barrel at the upstream and downstream end of each. The location of each culvert barrel is to be provided.
 - b. Invert – Provide the upstream and downstream invert elevation of each culvert barrel.
- 9. Channels and Ditches:
 - a. Profile – Provide survey points (location and elevation) at the upstream and downstream end of the channel and along the channel at a maximum 50-foot intervals and at all bends and changes in alignment.
 - b. Survey points shall be taken at finished grade at the centerline, toes of side slopes or walls and top elevation of the high flow channel on both sides of the channel. If water is present in the channel or ditch, provide water surface elevation on both sides of the channel.
- 10. Detention Areas:
 - a. For any surface feature designed to detain or retain storm water runoff (i.e., detention basins, rain gardens, bio-retention cells, etc.) an as-built survey of the feature is required.
 - b. Enough survey points shall be taken to generate 1-foot contours of the detention or retention area and any containment berms.
 - c. Provide survey points (location and elevation) for both ends of weirs, all weir high and low points (if top of weir is not level) and other flow control structures, inlets and outlets.
 - d. Provide survey points (location and elevation) for both ends of weirs and all weir high and low points (if top of weir is not level) of the principle spillway structure.
- 11. Facility Site Assets:
 - a. Site Assets shall be documented to the same level of detail as other assets (water, wastewater etc..).
 - b. Assets include all buried infrastructure in the project including but not limited to ductbanks, conduit, chemical piping, casings, gravity sewers, process piping, etc.

3.02 FIELD-MARKED DRAWINGS

- A. The Contractor or Design-Builder shall continuously maintain a set of Field-Marked Drawings which details all work completed and shows all changes or deviations made by the Contractor or Design-Builder from the Approved for Construction Drawings. Where the Approved for Construction Drawings are not detailed and allow for flexibility during construction, the Contractor or Design-Builder shall include the detailed information on how the Work was constructed. These adjustments shall include, but are not limited to, field adjustments and change orders.
- B. Field-Marked Drawings shall be prepared using survey grade information to show the horizontal and vertical location of the Work after completion of construction. Connection details may be sketched using field run measurements.
- C. Mark new information that is not shown on Drawings or Shop Drawings.
- D. Include the following:
 - a. Field changes of dimension and detail.
 - b. Change Order modification. Note related Change Order numbers where applicable.
 - c. RFI modification. Note related RFI numbers where applicable.

- d. Details not on original Drawings.
- e. Horizontal and vertical location of all underground utilities and all other concealed elements that would be difficult or costly to maintain the installed asset long term.
- E. Precision of Measurement:
 - a. Where survey measurements are not required (sketching connection details) – elevations, stationing, distances and measurements shall be expressed to the nearest 0.10 foot.
 - b. All other Work requires survey information – elevations, station, distances and measurements shall be expressed to the nearest 0.01 foot.
 - c. Field changes or additions shall be designated in RED. Hard copy and electronic (PDF) deliverables shall be provided in color.
 - d. Information shall be clearly distinguishable on hard copy mark-ups and in the electronic files.
- F. If the Contractor or Design-Builder observes inaccurate information pertaining to existing conditions, the correct information shall be noted in the Field-Marked Drawings.
- G. The Contractor or Design-Builder shall submit 30%, 60% and 90% check prints with the corresponding percent complete of work. The check prints shall be submitted with the Application for Payment. Failure to provide the check prints shall cause the Application for Payment to be returned to the Contractor or Design-Builder.

3.03 AS-BUILT DRAWINGS

- A. Upon completion of the Work and before the Application for Final Payment, the Contractor or Design-Builder shall prepare the As-Built Drawings by completing annotations to the Field-Marked Drawings and adding the required certification statements.
- B. Surveyor's Certification:
 - 1. Each drawing shall be modified to include a certification statement and signature block as described below.
 - a. Water Systems

Each sheet of these Record Drawings and attached Survey Cut Sheets for the Work have been reviewed and approved by the Professional Land Surveyor whose seal is affixed to this Record. The horizontal control, coordinates and elevations shown on these Records are accurate and are based on the Missouri Coordinate System of 1983, West Zone and NAVD88 datum, with the date of adjustment. These Records have been revised, as required in Section 01000, 1.20 of the Standards and Specifications for Water Main Extensions and Relocations, under my personal supervision to show the true and accurate measurements of the work as it was actually constructed.

- b. Wastewater, Storm Water and Green Infrastructure Systems

Each sheet of these Record Drawings, Record Models and attached Survey Cut Sheets for the Work have been reviewed and approved by the Professional Land Surveyor whose seal is affixed to this Record. The horizontal control coordinates and elevations shown on these Records are accurate and are based on the Missouri Coordinate System of 1983, West Zone and NAVD88 Datum. These Records have been revised under my personal supervision to show the true and accurate measurements of the work as it was actually constructed.

2. Every sheet of the Field-Marked Drawings must be reviewed, signed and sealed by a Professional Land Surveyor, licensed in the State of Missouri and must include the following statement on the title block inside the box marked “for WSD use” and near the Surveyor’s professional license seal.

C. Contractor’s Certification:

1. Each drawing shall be modified to include a certification statement and signature block as described below:

Water Systems

I hereby certify that this Record correctly depicts the Work constructed as to size, material, horizontal location, vertical location and finished grade as shown on the approved construction drawings or their revision. The Work was done in accordance with these Records and the current version of the Standards and Specifications for Water Main Extensions and Relocations.

Contractor: _____ Date: _____
Name _____ Title: _____
(print): _____
Signature: _____

Wastewater, Storm Water and Green Infrastructure Systems

I hereby certify that this Record correctly depicts the Work constructed as to size, material, horizontal location, vertical location, grade of installed piping systems and finished grade as shown on the approved construction drawings or their revision. The Work was done in accordance with these Records.

Contractor: _____ Date: _____
Name _____ Title: _____
(print): _____
Signature: _____

- a. The Contractor or Design-Builder shall provide certification that the Field-Marked Drawings reflect the conditions that were constructed.
 - b. The Contractor or Design-Builder shall review the Field-Marked Drawings and verify all information is accurate. The Contractor or Design-Builder shall verify that all changes to the Work have been documented. The Contractor or Design-Builder shall sign each sheet of the Record Drawings with the following certification(s):
- D. Submittals – Submit As-Built Drawings in accordance with paragraph SUBMITTALS. As-Built and Conforming to Construction Drawings must be approved by the City before the Contractor or Design-Builder submits the Application for Final Payment.
1. Mark each document "AS-BUILT DRAWINGS" in neat, large print letters.
 2. The cover sheet of the project shall be included. The cover sheet shall include all required As-Built certifications and shall clearly show that the drawings are AS-BUILT.

3.05 RECORD MODEL

- A. BIM model of the structure constructed or modified during this project.
- B. Record Model should be per KC BIM standards with Record documents and drawings linked.

C. All BIM files and associated files shall be tagged according to Record File Standard.

3.06 CONFORMING TO CONSTRUCTION DRAWINGS AND MODEL

- A. Conforming to Construction Drawings shall be submitted and accepted by the City before the Contractor or Design-Builder may submit the Application for Final Payment.
- B. The Contractor or Design-Builder shall edit the CAD drawings to reflect the changes shown on the As-Built Drawings. All line work and text shall be revised and edited to accurately reflect the information provided in the As-Built Drawings. Line work shall be drawn to scale in the coordinate system and datum specified herein.
- C. Version – CAD drawings shall be developed and submitted in the latest version of AutoCAD® .dwg format or AutoCAD® Civil 3D.
- D. CAD Standards – Comply with KC Water CAD Standards.
- E. GIS Standards – Comply with KC Water GIS Standards.
- F. The cover sheet of the project shall be included. The cover sheet shall include all required as-built certifications and shall clearly show that the drawings are as-built.
- G. Conforming to Construction Drawings shall have a “CONFORMED TO CONSTRUCTION” label clearly and prominently shown on each sheet, preferably in the lower right-hand corner of the drawing.
- H. Conforming to Construction Drawings shall be labeled with the following information:
 - 1. Project Name.
 - 2. WSD Project Number.
 - 3. WSD Work Order Number.
 - 4. WSD Drawing Number.
 - 5. CMMS Assets.
 - 6. Date of publication.

3.07 OTHER RECORD DOCUMENTS

- A. As defined by Section 00700 – General Conditions, Article 6 – Contractor or Design-Builder’s Responsibilities. Section 01021 – Operation and Maintenance Data, Section 01300 –Submittals, Section 01320 – Construction Progress Documentation, Section 01322 – Photographic Documentation, Section 01664 – Training, Section 01757 – Commissioning, etc...
- B. GIS Data of Site Piping.
- C. Coordinates Table – Provide a Microsoft Excel spreadsheet that contains the coordinates of every asset installed or adjusted as part of the Work.
- D. Survey Cut Sheets.
- E. Television Inspection data files as specified in Section 02686 – CCTV Inspection.

END OF SECTION

SECTION 01021 – OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes administrative and procedural requirements for the preparation, submission, and City's Representative's review of Operation and Maintenance (O&M) Data.
 - 1. The Contractor or Design-Builder shall furnish all labor, materials, equipment, and incidentals as necessary to comply with these requirements.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract; including General and Supplementary Conditions, all applicable Division 1 Sections, and all applicable Division Sections; apply to this Section.
- B. Related Sections include the following:
 - 1. Section 01019 – Closeout Procedures
 - 2. Section 01020 – Record Documents
 - 3. Section 01140 – Work Restrictions
 - 4. Section 01140.01 - Process and System Shutdown Constraints Schedule
 - 5. Section 01140.02 - Operation Change Control Plan Documents
 - 6. Section 01020 – Record Documents
 - 7. Section 01300 –Submittals
 - 8. Section 01320 – Construction Progress Documentation
 - 9. Section 01322 – Photogram Documentation
 - 10. Section 01335 – Document Management
 - 11. Section 01664 – Training
 - 12. Section 01757 – Commissioning

1.03 REQUIRMENTS

- A. Contractor shall prepare and provide data and materials, and provide instruction and services, as specified in this Section.
- B. Compile product data and related information appropriate for Owner's maintenance and operation of products and systems furnished under this Contract. Include Information on all motors supplied with equipment.
- C. Prepare O&M Data as specified in this Section and as referenced in other pertinent sections of the Specifications.
- D. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems, including electrical and instrumentation.

1.04 DEFINITIONS

- A. O&M Data is including but not limited to:
 - 1. Original Equipment Manufacturer Operation and Maintenance manuals.
 - 2. Electronic O&M Manual for the entire project.
 - 3. PLC, VFD, and SCADA Server Programs.

- B. Preliminary Data: Initial and subsequent submissions for the City's Representative's review.
- C. Final Data: City's Representative accepted data, submitted as specified herein.
- D. Maintenance Operation: As used on Asset Maintenance Summary Form is defined to mean any routine operation required to ensure satisfactory performance and longevity of equipment. Examples of typical maintenance operations are lubrication, belt tensioning, adjustment of pump packing glands, and routine adjustments.

1.05 SUBMITTALS

A. Informational:

- 1. Data Outline: Submit two copies of a detailed outline of proposed organization and contents of Final Data prior to the preparation of the Preliminary Data.
- 2. Preliminary Data:
 - a. Submit three copies for City's Representative's review including Relevant Standard Operation Procedures and Standard Instructions.
 - b. If Data meets the condition of the Contract:
 - (1) One copy will be returned to Contractor or Design-Builder.
 - (2) One copy will be forwarded to Resident Project Representative.
 - (3) One copy will be retained in City's Representative's file.
 - c. If Data does not meet the condition of the Contract:
 - (1) All copies will be returned to Contractor or Design-Builder with City's Representative's comments (on separate document) for revision.
 - (2) City's Representatives comments will be retained in City's Representative's file.
 - (3) Resubmit two copies revised in accordance with City's Representative's comments.

1.06 SEQUENCING AND SCHEDULING

A. Equipment and System Data:

- 1. Preliminary Data:
 - a. Do not submit until Shop Drawings for equipment or system has been reviewed and approved by City's Representative.
 - b. Submit prior to shipment.
- 2. Final Data: Submit instructional Manual Formatted data not less than 30 days prior to equipment or system field functional testing Submit Compilation Formatted and Electronic Media Formatted data prior to Substantial Completion of Project.

B. Materials and Finish Data:

- 1. Preliminary Data: Submit at least 15 days prior to request for final inspection.
- 2. Final Data: Submit within 10 calendar days after final inspection.

PART 2 - PRODUCTS

2.01 DATA FORMAT (for Original Equipment Manufacture Operations and Maintenance Manuals OEM O&Ms)

A. Prepare preliminary and final data in the form of an instructional manual. Prepare final data on electronic media and printed.

B. Instructional Manual Format:

1. Binder: Commercial quality, permanent, three ring or three post binder with durable plastic cover.
2. Size: 8 ½ inches by 11 inches minimum.
3. Cover: Identify manual with typed or printed title, “(relevant area) OPERATION AND MAINTENANCE MANUAL” and list.
 - a. Project title.
 - b. Designate applicable system, equipment, material, or finish.
 - c. Identify the assets covered in this O&M Manual.
 - d. Identify separate structure as applicable.
 - e. Identify volume number if more than one volume.
 - f. Identify of general subject matter covered in manual. Identity of equipment number and Specification section.
4. Spine:
 - a. Project Title.
 - b. Volume number (if more than one volume).
5. Title Page:
 - a. Contractor name, address, and telephone number.
 - b. Subcontractor, supplier, installer, or maintenance Contractor or Design-Builder’s name, address, and telephone number, as appropriate.
 - (1) Identify area of responsibility of each.
 - (2) Provide name and telephone number of local source of supply of parts and replacement.
6. Table of Contents:
 - a. Neatly typewritten and arranged in systematic order with consecutive page numbers.
 - b. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
7. Paper: 20 pound minimum, white for typed pages.
8. Text: Manufacturer’s printed data, or neatly typewritten.
9. Three-hole punch data for binding and composition.
10. Material shall be suitable for reproduction, with quality equal to original. Photocopying of material will be acceptable, except for material containing photographs.

C. Data Compilation Format:

1. Compile all City’s Representative’s accepted preliminary O&M data into a hard copy, hard bound set.
2. Each set shall consist of the following:
 - a. Binder: Commercial quality, permanent, three ring or three post binders with durable plastic covers.

- b. Cover: Identify each volume with typed and printed title “OPERATION AND MAINTENANCE DATA, VOLUME NO. ____ OF ____”, and list:
 - (1) Project Title
 - (2) Contractor’s name, address, and telephone number.
 - (3) If entire volume covers equipment or system provided by one supplier include the following:
 - (a) Identity of general subject matter covered in manual.
 - (b) Identity of equipment number and Specification section.
- c. Provide each volume with title page and typed table of contents with consecutive page numbers. Place contents of entire set, identified by volume number, in each binder.
- d. Table of contents neatly typewritten, arranged in a systematic order:
 - (1) Include list of each product, indexed to content of each volume.
 - (2) Designate system or equipment for which it is intended.
 - (3) Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
- e. Section Dividers:
 - (1) Heavy, 80 pound cover weight, tabbed with numbered plastic index tabs.
 - (2) Fly leaf:
 - (a) For each separate product, or each piece of operating equipment, with typed description of product and major component parts of equipment.
 - (b) List with each product:
 - (i) Name, address, and telephone number of Sub-contractor, Supplier, Installer, and Maintenance Contractor or Design-Builder, as appropriate.
 - (ii) Identify area of responsibility of each.
 - (iii) Provide local source of supply for parts and replacement.
- f. Assemble and bind material, as much as possible, in same order as specified in the Contract Documents.

D. Electronic Media Data:

- 1. Portable Document Format (PDF):
 - a. After all preliminary data has been found to be acceptable to City’s Representative, submit Operation and Maintenance data in PDF format on CD.
 - b. Files to be exact duplicates of City’s Representative’s accepted preliminary data. Arrange by specification number, asset, and name.
 - c. Files to be fully functional and viewable in most recent version of Adobe Acrobat.
 - d. PDFs shall be bookmarked as appropriate with appropriate hyperlinks.
 - e. All files shall be tagged per the City’s Record File tagging system.

E. DATA FOR EQUIPMENT SYSTEMS (Original Equipment Manufacturer Operations and Maintenance Manuals OEM O&Ms):

- 1. Content for each Unit (or Common Units) and System:
- 2. Product Data:
 - a. Include only those sheets that are pertinent to specific product.
 - b. Clearly annotate each sheet to:
 - (1) Identify specific product or part installed.
 - (2) Identify data applicable to installation.

- (3) Delete references to inapplicable information.
 - c. Function, normal operating characteristics, and limiting conditions.
 - d. Performance curves, engineering data, nameplate data, and tests.
 - e. Complete nomenclature and commercial number of replaceable parts.
 - f. Original manufacturer's parts list, illustrations, detailed assembly drawings showing each part with part numbers and sequentially numbered parts list, and diagrams required for maintenance.
 - g. Spare parts ordering instructions.
 - h. Where applicable, identify installed spares and other provisions for future work (e.g., reserved panel space, unused components, wiring, terminals).
- 3. As installed, color coded piping diagrams.
- 4. Charts of valve tag numbers, with the location and function of each valve.
- 5. Drawings: Supplement product data with drawings as necessary to clearly illustrate:
 - a. Format:
 - (1) Provide reinforced, punched, binder tab; bind in with text.
 - (2) Reduced to 8 ½ inches by 11 inches, or 11 inches by 17 inches folded to 8 ½ inches by 11 inches.
 - (3) Where reduction is impractical, fold and place in 8 ½ inch by 11 inch envelopes bound in text.
 - (4) Identify Specification section and product on drawings and envelopes.
 - b. Relations of component parts of equipment and systems.
 - c. Control and flow diagrams.
 - d. Coordinate drawings with Project record documents to assure correct illustration of completed installation.
- 6. Instructions and procedures: Within text, as required to supplement product data.
 - a. Format:
 - (1) Organize in consistent format under separate heading for each different procedure.
 - (2) Provide logical sequence of instructions for each procedure.
 - (3) Provide information sheet for Owner's personnel, including:
 - (a) Proper procedures in event of failure.
 - (b) Instances that might affect validity of guarantee or Bond.
 - b. Installation Instructions: Including alignment, adjusting, calibrating, and checking.
 - c. Operating Procedures:
 - (1) Startup, break-in, routine, and normal operating instructions.
 - (2) Test procedures and results of factory tests where required.
 - (3) Regulation, control, stopping, and emergency instructions.
 - (4) Description of operation sequence by control manufacturer.
 - (5) Shutdown instructions for both short and extended duration.
 - (6) Summer and winter operating instructions, as applicable.
 - (7) Safety precautions.
 - (8) Special operating instructions.
 - d. Maintenance and Overhaul Procedure:
 - (1) Routine maintenance.
 - (2) Guide to troubleshooting.

- (3) Disassembly, removal, repair, reinstallation, and re-assembly.
 - (4) Recommended work orders for preventative maintenance.
 - 7. Guarantee, Bond, and Service Agreement: In accordance with section 01770, "Closeout Procedures".
 - 8. Standard Operating Procedures and Standard Instructions for each unit process in KCMO Water Services Format approved by the KCMO City's Representative and Utility and created by the engineer of record or an alternative acceptable to the KCMO City's Representative.
 - 9. Assets covered in this document.
- F. Content for each Electric or Electronic Item or System:
- 1. Description of Unit and Component Parts:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, nameplate data, and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 - d. Interconnection wiring diagrams, including control and lighting systems.
 - e. Piping and Instrumentation Diagram of the unit.
 - 2. Circuit Directories of Panelboards.
 - 3. Electrical service.
 - 4. Control requirements and interface.
 - 5. Communication requirements and interfaces.
 - 6. List of electrical relay settings, and control and alarm contact settings.
 - 7. Electrical interconnection wiring diagram, including as applicable, single line, three line, schematic and internal wiring, tags per KCMO tagging standard and external interconnection wiring.
 - 8. As installed control diagrams by control manufacturer.
 - 9. Operating Procedures:
 - a. Routine and normal operating instructions.
 - b. Startup and shutdown sequences, normal, and emergency.
 - c. Safety precautions.
 - d. Special operating instructions.
 - 10. Maintenance Procedures:
 - a. Routine maintenance.
 - b. Guide to troubleshooting.
 - c. Adjustment and checking.
 - d. List of relay settings, control, and alarm contact settings.
 - e. Preventative Maintenance.
 - 11. Manufacturer's printed operating and maintenance instructions.
 - 12. List or original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

G. Maintenance Summary:

1. Complete individual Maintenance Summary for each applicable equipment item, respective unit or system, and for components or sub-units.
 2. The Maintenance Summary form shall be updated to incorporate the final recommendations established through the Maintenance Workshops described in Section 01320 Construction Progress Documentation.
 3. Format:
 - a. Use Maintenance Summary Form bound with this section or electronic facsimile of such.
 - b. Each Maintenance Summary may take as many pages as required.
 - c. Use only 8 ½ inch by 11 inch size paper.
 - d. Complete using typewritten or electronic printing.
 4. Include detailed lubrication instructions and diagrams showing points to be greased or oiled; recommended type, grade, and temperature range of lubricants and frequency of lubrication.
 5. Recommended Spare Parts:
 - a. Data to be consistent with manufacturer's Bill of Materials/Parts List furnished in O&M manuals.
 - b. "Unit" is the unit of measure for ordering the part.
 - c. "Quantity" is the number of units recommended.
 - d. "Unit Cost" is the current purchase price.
- H. The type and quantity of spare parts provided shall be consistent with Criticality Workshops and failure mode and effects analysis (FMEA) process FMEA process as described in Section 01320 Construction Progress Documentation.

2.02 DATA FOR MATERIALS AND FINISHES

A. Content for Architectural Products, Applied Materials, and Finishes:

1. Manufacturer's data, giving full information on products:
 - a. Catalog number, size, and composition.
 - b. Color and texture designations.
 - c. Information required for reordering special manufactured products.
2. Instructions for Care and Maintenance:
 - a. Manufacturer's recommendation for types of cleaning agents and methods.
 - b. Cautions against cleaning agents and methods that are detrimental to product.
 - c. Recommended schedule for cleaning and maintenance.

B. Content for Moisture and Weather Exposed Products:

1. Manufacturer's data, giving full information on products:
 - a. Applicable standards.
 - b. Chemical composition.
 - c. Details of installation.
2. Instructions for inspection, maintenance, and repair.

2.03 ELECTRONIC O&M MANUAL (E-O&M)

- A. Contractor or Design-Builder shall provide a project specific Electronic O&M manual (e-O&M), which shall supplement the OEM O&M described. E-O&M shall contain the following information and functionalities:
 - 1. Images (Photographic or digitally rendered) of the facility shall be provided in a “main screen” location, with specific facilities and systems labeled with all relevant names including but not limited to common names, CMMS tag and P&ID tags.
 - 2. Overall and Major system descriptions as provided in the O&M manual.
 - 3. Control Narratives for the overall project and individual systems/subsystems.
 - 4. SOPs and SIs created by the Engineer of Record.
 - 5. Record Photographs providing a document of the construction progress, as well as buried/hidden piping, conduits, foundations, and other infrastructure not readily located after construction work at the facilities is complete.
 - 6. Manufacturer’s shop drawings and O&M documents.
 - 7. BIM of the assets.
 - 8. Arc Flash Study.
 - 9. Load Study.
 - 10. Testing Results as identified in other Sections.
 - 11. GIS records for the project.
 - 12. As-Constructed/Record drawings and BIM of the completed facility.
 - 13. Final Submittals for all project components.
 - 14. Video recorded training organized by asset.
 - 15. All system-specific information shall be organized into accessible files tied to each system. Access shall be through a written and/or graphic interface at the main screen.
- B. All files submitted as part of the E-O&M shall be tagged per the Record File Standard.
- C. PDF shall be bookmarked and hyperlinked.
- D. E-O&M will operate through adobe acrobat software unless Contractor or Design-Builder provides an alternative application that is accepted in writing by the City of Kansas City, MO.
- E. A draft version of the e-O&M will be provided to the city for review and comment at approximately 70% completion of the facility.
- F. E-O&M will be installed at/on the project facility server or workstation(s) as appropriate, and a copy will be provided to the CITY.
- G. Contractor will provide training on the use and update of the e-O&M to CITY. One training session lasting no longer than two (2) hours will be provided at the project location, Water Services offices, or Contractor or Design-Builders offices, as agreed-upon by the CITY.

- H. All source files to the electronic O&M manual will be linked to the as-built BIM model by relevant asset, Items relevant to multiple assets will have multiple links.
- I. Complete a short-circuit device coordination and arc flash study computer model developed in SKM.
- J. Update SKM load study provided by the Owner.
- K. Complete Asset/CMMS data:
 - 1. Owner will provide a template for machine reading assets and maintenance activities into the Owner's Computerized Maintenance Management System (CMMS).
 - 2. Access database template will be blank with fields for assets information such as asset additions, asset updates, asset retirements including a rough estimated value, maintenance activities for the assets, PID tags within the asset, and asset categorization.
 - 3. Contractor or Design-Builder shall fill out the template documenting changes in the CMMS; insert asset additions including value, updates and retired assets including estimated value when taken out of service; work order updates; new PMs; PMs to be retired; non-destructive testing updates; and other asset fields. Assets shall be coordinated and categorized with the applicable CMMS takes for entry into Owner's CMMS and Financial Software.

2.04 PROGRAMS

- A. PLC, VFD, and SCADA Programs: Provide current native format copies of all software programs used to control assets.
 - 1. Files should be named per asset equipment IDs, systems, or sub systems as appropriate.

2.05 SUPPLEMENTS

- A. The supplements listed below, following "End of Section", are part of this Specification.
 - 1. Forms: Asset Maintenance Summary Form.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

ASSET MAINTENANCE SUMMARY FORM

<u>PROJECT</u> _____	<u>CONTRACT NO</u> _____
KCMO CMMS TAG	_____
EQUIPMENT ITEM	_____
MANUFACTURER	_____
PID/TAG NUMBERS	_____
WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) _____	
NAMEPLATE DATA (hp, voltage, speed, etc.) _____	
MANUFACTURER'S LOCAL REPRESENTATIVE _____	
Name _____	Telephone Number _____
Address _____	

MAINTENANCE REQUIREMENTS

Maintenance Operation Comments	Frequency	Lubricant (if applicable)
List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable. (Reference to manufacturer's catalog or sales literature is not acceptable)	List required frequency of each maintenance operation	Refer by symbol to lubricant required

LUBRICANTS

Reference Symbol	Shell	Exxon Mobil	Chevron Texaco	BP Amoco	or Equal

RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

Part Number	Description	Unit	Quantity	Unit Cost
Note: Identify parts provided by this contract with two asterisks				

SECTION 01110 – SUMMARY OF WORK

PART 1 GENERAL

1.01 LOCATION OF WORK

- A. The work of this Contract is located at Blue River WWTP at 7300 Hawthorne Road, Kansas City, MO 64120.

1.02 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and construct the Blue River Screen House Project in its entirety as shown on the Drawings and as specified herein for a fully functioning system within the project budget.
- B. The Work includes, but is not necessarily limited to, the following:
 - 1. Demolition and removal of existing equipment as indicated and necessary for the construction of the project including the chain and rake bar screens, out-of-service piping and appurtenances.
 - 2. Design and Construction of channel separation system including the forebay, slide gates, channel modifications, and the afterbay. Channel separation system will be designed and constructed to prevent flows from one channel bypassing the flows of any other individual channel. Modifications to allow even distribution of screenings and grit to each channel.
 - 3. Furnishing and installation of multi-rake screens and associated fittings including modifications to existing facility needed to accommodate current flows, anticipated 2035 flows, installation and removal of multi-rake screens via roof access.
 - 4. Furnishing and installation of new conveyance system for the transport of screenings from the discharge of multi-rake screens to the building dumpster.
 - 5. Furnishing and installation of new building appurtenances as required for the installation of the multi-rake screens. Building appurtenances may include but not necessarily limited to doors, windows, wall penetrations, roof skylights, handrails, guardrails, safety gates, floor plates, and wall panels.
 - 6. Electrical modifications including demolition and replacement of existing electrical equipment, coordination with the electrical utility, and installation of power and control to all new equipment as shown on the Drawings. Instrumentation as required for H2S detection at Blue River Screen House and near Parshall flume.
 - 7. Furnish and install HVAC system upgrades for Blue River Screen House facility and/or may include removal of parshall flume roof for increased ventilation/air changes per hour entering Blue River Screen House.

1.03 WORK SEQUENCE

- A. Perform Work in sequence as indicated in the contract documents to ensure completion of the Work in the Contract Time. Completion dates of the various stages shall be in accordance with the approved construction schedule submitted by the Contractor or Design-Builder.

1.04 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit the use of the premises for his/her Work and for storage to allow for:
 - 1. Work by other agencies.
 - 2. Owner occupancy.
 - 3. Public use.
- B. Coordinate use of premises with Owner.
- C. Contractor shall assume full responsibility for security of all his/her and his/her subcontractors materials and equipment stored on the site.
- D. If directed by the Owner, move any stored items which interfere with operations of Owner or other contractors.
- E. Obtain and pay for use of additional storage or work areas if needed to perform the Work.

1.05 OWNER OCCUPANCY

- A. Owner will occupy premises during performance of the work for the conduct of his/her normal operations. Coordinate all construction operations with Owner to minimize conflict and to facilitate Owner usage.

1.06 CONSTRUCTION COORDINATION

- A. Activities by Others which may affect performance of the Work:
 - 1. The following items designed or specified by Design-Builder shall be constructed by issuing Purchase Orders for CITY's existing IDIQ contracts for the following items:
 - a. Dewatering of channels
 - b. Roof work including modification and/or repair
 - c. HVAC work including equipment installation, equipment modification, ductwork and conveyance installation and/or modification and;
 - d. Instrumentation and Controls Work including wiring, programming and commissioning.
- B. Contractor shall coordinate with the Owner regarding scheduling and sequence of work.

END OF SECTION

SECTION 01140 – WORK RESTRICTIONS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for sequencing and scheduling the Work affected by existing site and facility; work restrictions; and coordination between construction operations and plant operations.

1.02 SUBMITTALS

- A. Baseline Schedule with OCCP tasks.
- B. Operational Change Control Plan (OCCP) Form.
- C. Progress Schedule with OCCP tasks.

1.03 GENERAL CONSTRAINTS ON SEQUENCE AND SCHEDULING OF WORK

- A. Wastewater projects:
 - 1. This facility is the City's only means of treating sewage for the designated service area prior to discharging treated effluent to the Missouri River. Impairing the operational capabilities of this treatment plant will result in serious environmental damage and monetary fines.
 - 2. Conduct Work in a manner that will not impair the operational capabilities of essential elements of the treatment process or reduce the capacity of the entire treatment plant below levels sufficient to treat the quality of raw wastewater to the water quality limitations specified in the discharge permit.
 - 3. Conduct commissioning and process start-up activities as specified in Section 01757 - Commissioning in a manner that will not impair the operational capabilities of essential elements of the treatment process or reduce the capacity of the entire treatment plant below levels sufficient to treat the quality of raw wastewater to the water quality limitations specified in the discharge permit.
 - 3. The status of the treatment plant shall be defined as "operational" when it is capable of treating the entire quantity of wastewater received at the Birmingham WWTP to the water quality limits specified in the discharge permit.
- B. Work sequence and constraints:
 - 1. Utilize description of critical events in work sequence in this Section as a guideline for scheduling and undertaking the Work.
 - 2. Work sequence and constraints presented do not include all items affecting completion of the Work, but are intended to describe critical events necessary to minimize disruption of the existing facilities and to ensure compliance with National Pollutant Discharge Elimination System (NPDES) permit requirements.
- C. Instrumentation and controls process performance testing:
 - 1. After the Process Operational Period, test PCIS system as specified in Section 01757 - Commissioning.

1.04 SHUTDOWN AND CONSTRUCTION CONSTRAINTS

- A. Normal working hours:
 - 1. Construction will take place during normal working hours as defined:
 - a. 7AM to 3PM Monday through Friday.
 - b. Refer to 0700 General Conditions Section 6.03 for further restrictions.
- B. General shutdown constraints:
 - 1. Execute the Work while the existing facility is in operation.

2. Some activities may be accomplished without a shutdown.
 3. Apply to activities of construction regardless of process or work area.
 4. Activities that disrupt plant or utilities operations must comply with these shutdown constraints.
 5. Organize work to be completed in a minimum number of shutdowns.
 6. Provide thorough advanced planning, including having required equipment, materials, and labor on hand at time of shutdown.
 7. Notify the City at least 30 days in advance of any tasks that will require dewatering and cleaning to allow the City the appropriate amount of time to conduct the work.
 8. Where required to minimize treatment process interruptions while complying with specified sequencing constraints, provide temporary pumping, power, lighting, controls, instrumentation, and safety devices.
 9. Final determination of the permitting of shutdowns will be the sole judgment of the Owner.
 10. Owner maintains the ability to abort on the day of the scheduled shutdown or to hold at any hold point.
- C. Blue River Screen House Capacity:
1. Shutdowns or decreased capacity of any equipment must occur with flows below 60 MGD in Blue River Inlet Sewer and rain probability below 20%.
 2. Activities that disrupt plant operations are prohibited during the following influent flow conditions, unless otherwise approved in writing by the Engineer, or specified in 01140.01 Process and System Shutdown Constraints Schedule:
 - a. 100 MGD
- D. Unit process availability work limitations:
1. Shutdowns and tie-ins or other activities that disrupt plant operations shall not occur if the following conditions exist unless approved by the OWNER in writing, or specified in 01140.01 Process and System Shutdown Constraints Schedule:
 - a. Rainfall has occurred in the 2 days preceding the shutdown.
 - b. Rainfall is forecast for more than 3 of the first 14 days of the shutdown period.
- E. Shutdown activities:
1. Scheduling:
 - a. Perform between the hours of 10 p.m and 4 a.m. unless otherwise specified herein or as approved by Owner.
 2. Unplanned shutdowns due to emergencies are not defined in this Section.
- F. Dewatering of existing process and disposal of residue:
1. When the Owner has turned the process unit over to the Contractor for modification or temporary use, the Contractor is responsible for costs and procedures required to dewater and dispose of liquid, solids, etc. in the process unit unless the Owner has made prior arrangements.
 - a. Drainage and disposal of process unit liquids, solids, etc. into another treatment process unit on the plant site may be allowed if approved in advance by the Engineer and Owner and is conducted in accordance with the Project requirements.
 - b. Costs for dewatering, disposal of solids and residuals, and preparation of surfaces for the Work are Contractor's responsibility.
 - (1) Includes tipping fees for the removal and disposal of the grit/debris.
 - c. Dewatering of grit/debris to meet landfill requirements is the responsibility of the Contractor.

- d. Contractor shall provide adequate time in schedules for draining and cleanup of basins and channels.
- G. Refer to the Process and System Shutdown Constraints Schedule in Section 01140.01 for additional requirements.

1.05 OPERATIONAL CHANGE CONTROL PLAN (OCCP)

- A. Refer to Section 01140.02 - Operational Change Control Plan (OCCP) Documents for additional requirements.
- B. Submit Baseline Schedule, as specified in Section 01320 – Construction Progress Documentation.
- C. No consideration will be given to claims of additional time and cost associated to preparing OCCPs required by the Owner and Engineer to complete this work in a manner that facilitates proper operation of the facility and compliance with effluent discharge criteria.
- D. Where required to minimize treatment process interruptions while complying with specified sequencing constraints, provide temporary pumping, power, lighting, controls, instrumentation, and safety devices.
- E. OCCPs are required whenever an existing asset or a new asset that could affect treatment or conveyance are modified including but not limited to set points and operational modes.

1.06 COMPLIANCE WITH NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

- A. The existing facility is operating under the terms of a NPDES permit issued by the State of Missouri. This permit specifies the water quality limits that the plant must meet prior to discharge of effluent. A copy of the existing permit (Missouri State Operating Permit No. MO-0049531) is on file for review at the Administration Building at the Birmingham WWTP.
- B. Perform work in a manner that will not prevent the existing facility from achieving the finished water quality requirements established by regulations.
- C. Bear the cost of penalties imposed on the Owner for discharge violations caused by actions of the Contractor.

1.07 REQUIREMENTS FOR OPERATION OF PLANT AND MAINTAINING CONTINUOUS OPERATION OF EXISTING FACILITIES

- A. Contractor's may or may not directly affect the processes below excluding processes approved by in the Operational Change Control Plan (OCCP). Refer to Section 01140.02 - Operational Change Control Plan Documents.
- B. Facilities or conditions required to keep the existing plant operational include, but are not limited to, the following:
 - 1. Electrical power including transformers, distribution wiring, and motor control centers.
 - 2. Pumping and piping for conveyance of wastewater, chemicals, and utilities between treatment units and pump stations.
 - 3. Chemical storage, metering, conveyance, and control facilities
 - 4. Provided with existing storage tanks for sodium hypochlorite and sodium bisulfite; chemical metering pumps and associated equipment; chlorine and ammonia residual analyzers; and chemical solution piping at various locations in the plant.
 - 5. Continuous addition of disinfection chemicals (sodium hypochlorite and sodium bisulfite) is required during plant operations during the recreational season from April 1 to October 31.
 - 6. At least one Primary clarifier including sludge and scum pumping.

7. At least one Aeration basins including surface aerators.
 8. At least one Final clarifier including sludge and scum pumping.
 9. Laboratory facilities.
 10. Office, toilets, and washrooms.
 11. Fencing and gates.
 12. Lighting.
 13. Heating, ventilation, and air conditioning.
 14. Instrumentation, meters, controls, and telemetry equipment.
 15. Safety equipment and features.
 16. Parking for City employees and vehicles required for operation and maintenance of the treatment facilities.
 17. Telephone system.
 18. Storm drainage.
 19. Natural gas service.
 20. Potable water service.
- C. Contractor shall protect existing grating with steel traffic plate or other Engineer approved means when moving equipment or supplies over grating.
- D. Maximum allowable superimposed live load on any existing grating or walkway shall be 50 psf. If higher loads are proposed, provide detailed calculations demonstrating adequacy of grating or walkway system for higher loads. The calculations shall be sealed and signed by a registered professional engineer and submitted to the Engineer for review and acceptance.

1.08 OPERATION AND MAINTENANCE ACCESS

- A. Provide safe, continuous access to process control equipment for plant operations personnel.

1.09 COORDINATION OF THE WORK

- A. Maintain overall coordination of the Work.
- B. Obtain construction schedules from subcontractors and suppliers and assume responsibility for correctness.
- C. Incorporate schedules from subcontractors and suppliers into Progress Schedule to plan for and comply with sequencing constraints.

1.10 WORK BY OTHERS

- A. Where proper execution of the Work depends upon work by others, inspect and promptly report discrepancies and defects.

1.11 UTILITIES

- A. Provide advance notice to request and utilize services of the Missouri One Call System (www.mocall.com or 1-800-344-7483 (DIG-RITE)) for location and marking of underground utilities operated by utility agencies other than the Owner outside KC Water facilities. For location and marking of underground utilities Work within KC Water facilities, Contractor shall coordinate with KC Water.
- B. Maintain electrical, telephone, water, gas, sanitary facilities, and other utilities within existing facilities in service. Provide temporary utilities when necessary.
- C. New yard utilities were designed using existing facility drawings.
1. Field verification of utilities locations was not performed during design.

2. Services crossed or located nearby new yard utilities may require relocation and possible shutdowns.

1.12 WORK SEQUENCE AND CONSTRAINTS

Contractor and Design-Builder shall sequence work in a manner that allows the facility to receive average flows and peak flows without loss of capacity.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PROCESS AND SYSTEM SHUTDOWN CONSTRAINTS SCHEDULE

- A. Refer to the Process and System Shutdown Constraints Schedule in Section 01140.01 for constraints on process and system shutdowns.
- B. Requests for variance from any part of this schedule must be approved in writing by the OWNER.
- C. The planned date of shutdown as listed on the Operational Change Control Plan (OCCP) form shall be considered the start date for the shutdown and used for calculating the actual shutdown duration, unless approved in writing by the OWNER. In the event the OWNER can shut down a system or process prior to the planned date of shutdown and the CONTRACTOR agrees to commence work at that earlier date, the date that the CONTRACTOR commences work on the associated process or system shall be considered the start date for the shutdown and for calculating the actual shutdown duration.
- D. These constraints are intended to supplement the demolition, modification, tie-in, and construction activities and constraints described in Article 1.12 of this Section.

End of Section

01140.01 - PROCESS AND SYSTEM SHUTDOWN CONSTRAINTS SCHEDULE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Information on the shutdown constraints for each of the major processes.

1.02 DEFINITIONS

- A. **Maximum Shutdown Duration:** The maximum allowable time in calendar days (unless otherwise noted) that a process and its associated piping, valves, channels, gates, etc. may be removed from service to perform the required work on that process.
- B. **Minimum Time Between Shutdowns:** The minimum amount of time in calendar days (unless otherwise noted) between consecutive shutdowns of a process and its associated piping, valves, channels, gates, etc. 3.
- C. **Maximum Number of Shutdowns:** The maximum number of times that a process and its associated piping, valves, channels, gates, etc. may be removed from service to perform the required work on that process. In cases where only one (1) shutdown is allowed, a value has been listed in the "Minimum Time Between Shutdowns" column to provide guidance if additional shutdowns are determined to be required.
- D. **Seasonal Shutdown Constraint:** The approximate time period during which a process shall remain in service and no work shall be performed on that process.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 PROCESS AND SYSTEM SHUTDOWN CONSTRAINTS SCHEDULE

- A. The Process and System Shutdown Constraints Schedule is presented on the following pages.
- B. Requests for variance from any part of this schedule must be approved in writing by the OWNER.
- C. The planned date of shutdown as listed on the Operational Change Control Plan (OCCP) form shall be considered the start date for the shutdown and used for calculating the actual shutdown duration, unless approved in writing by the OWNER. In the event that the OWNER can shut down a system or process prior to the planned date of shutdown and the CONTRACTOR agrees to commence work at that earlier date, the date that the CONTRACTOR commences work on the associated process or system shall be considered the start date for the shutdown and for calculating the actual shutdown duration.
- D. These constraints are intended to supplement the demolition, modification, tie-in, and construction activities and constraints described in Section 01140 - Work Restrictions.

PROCESS AND SYSTEM SHUTDOWN CONSTRAINTS SCHEDULE					
Work Sequence	Maximum Shutdown Duration	Minimum Time Between Shutdowns	Maximum Number of Shutdowns	Seasonal Shutdown Constraints	Notes
Blue River Screen House	4 hours	7 days	1	NC	1,6
Blue River Pump Station	4 hours	7 days	1	NC	1, 4, 7
Individual channel (within parallel channels)	2 weeks	NA	1	NC	5
Process Piping	4 hours	7 days	2	NC	
Low Voltage Electrical Switchgear	4 hours	14 days	2	NC	1, 2
Medium Voltage Electrical Switchgear	4 hours	14 days	5	NC	1, 2
<u>General Notes:</u> (1) NC = No Constraints (2) NA = Not Applicable <u>Notes:</u> (1) Shutdown of this process, system, or equipment is restricted to between the hours of 2 a.m. and 8 a.m. (2) Shutdown of this process, system, or equipment shall not occur at the same time as other items having this note. (3) For each shutdown, provide a 1,000 kW temporary generator and cabling to account for unforeseen circumstances that may require work to occur outside the allowable time frame. (4) Shutdown of these processes shall not occur at the same time as a shutdown of upstream or downstream basin. (5) Shutdown of process must include provisions for isolating from influent and effluent for average flow and peak flow conditions.					

- (6) Shutdown of facility must allow continuous gravity flow from Parshall flume through the Pump Station.
- (7) Shutdown of facility must keep two (2) pumps in operation all times.

END OF SECTION



KC WATER

WASTEWATER TREATMENT DIVISION

7300 Hawthorne Road • Kansas City, MO 64120

P: 816-513-7200 • F: 816-513-7271 • www.kcwater.us

Operational Change Control Plan (OCCP) Version 8

OCCP Number & Title (The OCCP number will be provided by the Division OCCP Coordinator)

OCCPs ARE REQUIRED TWO WEEKS IN ADVANCE OF THE ANTICIPATED WORK

This version is being provided as a Word document to enable editing within the document.

Do not delete any sections. Note if a section is not applicable to the proposed work.

Instructions are provided at the beginning of each section. **READ THESE CAREFULLY.** Provide the information requested. The submitted document is to include this title page.

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1. Date	
2. Version (use modifier starting with A at end of OCCP number when document changes substantially)	
3. OCCP Number	
4. Facility Name/ Facility ID	
5. Project Execution Start Date	

6. Description of Works (provide a brief summary of the work to be performed)

7. Key Plan information (hold points are those points at which work will be halted and operations returned to usual and customary conditions and is not a description of the work to be performed)

Description of Hold Point 1	
Description of Hold Point 2	
Description of Hold Point 3	
Description of Hold Point 4	
Description of Hold Point 5	
Description of Hold Point 6	
Description of Hold Point 7	
Description of Hold Point 8	

8. Significant Dates (this section keys around the OCCP development to include a meeting with WTD staff to define operational collaboration)

Project is scheduled to start no earlier than (insert date here)	
Action	Date
OCCP Initial Development no later than:	
OCCP Final no later than:	
OCCP Coordination Meeting no later than:	
Other as needed:	
Other as needed:	

9. Project Milestones/ExecutionSteps (define the major work steps and attach a schedule for the work if so developed specifically for this OCCP project)

Step	Action and Date (may include start date + X if start is unknown at the time of OCCP development)

Step	Action and Date (may include start date + X if start is unknown at the time of OCCP development)

10. Works to be completed prior start of OCCP (this will result from the initial OCCP meeting)

Operational Condition	Contingency Action

11. Contingency Actions (these actions result from plans in the event of adverse project impacts)

Mode of Failure/Incident	Contingency Action

12. Job Hazard Analysis (define any hazards to be encountered that are not usual and customary)

Hazard	Mitigation

13. Affected monitoring points and impact

- a. Usual sample locations affected by this operation (this will result from the initial OCCP meeting)

Description of Element	How is it Affected

- b. Special location(s) established for this operation (this will result from the initial OCCP meeting)

Description of Location	Describe Revised Procedure

- c. **Treatment Process Affected** (define which process will be impacted and how any alternate or interim operation will be implemented)

Process Description	Describe Alternate or Interim Operation

d. Alarm Modifications

Alarm name	Alarm Value	Replacement	How Does it Operate?

e. Environmental Spill Risks

Description of Spill Risks	Mitigating Controls

14. Wastewater Quality Impacts

Description of Impact	How It Will Be Managed



APPLICATION FOR PAYMENT

Project Number _____

Project Title _____

Final Payment⁵ ☐

CONTRACTOR _____

Address _____

Application Number²: _____

Date: _____

Ordinance/Resolution Number: _____

Effective: _____

PO Number _____

Vendor Number _____

Application for Work Accomplished from _____

to _____

Original Contract Price	[1]	\$	-
Net by Change Orders ____ through ____	[2]	\$	-
Current Contract Price (1+2)	[3]	\$	-
Completed Work	[4]		
Disputed Amounts ³	[-] [4a]	\$	-
Stored Material ⁴	[5]	\$	-
Disputed Amounts ³	[-] [5a]	\$	-
Total Completed and Stored to Date (4+5)	[6]	\$	-
Previous Payments	[7]		
Previous Retainage	[8]		
Total Previous Applications (7+8)	[9]	\$	-
Amount This Application (6-9)	[10]	\$	-
Less Retainage This Application (5%)	[-] [11]	\$	-
Release of Retainage	[12]	\$	-
Total Due This Application (10-11+12)	[13]	\$	-
Liquidated Damages			
Completion of Work	[14]	\$	-
Prevailing Wage ⁷	[15]	\$	-
MBE/WBE Program ⁷	[16]	\$	-
Workforce Program ⁷	[17]	\$	-
Total Amount Due Contractor (13 - 14 through 17)	[18]	\$	-

Accompanying Documentation: 1, 2, 3, 4, 5, & 6 and any other information as necessary.

NOTE: Initial all figures on this Application and on the Schedule of Values that are changed to correct errors or conform to the amount recommended. Attach explanation of changes that have been made.

CONTRACTOR's Certification:

The undersigned CONTRACTOR certifies that (a) all previous progress payments received from OWNER on account of Work done under this Contract have been applied on account to discharge CONTRACTOR's legitimate obligations incurred in connection with Work covered by all prior Applications for Payment; (b) at time of payment, title of all Work, materials and equipment incorporated into said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to OWNER indemnifying OWNER against any such Lien, security interest or encumbrance); and (c) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective; and (d) all manufactured goods or commodities used or supplied for this Project are in compliance with Kansas City's Buy America ordinance.

By _____
Contractor Authorized Representative (Print) Signature

Date _____

State of _____)
County of _____)SS

Subscribed and Sworn to before me this _____ day of _____, _____.

My commission expires:

Notary Public:

DESIGN PROFESSIONAL's Recommendation of Payment:

In accordance with the Contract Documents, based on on-Site observations and the data comprising this application, the DESIGN PROFESSIONAL recommends to the OWNER that to the best of the DESIGN PROFESSIONAL's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the CONTRACTOR is entitled to payment of the Amount above listed in this application.

Name of firm (Print)

DESIGN PROFESSIONAL (Print)

(Signature)

Date: _____

Construction/Program Manager's Recommendation of Payment: (if applicable)

In accordance with the Contract Documents, based on on-Site observations and the data comprising this application, the Construction/Program Manager recommends to the OWNER that to the best of the Construction/Program Manager's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the CONTRACTOR is entitled to payment of the Amount above listed in this application.

Construction/Program Manager firm (Print)

Authorized Representative (Print)

(Signature)

Date: _____

City's Representative's Agreement with Recommendation of Payment

City's Representative(print)

(Signature)

(Date)

City's Approval

The amount previously recommended is approved for payment.

Director or Designee (Print)

(Signature)

(Date)

¹See General Conditions Article 14.02 A and B

²Proof of tax compliance if 1st payment and if Contract amount exceeds \$150,000.00

³Schedule of Values—Denote any amounts currently disputed in this application. Attach additional dispute documentation if required.

⁴If requesting payment for stored materials, see General Conditions Article 14.02 A.1

⁵If final payment, current proof of tax compliance if Contract is longer than 1 year and amount exceeds \$150,000.00.

⁶ Per General Conditions Sec. 14.02 attach a copy of the most recent 00485.01 M/WBE Monthly Utilization Report, 00485.02 Project Workforce Monthly Report and 00485.03 Company-Wide Workforce Monthly Report CONTRACTOR has submitted to the City's Human Relations Department

⁷Applicable only if final payment

REMINDER: CONTRACTOR is responsible for meeting or exceeding the the D/M/WBE participation amounts in its Contractor Utilization Plan (CUP) as amended by any previously approved Request for Modification/Substitution. Any Change Orders or amendements modifying the amount CONTRACTOR is to be compensated will have correspondingly impacted the amount of compensation due D/M/WBEs for purposes of meeting or exceeding the Bidder/Proposer participation. CONTRACTOR is again reminded to consider the effect of any Change Order or amendment, and to submit a Request for Modification/Substitution if appropriate.

Distribution: Owner
Contractor

Project Manager
Design Professional



Project Title _____

City's Representative (if Applicable): _____

[illegible]



City Of Kansas City, Missouri

Certified Payroll Report Instructions

GENERAL INSTRUCTIONS:

Each space on the attached Certified Payroll Report requiring information is numbered. The numbers below correspond to those spaces. When completing the Certified Payroll Report, insert the required information in each space. The Certified Payroll Report **must be complete, clear and legible** and be accompanied by a completed Payroll Certification including **original signature**. All payrolls are to be submitted within two (2) weeks after the ending date of the payroll week.

The payroll form is available on line.

INSTRUCTION FOR PAYROLL SHEETS

1. **PAYROLL NUMBER:** Insert the number of the payroll. Payrolls start with number 1 (one) for the first week of work by each contractor or subcontractor. The numbers are then continuous until the last payroll. During weeks when no work takes place a payroll for that week showing no work is to be turned in. Revised payrolls must be designated with a letter "R" following the number. Check (✓) the box by the word "FINAL" after the number to indicate that no further work will be done by the contractor or subcontractor.
2. **WEEK ENDING:** On each sheet, insert the date of the last day of this payroll.
3. **SHEET OF:** On each sheet, insert the number of each sheet and the total number of sheets submitted.
4. **GRANT AGENCY PROJECT NO:** Insert the Grant Agency Project Grant Number if this is a grant funded project.
5. **CONTRACTOR:** Insert the contractor's company name and address.
6. **SUBCONTRACTOR:** If this is a payroll for a subcontractor, insert subcontractor's name and address. For the remainder of these instructions, the word "contractor" shall apply to both contractor and subcontractor.
7. **DEPARTMENT PROJECT or CONTRACT NO:** Insert Department's Project or Contract Number.
8. **LOCATION:** Insert location of work, including address, and county.
9. **DESCRIPTION:** Insert name of the project or contract from the Agreement.
10. **FEDERAL I.D. NUMBER:** Insert the contractor (10a) and subcontractor's (10b) Federal I.D. Number.
11. **EMPLOYEE NAME:** Insert employee's full legal name and complete home address. Make sure to include Apartment #'s and zip code.

12. **SOCIAL SECURITY NO.:** Insert employee's social security number (xxx-xx-xxxx).
13. **DATE:** Insert date for each day of the payroll week for each employee (mm/dd/yyyy).
14. **REGULAR HOURS*:** Insert the regular hours worked each day.
15. **OVERTIME HOURS*:** Insert the overtime hours worked each day.
16. **DOUBLE OVERTIME HOURS*:** Insert the double overtime hours worked each day.

***Note:** Numbers 14, 15, and 16: Make sure these **hours are equal to or greater than the hours turned in on the "Daily Labor Force Report" form**. Refer to the wage order for applicable overtime schedule.

If allowed by occupational title's applicable overtime rate, Contractor may make a permanent schedule transfer to an eight (8) or ten (10) hour day work week. **Advance written notification to and approval** from the Owner's Representative **is required**.

If allowed by the occupational title's applicable overtime rate, any change in the work week schedule due to inclement weather **must** be documented on the certified payroll.

17. **TOTAL HOURS:** Insert total of *regular hours* worked for the week on this project. (The total hours will calculate automatically if you are using the electronic form.)
18. **TOTAL HOURS:** Insert total of *overtime hours* worked for the week on this project. (The total hours will calculate automatically if you are using the electronic form.)
19. **TOTAL HOURS:** Insert total of *double overtime* hours worked for the week on this project. (The total hours will calculate automatically if you are using the electronic form.)
20. **TOTAL FRINGE HOURS:** Insert total Fringe Hours (by adding the amounts in 17, 18, and 19). (The total hours will calculate automatically if you are using the electronic form.)
21. **BASE RATE*:** Insert basic hourly rate of pay. Check the contract's "Annual Wage Order" or the "Federal General Wage Decision" section for basic hourly rate.
22. **OVERTIME RATE*:** Insert overtime rate of pay. Check the contract's "Annual Wage Order" or the "Federal General Wage Decision" section for the overtime rate.
23. **DOUBLE OVERTIME RATE*:** Insert double overtime rate of pay. Check the contract's "Annual Wage Order" or the "Federal General Wage Decision" section for the double overtime rate.
24. **FRINGE RATE*:** Insert fringe benefit rate for this project. Check the contract's "Annual Wage Order" or the "Federal General Wage Decision" section for the fringe benefit rate.

***Note:** *The total of the basic hourly rate plus the fringe benefit rate must be equal to or greater than the total of the basic hourly rate plus the fringe benefit rate found in the contract's "Annual Wage Order" or the "Federal General Wage Decision" section. If the contract contains both of the above, the higher rate will prevail.*

25. **TOTAL:** Multiply the amounts in 17 by 21 and insert here. (The total hours will calculate automatically if you are using the electronic form.)

26. **TOTAL:** Multiply the amounts in 18 by 22 and insert here. (The total hours will calculate automatically if you are using the electronic form.)
27. **TOTAL:** Multiple the amounts in 19 by 23 and insert here. (The total hours will calculate automatically if you are using the electronic form.)
28. **TOTAL:** Multiply the amounts in 20 by 24 and insert here. (The total hours will calculate automatically if you are using the electronic form.)
29. Check (✓) the box (□) for the “*APPROVED PLAN*”, “*EMPLOYEE*”, or both indicating the Plan or manner in which the fringe benefit is paid. If fringe benefit is paid to both a Plan and the employee, then insert each amount that is paid to the Plan and/or the employee. If paid to a Plan, list the name(s) of Plan Programs on Payroll Certification page.

***Note:** 29a plus 29b **must equal** 28.

30. **OCCUPATIONAL TITLE/CLASSIFICATION:** Insert occupational title/classification of worker for each employee. Examples: Carpenter, laborer, electrician.
31. **GROUP:** Insert the group if, applicable for the occupational title/classification. Example: Operating Engineers Group I, II, III, IV or V.
32. **SKILL GROUP:** Insert skill group, if applicable. Example: general laborer, skilled laborer, first semi-skilled, second semi-skilled etc. or any of the listings under the federal classification such as painters.
33. **HOURS:** Insert total hours worked for all jobs for each employee during each payroll period.
34. **GROSS EARNINGS:** Insert employee’s gross earnings for each payroll period.
35. **FEDERAL:** Insert the amount of the deduction from each employee’s check stub.
36. **FICA:** Insert the amount of the deduction from each employee’s check stub.
37. **STATE:** Insert the amount of the deduction from each employee’s check stub.
38. **LOCAL E-TAX:** Insert the amount of the deduction from each employee’s check stub.
39. **MISCELLANEOUS:** Insert the amount of the deduction from each employee’s check stub.
40. **NET PAY:** Insert the employee’s net pay for each week.
41. **EARNINGS FOR THIS JOB:** Add the amounts in 25, 26, 27, and 29b and insert here.

***Note:** If fringe benefit is paid to Approved Plan, do not add the amount in 29a to this total.

42. **KANSAS CITY EARNINGS TAX THIS JOB:** Insert Kansas City Earnings tax deducted from employee’s check for this job.

Steps 11 through 42 are to be repeated for each employee working on the project site, or for the same employee working any additional Occupational Title/Classification.



CERTIFIED PAYROLL REPORT

Project Number:

Project Title:

Payroll Number: 1

☐ Final

CONTRACTOR: 5		SUBCONTRACTOR: 6		GRANT AGENCY PROJECT NO.: 4												
ADDRESS:		ADDRESS:		DEPT PROJECT OR CONTRACT NO.: 7												
CITY, STATE ZIP:		CITY, STATE ZIP:		LOCATION: 8												
FEDERAL I.D. NUMBER: 10a		FEDERAL I.D. NUMBER: 10b		DESCRIPTION: 9												
EMPLOYEE NAME: 11	First Name	Last Name	DATE: 13	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL HRS	BASE RATE	O.T. RATE	FRINGE RATE	TOTAL	
ADDRESS:			REG. HRS. 14								17 0.00	\$ 21 -			\$ 25 -	
CITY, STATE ZIP:			O.T. HRS. 15								18 0.00		\$ 22 -		\$ 26 -	
SOCIAL SECURITY NO.: 12			D.O.T. HRS. 16								19 0.00		\$ 23 -		\$ 27 -	
OCCUPATIONAL TITLE / CLASSIFICATION: 30			TOTAL FRINGE HOURS: 20 0.00												\$ 24 -	\$ 28 -
			GROUP: 31			SKILL GROUP: 32						FRINGE PAID TO: 29			☐ APPROVED PLAN 29a ☐ EMPLOYEE 29b	
WEEK ALL JOBS:	HOURS:	GROSS EARNINGS:	FEDERAL:	FICA:	STATE:	LOCAL E-TAX:	MISC:	NET PAY:	EARNINGS FOR THIS JOB:						\$ 41 -	
	33	\$ 34 -	\$ 35 -	\$ 36 -	\$ 37 -	\$ 38 -	\$ 39 -	\$ 40 -	KANSAS CITY EARNINGS TAX THIS JOB						\$ 42 -	
EMPLOYEE NAME:	First Name	Last Name	DATE:	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL HRS	BASE RATE	O.T. RATE	FRINGE RATE	TOTAL	
ADDRESS:			REG. HRS.								0.00	\$ -			\$ -	
CITY, STATE ZIP:			O.T. HRS.								0.00		\$ -		\$ -	
SOCIAL SECURITY NO.:			D.O.T. HRS.								0.00		\$ -		\$ -	
OCCUPATIONAL TITLE / CLASSIFICATION:			TOTAL FRINGE HOURS												\$ -	\$ -
			GROUP:			SKILL GROUP:						FRINGE PAID TO:			☐ APPROVED PLAN ☐ EMPLOYEE	
WEEK ALL JOBS:	HOURS:	GROSS EARNINGS:	FEDERAL:	FICA:	STATE:	LOCAL E-TAX:	MISC:	NET PAY:	EARNINGS FOR THIS JOB:						\$ -	
		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	KANSAS CITY EARNINGS TAX THIS JOB						\$ -	
EMPLOYEE NAME:	First Name	Last Name	DATE:	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL HRS	BASE RATE	O.T. RATE	FRINGE RATE	TOTAL	
ADDRESS:			REG. HRS.								0.00	\$ -			\$ -	
CITY, STATE ZIP:			O.T. HRS.								0.00		\$ -		\$ -	
SOCIAL SECURITY NO.:			D.O.T. HRS.								0.00		\$ -		\$ -	
OCCUPATIONAL TITLE / CLASSIFICATION:			TOTAL FRINGE HOURS												\$ -	\$ -
			GROUP:			SKILL GROUP:						FRINGE PAID TO:			☐ APPROVED PLAN ☐ EMPLOYEE	
WEEK ALL JOBS:	HOURS:	GROSS EARNINGS:	FEDERAL:	FICA:	STATE:	LOCAL E-TAX:	MISC:	NET PAY:	EARNINGS FOR THIS JOB:						\$ -	
		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	KANSAS CITY EARNINGS TAX THIS JOB						\$ -	
EMPLOYEE NAME:	First Name	Last Name	DATE:	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL HRS	BASE RATE	O.T. RATE	FRINGE RATE	TOTAL	
ADDRESS:			REG. HRS.								0.00	\$ -			\$ -	
CITY, STATE ZIP:			O.T. HRS.								0.00		\$ -		\$ -	
SOCIAL SECURITY NO.:			D.O.T. HRS.								0.00		\$ -		\$ -	
OCCUPATIONAL TITLE / CLASSIFICATION:			TOTAL FRINGE HOURS												\$ -	\$ -
			GROUP:			SKILL GROUP:						FRINGE PAID TO:			☐ APPROVED PLAN ☐ EMPLOYEE	
WEEK ALL JOBS:	HOURS:	GROSS EARNINGS:	FEDERAL:	FICA:	STATE:	LOCAL E-TAX:	MISC:	NET PAY:	EARNINGS FOR THIS JOB:						\$ -	
		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	KANSAS CITY EARNINGS TAX THIS JOB						\$ -	
EMPLOYEE NAME:	First Name	Last Name	DATE:	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL HRS	BASE RATE	O.T. RATE	FRINGE RATE	TOTAL	
ADDRESS:			REG. HRS.								0.00	\$ -			\$ -	
CITY, STATE ZIP:			O.T. HRS.								0.00		\$ -		\$ -	
SOCIAL SECURITY NO.:			D.O.T. HRS.								0.00		\$ -		\$ -	
OCCUPATIONAL TITLE / CLASSIFICATION:			TOTAL FRINGE HOURS												\$ -	\$ -
			GROUP:			SKILL GROUP:						FRINGE PAID TO:			☐ APPROVED PLAN ☐ EMPLOYEE	
WEEK ALL JOBS:	HOURS:	GROSS EARNINGS:	FEDERAL:	FICA:	STATE:	LOCAL E-TAX:	MISC:	NET PAY:	EARNINGS FOR THIS JOB:						\$ -	
		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	KANSAS CITY EARNINGS TAX THIS JOB						\$ -	



CERTIFIED PAYROLL REPORT

Project Number: _____

Project Title: _____

Payroll Number: _____

Final

WEEK ENDING:		SHEET		of		GRANT AGENCY PROJECT NO.:										
CONTRACTOR:				SUBCONTRACTOR:				DEPT PROJECT OR CONTRACT NO.:								
ADDRESS:				ADDRESS:				LOCATION:								
CITY, STATE ZIP:				CITY, STATE ZIP:				DESCRIPTION:								
FEDERAL I.D. NUMBER:				FEDERAL I.D. NUMBER:												
First Name		Last Name		DATE:	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL HRS.	BASE RATE	O.T. RATE	FRINGE RATE	TOTAL
EMPLOYEE NAME:				REG. HRS.								0.00	\$ -			\$ -
ADDRESS:				O.T. HRS.								0.00		\$ -		\$ -
CITY, STATE ZIP:				D.O.T. HRS.								0.00		\$ -		\$ -
SOCIAL SECURITY NO.:				TOTAL FRINGE HOURS								0.00		\$ -		\$ -
OCCUPATIONAL TITLE / CLASSIFICATION:														FRINGE PAID TO:	APPROVED PLAN EMPLOYEE	\$ -
				GROUP:												\$ -
				SKILL GROUP:												\$ -
WEEK ALL JOBS:	HOURS:	GROSS EARNINGS:	FEDERAL:	FICA:	STATE:	LOCAL E-TAX:	MISC:	NET PAY:	EARNINGS FOR THIS JOB:	\$ -						
		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	KANSAS CITY EARNINGS TAX THIS JOB	\$ -						
First Name		Last Name		DATE:	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL HRS.	BASE RATE	O.T. RATE	FRINGE RATE	TOTAL
EMPLOYEE NAME:				REG. HRS.								0.00	\$ -			\$ -
ADDRESS:				O.T. HRS.								0.00		\$ -		\$ -
CITY, STATE ZIP:				D.O.T. HRS.								0.00		\$ -		\$ -
SOCIAL SECURITY NO.:				TOTAL FRINGE HOURS								0.00		\$ -		\$ -
OCCUPATIONAL TITLE / CLASSIFICATION:														FRINGE PAID TO:	APPROVED PLAN EMPLOYEE	\$ -
				GROUP:												\$ -
				SKILL GROUP:												\$ -
WEEK ALL JOBS:	HOURS:	GROSS EARNINGS:	FEDERAL:	FICA:	STATE:	LOCAL E-TAX:	MISC:	NET PAY:	EARNINGS FOR THIS JOB:	\$ -						
		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	KANSAS CITY EARNINGS TAX THIS JOB	\$ -						
First Name		Last Name		DATE:	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL HRS.	BASE RATE	O.T. RATE	FRINGE RATE	TOTAL
EMPLOYEE NAME:				REG. HRS.								0.00	\$ -			\$ -
ADDRESS:				O.T. HRS.								0.00		\$ -		\$ -
CITY, STATE ZIP:				D.O.T. HRS.								0.00		\$ -		\$ -
SOCIAL SECURITY NO.:				TOTAL FRINGE HOURS								0.00		\$ -		\$ -
OCCUPATIONAL TITLE / CLASSIFICATION:														FRINGE PAID TO:	APPROVED PLAN EMPLOYEE	\$ -
				GROUP:												\$ -
				SKILL GROUP:												\$ -
WEEK ALL JOBS:	HOURS:	GROSS EARNINGS:	FEDERAL:	FICA:	STATE:	LOCAL E-TAX:	MISC:	NET PAY:	EARNINGS FOR THIS JOB:	\$ -						
		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	KANSAS CITY EARNINGS TAX THIS JOB	\$ -						
First Name		Last Name		DATE:	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL HRS.	BASE RATE	O.T. RATE	FRINGE RATE	TOTAL
EMPLOYEE NAME:				REG. HRS.								0.00	\$ -			\$ -
ADDRESS:				O.T. HRS.								0.00		\$ -		\$ -
CITY, STATE ZIP:				D.O.T. HRS.								0.00		\$ -		\$ -
SOCIAL SECURITY NO.:				TOTAL FRINGE HOURS								0.00		\$ -		\$ -
OCCUPATIONAL TITLE / CLASSIFICATION:														FRINGE PAID TO:	APPROVED PLAN EMPLOYEE	\$ -
				GROUP:												\$ -
				SKILL GROUP:												\$ -
WEEK ALL JOBS:	HOURS:	GROSS EARNINGS:	FEDERAL:	FICA:	STATE:	LOCAL E-TAX:	MISC:	NET PAY:	EARNINGS FOR THIS JOB:	\$ -						
		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	KANSAS CITY EARNINGS TAX THIS JOB	\$ -						
First Name		Last Name		DATE:	MON	TUES	WED	THUR	FRI	SAT	SUN	TOTAL HRS.	BASE RATE	O.T. RATE	FRINGE RATE	TOTAL
EMPLOYEE NAME:				REG. HRS.								0.00	\$ -			\$ -
ADDRESS:				O.T. HRS.								0.00		\$ -		\$ -
CITY, STATE ZIP:				D.O.T. HRS.								0.00		\$ -		\$ -
SOCIAL SECURITY NO.:				TOTAL FRINGE HOURS								0.00		\$ -		\$ -
OCCUPATIONAL TITLE / CLASSIFICATION:														FRINGE PAID TO:	APPROVED PLAN EMPLOYEE	\$ -
				GROUP:												\$ -
				SKILL GROUP:												\$ -
WEEK ALL JOBS:	HOURS:	GROSS EARNINGS:	FEDERAL:	FICA:	STATE:	LOCAL E-TAX:	MISC:	NET PAY:	EARNINGS FOR THIS JOB:	\$ -						
		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	KANSAS CITY EARNINGS TAX THIS JOB	\$ -						

Date _____

I, _____, _____
(Name of Signatory Party) (Title)
do hereby state:

(1) That I pay or supervise the payment of the persons employed by
(Contractor or subcontractor) _____
on the (Building or work) _____: that during the
payroll period commencing on the _____ day of _____, 20____, and ending
the _____ day of _____, 20____, all said persons employed on said project
have been paid the full weekly wages earned, that no rebates have been or
will be made either directly or indirectly to or on behalf of said (Contractor or
subcontractor) _____ from
the full weekly wages earned by any person and that no deductions have
been made either directly or indirectly from the full wages earned by any
person, other than permissible deductions as defined in Regulations, Part 3
(29 CFR Subtitle A), issued by the Secretary of Labor under the Copeland
Act, as amended (48 Stat. 948.63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40
U.S.C. 276c), and described below:

(2) That any payrolls otherwise required under this contract to be submitted
for the above period are correct and complete; that the wage rates for
laborers or mechanics contained herein are not less than the applicable
wage rates contained in any wage determination incorporated into this
contract; that the classifications set forth herein for each laborer or mechanic
conform to the work he performed.

(3) That any apprentices employed in the above period are duly registered in
a bona fide apprenticeship program registered with a State apprenticeship
agency recognized by the Bureau of Apprenticeship and Training, United
States Department of Labor, or if no such recognized agency exists in a
State, are registered with the Bureau of Apprenticeship and Training, United
States Department of Labor.

(4) That:

(a) WHERE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS,
OR PROGRAMS

☐ In addition to the basic hourly wage rates paid to each laborer or
mechanic listed in the above referenced payroll, consisting of _____ pages,
payments of fringe benefits as listed in the contract have been or will be

made to appropriate programs for the benefit of such employees, exceptions
noted in 4 (c) below.

(b) WHERE BENEFITS ARE PAID IN CASH

☐ Each laborer or mechanic listed in the above referenced payroll,
consisting of _____ pages, has been paid, as indicated on the payroll, in an
amount not less than the sum of the basic hourly wage rate plus the amount
of the required fringe benefits as listed in the contract, except as noted in
Section 4 (c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION
REMARKS	

NAME AND TITLE	SIGNATURE
The willful falsification of any of the above statements may subject the contractor or subcontractor to civil or criminal prosecution. See Section 1001 of Title 18 Section 231 of Title 31 of the United States Code.	



SUBCONTRACTORS AND MAJOR MATERIAL SUPPLIERS LIST

Project Number _____ Project Title _____

From Contractor _____ To _____ Date _____

Spec. No.	Section Title	4	Firm, Address (Check box if Supplier)	Phone, FAX and e-mail	Contact

☐ Attachments:

Signed by: _____ Date _____

Distribution: ☐ Owner ☐ Contractor ☐ Construction Manager ☐ Design Professional ☐ Consultant ☐ Other



DAILY LABOR FORCE REPORT

Project Number _____ Day _____ Date _____

Project Title _____

Contractor _____

Subcontractor _____

Weather: (Indicate if weather prevented work and why) _____

Shift: (circle) 5–8 hr Days 4–10 hr Days Other _____

* This report *MUST be completed and turned in* for EACH DAY until FINAL COMPLETION.

Worker's Full Legal Name	Occupational Title or Classification Group & Skill	Hours Worked & Time (i.e. 10AM – 4PM)	Race & Gender

I CERTIFY THAT ALL OF THE INFORMATION PROVIDED ABOVE IS TRUE AND COMPLETE.

Contractor/Subcontractor Representative:

Complete Name: (print) _____ Title: (print) _____

Signature: _____

Page ____ of ____

Distribution: ☐ City Department ☐ Contractor ☐ Subcontractor ☐ Other



CERTIFICATE OF SUBSTANTIAL COMPLETION

Project Number _____

Project Title _____

CONTRACT FOR: _____

CONTRACTOR: _____

DATE OF ISSUANCE: _____

PROJECT OR DESIGNATED PORTION SHALL INCLUDE:

The Work performed under this Contract has been reviewed and found, to the Design Professional's and/or Construction Manager's best knowledge, information and belief, to be substantially complete. Substantial Completion is the state in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of Project or portion thereof designated above is hereby established as _____ which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

A list of items to be completed or corrected is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

CONSTRUCTION MANAGER BY _____ DATE _____

DESIGN PROFESSIONAL BY _____ DATE _____

The Contractor will complete or correct the Work on the list of items attached hereto within _____ days from the above date of Substantial Completion.

CONSTRUCTION MANAGER BY _____ DATE _____

DESIGN PROFESSIONAL BY _____ DATE _____

The Owner accepts the Work or designated portion thereof as substantially complete and will assume full possession thereof at _____ (time) on _____ (date).

OWNER'S REPRESENTATIVE BY _____ DATE _____

Distribution: ☐ Owner
☐ Contractor
☐ Construction Manager
☐ Design Professional
☐ Consultant _____
☐ Other _____



PUNCH LIST

Project Number _____

Project Title _____

CONTRACTOR _____

From _____ Site Visit Date _____

The following items require the attention of the CONTRACTOR for completion or correction. This list may not be all-inclusive, and the failure to include any items on this list does not alter the responsibility of the CONTRACTOR to complete all Work in accordance with the Contract Documents.

Item No.	Location (Area)	Description	Correction/ Completion Date	Verification Check

☐ Attachments

Signed by: _____

Date: _____

DESIGN PROFESSIONAL (Firm/In House)

Distribution: ☐ OWNER
☐ CONTRACTOR
☐ DESIGN PROFESSIONAL
☐ Consultant _____
☐ Other _____



CONTRACTOR AFFIDAVIT FOR FINAL PAYMENT

Project Number _____

Project Title _____

STATE OF _____)
)SS
COUNTY OF _____)

The Undersigned, _____ of lawful
(Name)

age, being first duly sworn, states under oath as follows:

1. I am the _____ of _____ who is the general
(Title) (CONTRACTOR)
CONTRACTOR for the CITY on Project No. _____ and Project Title _____.

2. All payrolls, material bills, use of equipment and other indebtedness connected with the Work for this Project have been paid and all Claims of whatever nature have been satisfied, as required by the Contract.

3 (✓) _____ Prevailing wage does not apply; or

(✓) _____ All provisions and requirements set forth in Chapter 290, Section 290.210 through and including 290.340, Missouri Revised Statutes, pertaining to the payment of wages to workmen employed on public works projects have been fully satisfied and there has been no exception to the full and complete compliance with these provisions and requirements and the Annual Wage Order contained in the Contract in carrying out the Contract and Work. CONTRACTOR has fully complied with the requirements of the prevailing wage law as required in the Contract and has attached affidavits from all Subcontractors on this Project, regardless of tier, affirming compliance with the prevailing wage law as stipulated in the Contract.

4. I hereby certify that (a) at project completion and pursuant to contractor's final request for payment, contractor achieved (____%) Minority Business Enterprise (MBE) participation and (____%) Women Business Enterprise (WBE) participation on this contract, and (b) listed herein are the names of all certified M/WBE subcontractors, regardless of tier, with whom I, or my subcontractors contracted.

1. Name of MBE/WBE Firm _____
Address _____
Telephone Number (_____) _____
IRS Number _____
Area/Scope*of Work _____
Subcontract Final Amount _____

2. Name of MBE/WBE Firm _____
Address _____
Telephone Number (_____) _____
IRS Number _____
Area/Scope*of Work _____
Subcontract Final Amount _____

List additional subcontractors, if any, on a similar form and attach to the bid.

Supplier** Final Amount: _____

*Reference to specification sections or bid item number.

- (✓) _____ Met or exceeded the Contract utilization goals; or
(✓) _____ Failed to meet the Contract utilization goals (attach waiver, substitution or modification); or
(✓) _____ No goals applied to this Project.

5. CONTRACTOR certifies that each Subcontractor has received full payment for its respective work in connection with the Contract.

6. If applicable, I hereby certify that (a) at project completion and pursuant to contractor's final request for payment, contractor achieved, company-wide, at least ten percent (10%) minority workforce participation and two percent (2%) women workforce participation and (2) a true and accurate copy of my final project workforce monthly report (HRD Form 00485.02 and final company-wide workforce monthly report (HRD Form 00485.03) are attached. **NOTE: This paragraph is only applicable if you completed a construction contract that was estimated by the City, prior to solicitation, as requiring more than 800 construction labor hours and costing in excess of \$324,000.01. If applicable you MUST attach copies of your final monthly workforce reports.**

7. This affidavit is made in behalf of the CONTRACTOR for the purpose of securing from Kansas City, Missouri, the certification of completion of the Project and receiving payment therefore.

8. If the Contract amount exceeded \$150,000, CONTRACTOR has submitted proof of compliance with the City tax ordinances administered by the City's Commissioner of Revenue and has on file proof of tax compliance from all Subcontractors. If the Contract term exceeded one (1) year, CONTRACTOR has provided proof of compliance with the City tax ordinances administered by the City's Commissioner of Revenue prior to receiving final payment and has on file proof of tax compliance from all Subcontractors prior to the Subcontractor receiving final payment from CONTRACTOR.

CONTRACTOR _____

By _____
(Authorized Signature)

Title _____

On this _____ day of _____, _____, before me

appeared _____, to me personally known to be the

_____ of the _____,

and who executed the foregoing instrument and acknowledged that (s)he executed the same on behalf of

_____ as its free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal on the day and year first above written.

My commission expires:

Notary Public



SUBCONTRACTOR AFFIDAVIT FOR FINAL PAYMENT

Project Number _____

Project Title _____

STATE OF MISSOURI)

) ss:

COUNTY OF _____)

After being duly sworn the person whose name and signature appears below hereby states under penalty of perjury that:

1. I am the duly authorized officer of the business indicated below (hereinafter Subcontractor) and I make this affidavit on behalf of Subcontractor in accordance with the requirements set forth in Section 290.290, RSMo. Subcontractor has completed all of the Work required under the terms and conditions of a subcontract as follows:

Subcontract with: _____, Contractor

Work Performed: _____

Total Dollar Amount of Subcontract and all Change Orders: \$_____

City Certified ☐ MBE ☐ WBE ☐ DBE ☐ NA

List certifications: _____

2. Subcontractor fully complied with the provisions and requirements of the Missouri Prevailing Wage Law set forth in Sections 290.210, RSMo through 290.340, RSMo.

Business Entity Type:

- () Missouri Corporation
() Foreign Corporation
() Fictitious Name Corporation
() Sole Proprietor
() Limited Liability Company
() Partnership
() Joint Venture
() Other (Specify) _____

Subcontractor's Legal Name and Address

Phone No. _____

Fax: _____

E:mail: _____

Federal ID No. _____

I hereby certify that I have the authority to execute this affidavit on behalf of Subcontractor.

By: _____
(Signature)

(Print Name)

(Title)

(Date)

NOTARY

Subscribed and sworn to before me this _____ day of _____, 20_____.

My Commission Expires: _____ By _____

Print Name

Title

SECTION 01300 – SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

- A. This section provides for the submittals required by the City prior to the start of work and, as required, for the duration of the Work.
- B. All submittals shall be clearly identified by reference to a specification section and/or detail drawing. Submittals shall be clear and legible and shall include sufficient presentation of the data.
- C. No portion of the work requiring a shop drawing, product data or sample shall be started nor shall any materials be fabricated or installed prior to the completion of the submittal process described herein. Fabrication performed, purchased materials or on-site construction accomplished prior to completing the submittal process as defined herein shall be at the Contractor or Design-Builder's sole risk. The City shall not be liable for any expense or delay to complete the submittal process.

1.02 RELATED SECTIONS

- A. Section 00700 – General Requirements:
 - 1. Article 2, paragraph 2.07.B.1 – Preliminary Project Schedule.
 - 2. Article 2, paragraph 2.07.B.2 – Preliminary Schedule of Shop Drawings.
 - 3. Article 2, paragraph 2.07.B.3 – Preliminary Schedule of Values.
 - 4. Article 6, paragraph 6.04 – Progress Schedule.
 - 5. Article 6, paragraph 6.05 – Recovery Schedule.
 - 6. Article 6, paragraph 6.06 – Substitute and “Or-Equal” Items.
 - 7. Article 6, paragraph 6.15 – Safety Representative.
 - 8. Article 6, paragraph 6.18 – Shop Drawings and Samples.
- B. Section 01019 – Closeout Procedures
- C. Section 01020 – Record Documents
- D. Section 01021 – Operation and Maintenance Data
- E. Section 01140 – Work Restrictions
- F. Section 01140.01 - Process and System Shutdown Constraints Schedule
- G. Section 01140.02 - Operation Change Control Plan Documents
- H. Section 01020 – Record Documents
- I. Section 01320 – Construction Progress Documentation
- J. Section 01322 – Photogram Documentation
- K. Section 01019 – Closeout Procedures
- L. Section 01664 - Training
- M. Section 01757 – Commissioning
- N. Section 01335 – Document Management.

1.03 GENERAL INFORMATION

- A. Definitions:
 - 1. Refer to Section 01420 – Definitions and Acronyms
- B. Quality Requirements:
 - 1. The Contractor or Design-Builder shall submit Shop Drawings and Samples in accordance with Section 00700.

2. Submittals such as Shop Drawings and product data shall be of suitable quality for legibility and reproduction purposes. Every line, character and letter shall be clearly legible. Drawings shall be useable for further reproduction to yield legible hard copies.
 3. All submittals by subcontractors shall be sent directly to the Contractor or Design-Builder for checking. The Contractor or Design-Builder shall be responsible for their submission at the proper time to prevent delays.
 4. The Contractor or Design-Builder shall check all subcontractors' submittals regarding measurements, sizes, materials and details to determine and verify that they meet the requirements of the Contract Documents. Submittals found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission to the City.
 5. Certificates of Compliance – Where indicated in these specifications, each submittal shall include a certificate of compliance prepared by the manufacturer or Supplier of the submitted data, certifying that the item covered complies with Contract Documents. The certificate of compliance shall be a separate document and shall include identification of all deviations, if any, from the Contract Documents.
- C. Submittal Completeness:
1. The Contractor or Design-Builder shall accept full responsibility for the completeness of each submission. When an item consists of components from several sources, the Contractor or Design-Builder's initial submittal on the item shall include all components.
 2. Submittals shall be complete with respect to dimensions, design criteria, materials of construction and other information specified to enable the City or Designee to review the information effectively.
 3. Where standard drawings are furnished which cover several variations of the general class of Equipment, each drawing shall be annotated to indicate exactly which parts of the drawing apply to the Equipment being furnished. Use hatch marks to indicate variations that do not apply to the Submittal. The use of "highlighting markers" will not be an acceptable means of annotating Submittals. Annotation shall also include proper identification of the Submittal permanently attached to the drawing.
 4. Reproductions or copies of Contract Drawings or portions thereof will not be accepted as complete fabrication or erection drawings. The Contractor or Design-Builder may use a reproduction of Contract Drawings for erection drawings to indicate information on erection or to identify detail drawing references. Whenever the Drawings are revised to show this additional Contractor or Design-Builder information, the Design Professional's title block shall be replaced with Contractor or Design-Builder's title block and the Design Professional's professional seal shall be removed from the drawing. The Contractor or Design-Builder shall revise these erection drawings, as needed, for subsequent Design Professional revisions to the Contract Drawings.
- D. Form of Submittals:
1. Submittals and other Project documents shall be transmitted in electronic format and non-electronic format as specified.
 2. Contractor or Design-Builder shall provide a submittal registry prior to the pre-con meeting that is suitable for upload to the City's Document Management program.
 3. Electronic Format:
 - (a) Transmit Submittals and Project documents utilizing:
 - (i) Adobe ".pdf" files created directly from native electronic format or City-approved equal file type and format.

- (ii) Electronic submittal “.pdf” files are not to be combined files or collections of files/drawings. Each drawing document must stand alone.
 - (iii) Each file will be right reading and oriented the same for all consecutive resubmissions.
 - (iv) For any given Submittal, the filename and format shall be consistent for initial submission and subsequent revisions of the same. Use consistent naming convention throughout. Reference to revision or dates shall not be included in a filename.
 - (v) Files greater than 5 pages shall have table of contents with bookmarks for each section. The Sections shall have easily understood names.
 - (vi) Submittals not meeting the above criteria are subject to rejection.
- (b) Provide Project Record Documents, equipment instruction books and operating and maintenance manuals and any other documents, as required, in a file type and format approved by City.
- 4. Non-electronic Format:
 - (a) Selected Submittals may be provided in paper (hard copy), as well, only with advance approval of the City and using procedures specified herein.
 - (b) Equipment instruction books and operating manuals shall be provided in hardcopies in addition to the specified electronic format.
- E. Transmittal of Submittals:
 - 1. Submittal register shall be uploaded prior the transmission of the first submittal.
 - 2. All submittals, regardless of origin, shall be stamped with the approval of the Contractor or Design-Builder and identified with the name and number of this Contract, Contractor’s or Design-Builder’s name, references to applicable specification paragraphs and Contract Drawings and version of the submittal. Submittals can be named for their specification if the submittals cover the full scope of work in said specification.
 - 3. Each submittal shall indicate the intended use of the item in the Work. When catalog pages are submitted, applicable items shall be clearly identified and inapplicable data crossed out. The current revision, issue number and date shall be indicated on all drawings and other descriptive data. The Contractor or Design-Builder’s stamp of approval is a representation to the City and Design Professional that the Contractor or Design-Builder accepts full responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers and similar data, and the Contractor or Design-Builder has reviewed and coordinated each submittal with the requirements of the Work and the Contract Documents.
 - 4. Electronic Submittals – The Contractor or Design-Builder shall utilize the City’s document management system as specified in Section 01335- Document Management for managing, tracking and storing documents associated with the Project. If an internet-based document management system is to be used, additional requirements are provided in Section 01335- Document Management. The Contractor or Design-Builder shall comply with the file protocols and procedures for the document management system.
 - 5. Approved submittals shall be tagged per City’s metadata tagging standard and provided to the City as part of the Electronic O&M Manual.
- F. Submittals Required for the Preconstruction Conference:
 - 1. Following are the minimum required submittals to be provided by the Contractor or Design-Builder at the pre-construction conference:
 - (a) General Requirements:
 - (i) Preliminary Project Schedule including Submittals.
 - (ii) Preliminary Schedule of Values.
 - (iii) Preliminary Submittal Registry.

- (iv) Listing of Subcontractors.
- (v) Project Sign Request.
- (vi) List of Major Equipment utilized.
- (vii) Safety Representative.

(b) Document Management can be found in Section 01335 – Document Management.

G. In order to allow expedited review submittals on the sections or topics below are required to have a pre-submittal meeting:

- 1. Commissioning Schedule.
- 2. Sanitary Screens.
- 3. First Factory Acceptance Test Plan.
- 4. Switchgear and Transformer.
- 5. PLC Programming.

1.04 SHOP DRAWINGS AND SAMPLES

A. Shop Drawings:

- 1. Shop Drawings and engineering data covering all equipment and fabricated and building materials which will become a permanent part of the Work under this Contract shall be submitted to the City or Designee for review as specified herein. The data shall include drawings, descriptive information, sufficient detail to show the kind, size, arrangement and operation of component materials and devices; the external connections, anchorages and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment.
- 2. All deviations from the Contract Documents shall be identified on each submittal and shall be tabulated in the Contractor or Design-Builder's letter of transmittal. Such submittals shall, as pertinent to the deviation, indicate essential details of all changes proposed by the Contractor or Design-Builder (including modifications to other facilities that may be a result of the deviation) and all required piping and wiring diagrams.

B. Product Data:

- 1. Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the Work.
- 2. If applicable, submittals for equipment shall include a listing of all installations where identical or similar equipment has been installed and been in operations for a period of at least one year.
- 3. Certificates are statements printed on the manufacturer's or supplier's letterhead and signed by responsible officials of manufacturer of product, system or material. Certifications shall provide a clear statement that the product, system or material meets the specified requirements of Contract Documents. All certificates shall be dated after the Effective Date of the contract and shall clearly indicate the project name and project number.

C. Samples:

- 1. Samples specified in individual Sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively used products,

color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols and units of work to be used by the City or Designee for independent inspection and testing, as applicable to the Work.

D. Instruction Books and Operating and Manuals:

1. Per Section 01021 – Operation Maintenance Data

E. Record Documents

1. Per Section 011019 Closeout Procedures, 01021 Operation Maintenance Data, 01020 Record Documents, 01322 Photographic Documentation

F. Survey Data

1. All field books, notes, videotapes, and other data developed by Contractor in performing surveys required as part of the Work shall be available to City for examination throughout the construction period.
2. All such data shall be submitted to City with the other documentation required for final acceptance of the Work.

1.05 SCHEDULES

- A. 01320 - Construction Progress Documentation

1.06 COMMISSIONING SUBMITTALS

- A. Section 01757 Commissioning

1.07 CONSTRUCTION PROGRESS PHOTOGRAPHS AND VIDEOS

- A. Section 01320 Construction Progress Documentation
- B. Photos and Videos documenting assets that will not be visible during the substantial completion walkthrough shall have their record photos taken prior to be obscured by backfill, equipment installation, gypsum board installation, etc... Record photos shall have metadata tags per KC Water standards.

1.08 WARRANTY and BONDS and CLOSEOUT SUBMITTALS

- A. Section 011019 Closeout Procedures, Section 00800 Supplementary Conditions, and 00700 General Conditions

1.09 SCHEDULE OF VALUES

- A. The CONTRACTOR shall prepare and submit to the DESIGN PROFESSIONAL for approval by the preconstruction conference, a Schedule of Values for and covering the Lump Sum Price Bid as shown in the Proposal. The Schedule of Values shall show the estimated total number of construction units for each kind of work and the value of each unit.
- B. Each price listed shall include all overhead, other costs, CONTRACTOR's profit and the total estimated value of the items of work listed in the Schedule of Values shall equal the Contract Lump Sum Price covered by the estimate. Overhead and profit are not to be listed as separate items.
- C. An unbalanced schedule of values providing for overpayment of CONTRACTOR on items of Work which would be performed first will not be approved. The Schedule of Values shall be revised and resubmitted until acceptable to the DESIGN PROFESSIONAL & OWNER. Final acceptance by DESIGN PROFESSIONAL shall indicate only consent to the Schedule of Values as a basis for preparation of applications for progress payments and shall not constitute an agreement as to the value of each indicated item.

1.10 CITY OR DESIGNEE'S REVIEW OF DRAWINGS AND DATA

- A. The City or Designee's review of drawings and data submitted by Contractor or Design-Builder will cover only general compliance with the Construction Contract Documents. The City or Designee's review does not indicate a thorough review of all dimensions, quantities and details of the material, equipment, device or item shown. The City or Designee's review shall not relieve Contractor or Design-Builder of Contractor or Design-Builder's responsibility for errors, omissions or deviations in the drawings and data, nor of sole responsibility for compliance with the Construction Contract Documents.
- B. The City or Designee's submittal review period shall be 21 consecutive calendar days in length and shall commence on the first calendar day immediately following the date of arrival of the submittal or resubmittal in the City or Designee's office. The time required to mail the submittal or resubmittal back to Contractor or Design-Builder shall not be considered a part of the submittal review period.
- C. Contractor or Design-Builder may request an expedited review of a limited number of submittals. The City may elect to require a workshop to facilitate this expedited review. A maximum of one workshop per week will be allowed.
- D. Submittals shall be returned to the Contractor or Design-Builder under one of the following assignments:
 - 1. "Approved" is assigned when there are no notations or comments on the submittal. When returned, the Contractor or Design-Builder may release the equipment and/or material for manufacture.
 - 2. "Approved as Noted" is assigned when a confirmation of the notations and comments is not required by the Contractor or Design-Builder. The Contractor or Design-Builder may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
 - 3. "Revise and Resubmit" is assigned when the submittal does not meet the intent of the Construction Contract Documents. The Contractor or Design-Builder must resubmit the document revised to bring the submittal into compliance with Contract Documents. "Revise and Resubmit" is also assigned when notations and comments are extensive enough to require a resubmittal of the package.
 - 4. "Rejected" is assigned when the submittal does not meet the intent of the Construction Contract Documents. The Contractor or Design-Builder must resubmit the entire package revised to bring the submittal into compliance with Contract Documents. It may be necessary to resubmit using a different manufacturer/vendor to meet the Construction Contract Documents. "Rejected" is also assigned when the notations and comments are extensive enough to require a resubmittal of the package.
 - 5. "For Record Only" is assigned when the submittal is provided as a courtesy to the City or as a contractual requirement by the Design-Builder or Contractor. Design-Builder or Contractor has no further action required. Submittal is for supplementary information only; pamphlets, general information sheets, catalog cuts, standard sheets, test reports, manufacturer's or supplier's letters included with submittal data, unmarked catalog data, bulletins and similar data, all of which are useful to Owner in design, operation, or maintenance, but which by their nature does not constitute a basis for determining that items represented thereby conform with the design concept or comply with the intent of the Contract Documents. It is not subject to Owner's review and acceptance, and is being filed for Record Copy purposes only. This is generally used in acknowledging receipt of means and methods of construction work plans, filed conformance test reports, health and safety plans, or structural design by the Design-Builder's or Contractor Engineer of Record, etc.

- E. If the Contractor or Design-Builder considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor or Design-Builder shall give written notice thereof to the City or Designee at least seven working days prior to release for manufacture.
- F. Resubmittal of Drawings and Data:
1. The Contractor or Design-Builder shall accept full responsibility for the completeness of each resubmittal. The Contractor or Design-Builder shall verify that all corrected data and additional information previously requested by the City or Designee are provided on the resubmittal. When corrected copies are resubmitted, the Contractor or Design-Builder shall in writing direct specific attention to all revisions and shall list separately any revisions made other than those called for by the City or Designee on previous submissions.
 2. Requirements specified for initial submittals shall also apply to resubmittals. Resubmittals shall bear the number of the first submittal followed by a letter (A, B, etc.) to indicate the sequence of the resubmittal.
 3. Resubmittals shall be made within thirty (30) days of the date of the letter returning the submittal to be modified or corrected; unless, within 14 days, the Contractor or Design-Builder submits an acceptable request for an extension of the stipulated period, listing the reasons the resubmittal cannot be completed within the specified time.
 4. Any need for more than one resubmission or any other delay in obtaining the City or Designee's review of submittals, will not entitle the Contractor or Design-Builder to an extension of the Contract Times, unless: the delay of the Work is directly caused by a change in the Work authorized by a Change Order or by failure of the City or Designee to review the submittals within the submittal review period specified herein.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01320 – PROJECT MANAGEMENT AND CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the construction process beginning with the Notice of Intent to Contract and continuing through completion of the Work performed and Construction Contract close out.
- B. The Contractor or Design-Builder shall furnish all labor, materials, equipment and incidentals as necessary to comply with these requirements including but not limited to the following and as required herein:
 - 1. Preliminary Project Schedule.
 - 2. Project Baseline Schedule.
 - 3. Progress Schedule.
 - 4. Recovery Schedules.
 - 5. Submittals Schedule.
 - 6. Daily Labor Force reports.
 - 7. Material location reports.
 - 8. Field condition reports.
 - 9. Special reports.
 - 10. Commissioning
 - 11. Training
 - 12. O&M Data
 - 13. Electronic O&M Manuals
 - 14. Testing
 - 15. Acceptance Testing
 - 16. Photographic Documentation.

1.02 RELATED SECTIONS

- A. Drawings and general provisions of the Contract; including General and Supplementary Conditions, all applicable Division 01 Sections, and all applicable Division Sections; apply to this Section.
- B. Section 00700 – General Requirements:
 - 1. Article 2, paragraph 2.07.B.1 – Preliminary Project Schedule.
 - 2. Article 2, paragraph 2.07.B.2 – Preliminary Schedule of Shop Drawings.
 - 3. Article 2, paragraph 2.08.A – Acceptable Schedule.
 - 4. Article 2, paragraph 2.08.B – Project Baseline Schedule.
 - 5. Article 6, paragraph 6.04 – Progress Schedule.
 - 6. Article 6, paragraph 6.05 – Recovery Schedule.
- C. Section 01000 – General Project Requirements.
- D. Section 01015 – Specific Project Requirements.
- E. Section 01020 – Record Documents
- F. Section 01021 – Operation and Maintenance Data
- G. Section 01140.01 - Process and System Shutdown Constraints Schedule
- H. Section 01140.02 - Operation Change Control Plan Documents
- I. Section 01140 – Work Restrictions
- J. Section 01019 – Closeout Procedures

- K. Section 01664 - Training
- L. Section 01757 – Commissioning
- M. Section 01322 – Photographic Documentation.

1.03 CODES AND STANDARDS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.
- B. American Association of Cost Engineers (AACE):
 - 1. Comply with recommended practices.

1.04 SUBMITTALS

- A. Scheduler Qualifications – For firms and persons preparing schedules, submit qualifications as required by Table 1 to demonstrate their capabilities and experience. Include lists of completed projects with the following information:
 - 1. Project name.
 - 2. Project location.
 - 3. Name and address of engineer, architect or Contractor or Design-Builder for which schedules were prepared.
 - 4. Name and address of client.
 - 5. Project Duration at Bid & Project Duration.
 - 6. Other information and pertinent.
- B. Preliminary Schedule of Shop Drawings (Submittals) – Arrange the following information in a tabular format or a format that is compatible with entry into the City’s document management system:
 - 1. Scheduled date for each first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. If a Pre-Submittal Workshop is required
 - 7. If the Contractor or Design-Builder will request expedited review.
 - 8. Scheduled date for City’s final approval.
- C. Standard Schedule Format – Layout for all schedules and reports shall follow the standard format in the following order, activity ID, activity name, original duration, remaining duration, percent complete, start, finish, late start, late finish, total float, baseline variance, predecessor, successor, and resource ID.
- D. Preliminary Project Schedule (Design-Build Only) – Submit in native electronic format and *PDF format. PDF sheet size shall sufficiently large enough to legibly show entire schedule for entire construction period.
 - 1. Include:
 - (a) CPM Report
 - (b) Native File
- E. Baseline Project Schedule – Submit in native electronic format and *PDF format. PDF sheet size shall sufficiently large enough to legibly show entire schedule for entire construction period.
 - 1. Include:
 - (a) CPM Report
 - (b) Resource Loaded
 - (c) Native File

- F. Progress Schedules – Submit in native electronic format and *PDF format. PDF sheet size shall sufficiently large enough to legibly show entire schedule for entire construction period.
 - 1. Include:
 - (a) CPM Report
 - (b) Activity report
 - (1) A list of all activities sorted by activity number and early start date, or actual start date, if known.
 - (c) Logic Report
 - (1) A list of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 - (d) Total Float Report
 - (1) A list of all activities sorted in ascending order of total float.
 - (e) Daily Labor Force Report
 - (f) Material Location Report
 - (g) Field Condition Report
 - (h) City may request a cost and resource loaded schedule if the project has insufficient float or multiple overlapping critical paths.
- G. Commissioning Schedule Section 01757 - Commissioning
- H. Special Reports – Submit special reports within one day of an occurrence.
- I. Daily Construction Reports – Submit at weekly intervals.
- J. Four Week look ahead – Schedules provided at each progress meeting that indicate with work activities will be occurring over the next 4 weeks and what was accomplished the previous week.
 - 1. The activity designations used in the four week look ahead must be consistent with those used in the baseline schedule and the monthly schedule updates.

1.05 DEFINITIONS

- A. Refer to Section 01420 – Definitions and Acronyms.

1.06 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities including the scheduling and reporting of separate Contractor or Design-Builders performing construction activities related to project.
- B. Coordinate Progress Schedules with the Schedule of Values, to estimate a Schedule of Monthly Payments, list of subcontractors, Preliminary Schedule of Shop Drawings and Samples, progress reports, Application for Payment, and other required schedules and reports.
- C. Secure time commitments for performing critical elements of the Work from parties involved. Time commitments should be captured within the schedule.

1.07 TRAINING SCHEDULE:

- A. Contractor Shall provide a draft list of training sessions arranged in chronological order along with the submittal Schedule
- B. Contractor shall provide a draft list of training sessions arranged in chronological order along with the submittal schedule.

1.08 Contractor shall send an updated training schedule every 3 months, and Contractor shall indicate which training sessions are tentative or firmly scheduled. SCHEDULE LEVEL

- A. If a Recovery Schedule is deemed necessary by the City in accordance with Section 00700 – General Conditions, it shall be developed as a cost and resource loaded schedule.

1.09 SCHEDULING SOFTWARE

- A. Prepare schedules using the latest version of Primavera version P6 or higher or Microsoft Project.

1.10 PRELIMINARY SCHEDULE OF SHOP DRAWINGS AND SAMPLES

- A. Preparation – Provide a schedule of submittals arranged in chronological order by date required by the construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery as set forth in the Contract Documents, when establishing dates.
- B. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, the estimated Schedule of Monthly Payments, and Progress Schedules.
- C. Include Shop Drawing and Sample Submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
- D. At Contractor or Design-Builder's option, show submittals on the Preliminary Progress Schedule, instead of tabulating them separately.

1.11 SCHEDULE REQUIREMENTS

- A. Requirements According to Schedule Level – Contractor or Design-Builder shall provide the following information.

Item	Requirement
Procedures	Comply with procedures contained the American Association of Cost Engineers (AACE) recommended practices.
Time Frame	Extend project schedule from date established for the Notice to Proceed to the date of Final Completion.
Contract Times	Contract Times shall not be changed unless specifically authorized by Change Order.
Activities	Treat separate major areas as a separate numbered activity for each principal element of the Work. (WBS)
Activity Duration	Define activities so none is longer than 7 days, unless specifically allowed by City
Milestones	Include milestones indicated in the Contract Documents in schedule, including, but not limited to, all zero duration events, the Notice to Proceed, Substantial Completion, and Final Completion.
Computer Software	Prepare schedules using the latest version of Primavera version P6 or higher or Microsoft Project.
Scheduler's Qualifications	Submit scheduler's qualifications for review and approval
Submittal Review Time	Include review and re-submittal times for review of Shop Drawings and Samples. Each item listed in the Preliminary Schedule of Shop Drawings and Samples shall be included in the schedule.
Procurement Activities	Include separate activities for the procurement process of long-lead and major items that require a cycle of more than 30 days or fall within the critical path. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

Item	Requirement
Startup and Testing Time	See Sections -01757 Commissioning, 01664 Training. Incorporate all these requirements with appropriate lead times into the project schedule.
Phasing	Arrange list of activities on schedule by phase.
Submittal Review Time	Include review and re-submittal times for review of Shop Drawings and Samples. Each item listed in the Preliminary Schedule of Shop Drawings and Samples shall be included in the schedule.
City Activities	Include a separate activity for each area of the Work performed by City and a separate activity for notifying the City if contractually required or requested.
Products Ordered in Advance	Include a separate activity for each product. Delivery dates indicated stipulate the earliest possible delivery date.
City-Furnished Products	Include a separate activity for each product. Delivery dates indicated stipulate the earliest possible delivery date.
Work Restrictions	Show the effect of the following items on the schedule: • Coordination with existing construction. • Limitations of continued occupancies. • Uninterruptible services. • Partial utilization before Substantial Completion. • Use of premises restrictions. • Provisions for future construction. • Seasonal variations. • Environmental control.
Work Stages	Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following: • Subcontract awards. • Submittals. • Purchases. • Fabrication. • Sample testing. • Deliveries. • Installation. • Tests and inspections. • Adjusting. • Curing. • Startup and placement into final use.
Area Separations	Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities: • Contractor Mobilization* • Procurement – Divided by Long Lead and Short Lead • Completion of civil work • Completion of structural work • Completion of HVAC work • Completion of architectural work • Completion of mechanical installation • Completion of electrical installation • Completion of I&C installation • Completion of I&C programing

Item	Requirement
	• • Partial Utilization • Substantial Completion* • Start of Acceptance Testing • End of Acceptance Testing • Achievement of Full Operations* • Punch List and Final Corrections* • Final Completion*
Contract Modifications	For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragments to demonstrate the effect of the proposed change on the overall project schedule.
Work under More than One Contract or Subcontract.	Include a separate activity for each contract or subcontract.
Detailed by Work Package	Include detailed information by each work package and display all activities to be accomplished by the workforce with durations of 7 or more calendar days
Detail by Task	Include detail by task to support the short-term planning for the field, normally for those activities of less than 1-week duration.

B. Cost Correlation:

1. At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.

1.12 PRELIMINARY AND BASELINE PROJECT SCHEDULES

- A. Indicate each significant construction activity separately. Identify each Monday of each week with a continuous vertical line. Outline significant construction activities for the first 60 days of construction. Include skeleton diagram for the remainder of the Work.
- B. Preliminary Network Diagram – Outline significant construction activities for the project. To be submitted with the Preliminary Progress Schedule.
- C. Cost Loaded
- D. Baseline Schedule shall be resource loaded.

1.13 PROGRESS REPORTS AND SCHEDULES

- A. General – Prepare Progress Schedules using a CPM network analysis diagram and be cost loaded.
- B. CPM Schedule Preparation – Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths:
 1. Activities – Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - (a) Preparation and processing of submittals.

- (b) Purchase of materials.
 - (c) Delivery of materials and equipment.
 - (d) Fabrication.
 - (e) Installation.
2. Processing – Process data to produce output data or a computer-drawn, time scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 3. Format – Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges:
 - (a) Sub-networks on separate sheets are permissible for activities clearly off the critical path. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established for the Notice to Proceed.
 - (b) Establish procedures for monitoring and updating CPM schedule and for reporting progress monthly. Coordinate procedures with progress meeting and payment request dates.
 - (c) Use "one calendar day" as the unit of time.
 4. Initial Issue of Schedule – Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:
 - (a) Contractor or subcontractor and the Work or activity.
 - (b) Description of activity.
 - (c) Principle events of activity.
 - (d) Immediate preceding and succeeding activities.
 - (e) Early and late start dates.
 - (f) Early and late finish dates.
 - (g) Activity duration in days.
 - (h) Total float or slack time.
 - (i) Average size of workforce.
 5. Schedule Updating – Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
 - (a) Identification of activities that have changed added or deleted.
 - (b) Changes in logic ties.
 - (c) Changes in early and late start dates.
 - (d) Changes in early and late finish dates.
 - (e) Changes in activity durations in days.
 - (f) Changes in the critical path.
 - (g) Changes in total float or slack time.
 - (h) Changes in the Contract Time.
 6. Value Summaries – Prepare two cumulative value lists, sorted by finish dates:
 - (a) In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
 - (b) In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
 - (c) In subsequent issues of both lists, substitute actual finish dates for activities completed as of last date.
 - (d) Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
 - (e) In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.

- (f) Submit value summary printouts one week before each regularly scheduled progress meeting.

C. Reports:

1. Daily Labor Force Reports – Prepare a daily labor force report recording the following information concerning events at Project site:
 - (a) List of subcontractors at Project site.
 - (b) List of separate Contractor or Design-Builders at Project site.
 - (c) List of all the Contractor or Design-Builder's and subcontractor's personnel showing hours worked in labor class at Project site.
2. Material Location Reports – At monthly intervals, prepare a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
3. Field Condition Reports – Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit electronically and directly to City with a request for information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

D. Special Reports:

1. General – Submit special reports within one day of an occurrence.
2. Reporting Unusual Events – When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events; persons participating; response by Contractor or Design-Builder's personnel; evaluation of results or effects; and similar pertinent information. Advise City in advance when these events are known or predictable.

1.14 SCHEDULE OF VALUES

- A. Requirements for Schedule of Values are specified in Article 2.1.3 of the General Conditions.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 PROGRESS SCHEDULES

- A. Updates – At monthly intervals, update schedule to reflect actual construction progress and activities. Progress Schedule should be provided for review and approval prior to monthly pay request at a mutually agreed upon date each month to enable the City's review to be complete by the agreed upon monthly pay application date. Progress Schedules will be reviewed and discussed at regularly schedule progress meetings. Contractor or Design-Builder shall bring printed copies of CPM Schedule:
1. Revise schedule immediately after an activity revision has been recognized or made at the direction by the City. Issue updated schedule concurrently with the report of each such progress meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate actual completion percentage for each activity.
4. Post copies in Project meeting rooms and temporary field offices.

3.02 MEETINGS

A. Pre-Commencement Meeting for Design-Build Projects :

1. In accordance with Article 2.1.1 of the General Conditions, Contractor or Design-Builder shall schedule and conduct a Pre-Commencement Meeting with Owner. This meeting is separate from the Preconstruction Conference and is intended to discuss issues affecting the administration of the Work and to implement the necessary procedures, including those relating to schedules, communication protocols, precise roles and responsibilities of individuals, HRD submittals, and payment, to facilitate the ability of the parties to perform their obligations under the Contract Documents.
2. Review Payment Procedures as discussed in Contract Documents.
3. Review scheduling requirements. These include but are not limited to schedule preparation, reporting requirements, manpower and equipment loading, updates, revisions, and schedule delay analysis. Contractor or Design-Builder shall present their schedule methodology, planned sequence of operations, resource loading methodology, and proposed activity coding structure.
4. Mobilization and Engineering Schedule, Proposed Baseline Schedule, and Proposed Schedule of Values will also be reviewed, if desired by Contractor or Design- Builder.
5. Minutes: Contractor or Design-Builder shall distribute meeting minutes 1 business day after the meeting.

B. Preconstruction Conference:

1. Contractor or Design-Builder will schedule the Preconstruction Conference to occur before the start of general construction at a time convenient to Owner. Hold the conference at Project site or another convenient location. If Baseline Schedule is not ready for discussion at Preconstruction Conference, Owner and Contractor or Design- Builder may modify, for the purpose of discussion at the Conference, the Mobilization and Engineering Schedule for early construction activities with defined scope and budget.
 - (a) Attendees: Authorized representatives of Owner, Owner's Advisor, Design Professional, Contractor or Design-Builder Key Personnel, major Subcontractors and others as appropriate shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.
 - (b) Agenda: Discuss items of significance that could affect progress, including the following:
 - (1) Owner, Owner's Advisor, Design Professional, and Contractor or Design-Build team member contacts, roles, responsibilities, communication requirements.
 - (2) Distribution of Contract Documents.
 - (3) Submission of Owner-approved updated Subcontractors and Major Material Suppliers List, Schedule of Values, and Baseline Schedule if changed from Pre-Commencement Meeting
 - (4) Schedules and Milestones.
 - (5) Contractor or Design-Builder work zone and office trailer locations.
 - (6) Procedures: Includes change management, document controls, schedule management, submittals management, and RFIs.

- (7) Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and contract closeout procedures.
- (8) Project Record Document Requirements.
- (9) Review of startup requirements and procedures.
- (10) Lockout/tagout procedures and requirements.
- (11) Use of the premises.
- (12) Contractor or Design-Builder and Owner will discuss additional areas for Contractor or Design- Builder access.
- (13) Responsibility for temporary facilities and controls including designation of person responsible for traffic control in accordance with Section 01500 - Temporary Facilities, and 01700 Traffic Control
- (14) Standard vehicle traffic onsite.
- (15) Parking availability.
- (16) Equipment deliveries and priorities.
- (17) OCCPs.
- (18) Project site safety requirements (safety vests, OSHA), and first aid.
- (19) Plant/site Security/Access Procedures.
- (20) Progress cleaning.
- (21) Meetings.
- (22) Working hours.
- (c) Minutes: Contractor or Design-Builder shall record minutes and distribute electronic copies within 1 business days after meeting to participants, with copies to Contractor or Design-Builder, Owner, and those affected by decisions made.
- 2. Prior to Preconstruction Conference, Contractor or Design-Builder shall have submitted the following deliverables for discussion at meeting:
 - (a) Proposed Baseline Schedule.
 - (b) Mobilization and Engineering Schedule (modified as discussed above).
 - (c) Photo and Video Documentation Plan.
 - (d) Construction Safety Plan.
 - (e) List of Operational Change Control Plans lasting longer than one week.
 - (f) Quality Management Plan.
 - (g) Qualifications of Scheduler, Photographer, and any others as required by Specifications.
 - (h) And any other deliverables required by Specifications.
- C. Monthly Progress Meetings:
 - 1. Contractor or Design-Builder will schedule and administer formal progress meetings throughout progress of the Work at maximum monthly intervals with the first meeting scheduled approximately 30 calendar days after the Preconstruction Conference.
 - 2. Contractor or Design-Builder will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
 - 3. Contractor or Design-Builder shall provide printed copies of latest submitted progress schedules and Schedule Update.
 - 4. Attendance Required: Owner, Owner's Advisor, Design Professional, Contractor or Design-Builder's Project Manager, Contractor or Design-Builder's Construction Manager (if different than the Project Manager), as appropriate to agenda topics for each meeting.
 - 5. Agenda shall be reoccurring and approved by Owner. Topics shall include:
 - (a) Review minutes of previous meetings.
 - (b) Review of Work progress and future Work.

- (c) Review of safety record/events.
 - (d) Risk register/log.
 - (e) Change orders.
 - (f) Quality control.
 - (g) Pay application.
 - (h) Schedule reports.
 - (i) Discuss Stored Material for which the Contractor or Design-BUILDER will be requesting payment.
 - (j) Commissioning.
6. Minutes: Contractor or Design-BUILDER will record changes for update and distribute electronic copies within 7 calendar days after meeting to participants and file on Owner's document management system.
- D. Weekly Coordination Meetings:
- 1. Upon start of construction, Contractor or Design-BUILDER will schedule and administer meetings throughout progress of the Work at maximum weekly intervals.
 - 2. Contractor or Design-BUILDER will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
 - 3. Attendance Required: Owner, Owner's Advisor, Design Professional, Contractor or Design-BUILDER's Project Manager, Contractor or Design-BUILDER's Construction Manager (if different than the Project Manager), Commissioning Manager, superintendents, major subcontractors and suppliers as appropriate to agenda topics for each meeting.
 - 4. Agenda:
 - (a) Review of Work progress.
 - (b) Field observations, problems, and decisions.
 - (c) Identification of problems delaying planned progress, hazards and risks.
 - (d) Review of critical submittals.
 - (e) Deviations in the previous week's 4-Week Schedule.
 - (f) Review of critical RFIs, change documents, issues and action items.
 - (g) Review of upcoming OCCPs within 3-week window.
 - (h) Review of offsite fabrication and delivery schedules.
 - (i) Maintenance of Baseline Schedule.
 - (j) Corrective measures to regain projected schedules.
 - (k) Review 5-Week Schedule and planned progress during succeeding work period.
 - (l) Schedule Update, if required in accordance with Paragraph 3.02.
 - (m) Coordination of projected progress.
 - (n) Maintenance of quality and work standards.
 - (o) Effect of proposed changes on Baseline Schedule and coordination.
 - (p) Any requests for stored materials payment
 - (q) Other business relating to Work.
 - 5. Contractor or Design-BUILDER will record minutes and distribute electronic copies within 1 calendar day after meeting to participants and those affected by decisions made.
- E. Daily Coordination Meeting: Upon start of construction, Contractor or Design-BUILDER shall hold daily informal meetings with the Owner to discuss planned daily activities by the Contractor or Design-Build team and Owner staff. Owner may elect to merge this meeting with the Division's regular morning meetings.
- F. OCCP Coordination Meetings:
- 1. Contractor or Design-BUILDER shall schedule and coordinate with Owner one-week prior to implementation of approved OCCP.
 - 2. Agenda:

- (a) Review Approved OCCP.
 - (b) Review safety requirements and preparations.
 - (c) Review contingency plans.
 - (d) Confirm resource availability for execution of OCCP.
- 3. Contractor or Design-Builder may request and coordinate additional meetings with Owner as necessary to facilitate completion and approval of draft OCCPs. Owner will make reasonable effort to accommodate Contractor or Design-Builder but prefers minimum one week notice.
- G. Pre-Installation Conferences:
 - 1. Conduct a Pre-Installation Conference at Project site before each construction activity that requires coordination with other construction or moving heavy equipment within reach of the railroad. Work around railroads shall be coordinated in accordance with Section OR-01500 - Temporary Facilities.
 - 2. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Owner of scheduled meeting dates.
 - 3. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - (a) Contract Documents.
 - (b) Options.
 - (c) Related Change Orders.
 - (d) Purchases.
 - (e) Deliveries.
 - (f) Submittals.
 - (g) Possible conflicts.
 - (h) Compatibility problems.
 - (i) Time schedules.
 - (j) Weather limitations.
 - (k) Manufacturer's written recommendations.
 - (l) Warranty requirements.
 - (m) Compatibility of materials.
 - (n) Acceptability of substrates.
 - (o) Temporary facilities and controls.
 - (p) OCCPs.
 - (q) Space and access limitations.
 - (r) Regulations of authorities having jurisdiction.
 - (s) Testing and inspecting requirements.
 - (t) Required performance results.
 - (u) Protection of construction and personnel.
 - 4. Record significant conference discussions, agreements, and disagreements.
 - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- H. Expedited Submittal Review Meetings: To expedite the submittal process and accelerate the delivery schedule for equipment with long delivery lead times, expedited submittal review meetings may will need to be held for equipment identified by the Contractor or Design-Builder. Contractor or Design-Builder shall identify such meetings on Baseline Construction Schedule and coordinate the meetings as needed.

- I. Required Submittal Review Meetings: Work in the following Specifications shall require a workshop prior to submittals in order to streamline the review process.
 - (a) Section 13384 – Configuration of HMI Software including a standards and conventions workshop, draft graphics review meeting and field testing coordination meeting.
 - (b) Section 11330 - Mechanical Bar Screens
 - (c) Section 16134 - Medium-Voltage, Metal-Clad Switchgear
 - (d) Section 1648 - Low Voltage Motor Control Centers
 - (e) Section 16113 – Secondary Unit Substations with Switchboards Secondary
- J. Other Meetings as Required:
 - 1. Maintenance Workshop(s):
 - (a) Purpose: Develop the work orders for new and modified assets with the Owner. Contractor or Design-Builder shall review Original Equipment Manufacturer (OEM) O&M manual maintenance recommendations with Owner. Maintenance activities (Preventive & Predictive) will be divided between operations and maintenance. The updated round sheets for the site(s) will be reviewed for deficiencies. Contractor or Design-Builder shall facilitate a discussion of which OEM recommended maintenance activities have value after the warranty period. If necessary, the Contractor or Design-Builder and Owner will develop additional maintenance activities not recommended by the OEM with a particular focus on predictive maintenance activities such as vibration testing, lubricant testing, and IR testing to support the Owner's reliability centered maintenance program. Maintenance activity frequency will also be discussed. Lubrication for assets will be discussed with a focus on minimizing new lubricants that will need to be stocked.
 - (b) Scheduling: Meetings shall occur after OEM manuals have submitted and approved.
 - 2. Sequence of Operations Meeting(s):
 - (a) Schedule: During design, after draft sequence of operations are completed.
 - (b) Purpose: Walk Owner's operations staff and engineering staff through the proposed sequences of operation to control equipment and processes and solicit comments and refinements.
 - 3. Facility Data Workshop:
 - (a) Purpose: Any points communicated to a PLC and not SCADA will be discussed. Alarm set point and priority will be reviewed and developed. Historian settings for each point will also be developed or reviewed.
 - (b) Scheduling: After draft sequence of operations is completed and finalized PIDs.
 - 4. O&M Data Meeting
 - (a) 90 days prior to Substantial Completion, a meeting will be held to discuss the steps to prepare the O&M Data for transmittal to the City.
 - 5. Spare Parts Coordination Meeting
 - 6. Commissioning meetings as required in Section 01757 - Commissioning.

END OF SECTION



DAILY FIELD OBSERVATION REPORT

Project Number _____

Project Title _____

Contractor _____

Report Number _____ Date _____ Time _____

Weather

☐ Clear ☐ Snow
☐ Overcast ☐ Foggy
☐ Rain ☐ Cold

☐ Warm
☐ Hot
☐ Temperature Range _____

Site Conditions

☐ Clear ☐ Dusty
☐ Muddy ☐ _____
☐ Temperature Range _____

Day

☐ Monday ☐ Thursday
☐ Tuesday ☐ Friday
☐ Wednesday ☐ _____

Persons Contacted: _____

Work Observed: _____

Items Discussed: _____

Materials Delivered: _____

Requested Revisions or Interpretations: _____

Nonconforming Work Reported This Date To Contractor: _____

Remarks: _____

☐ Attachments _____

Signed by: _____

Date: _____

Distribution:

- ☐ Owner
☐ Contractor
☐ Construction Manager
☐ Design Professional
☐ Consultant _____
☐ Other _____



PERIODIC FIELD OBSERVATION REPORT

Project Number _____

Project Title _____

Contractor _____

Report Number _____ Date _____ Time _____

Weather

☐ Clear ☐ Snow
☐ Overcast ☐ Foggy
☐ Rain ☐ Cold

☐ Warm
☐ Hot
☐ Temperature Range _____

Site Conditions

☐ Clear ☐ Dusty
☐ Muddy ☐ _____

Day

☐ Monday ☐ Thursday
☐ Tuesday ☐ Friday
☐ Wednesday ☐ _____

Persons Contacted:

Work Observed:

Items Discussed:

Remarks:

☐ Attachments

Signed by:

Date:

Distribution:

- ☐ Owner
☐ Contractor
☐ Construction Manager
☐ Design Professional
☐ Consultant _____
☐ Other _____



WEEKLY REPORT OF WORKING DAYS

Project Number _____

Project Title _____

Contractor _____

Report Number _____ Week Ending: _____

DATE:	WORKING DAY	REMARKS			
TOTAL THIS WEEK	PREVIOUSLY	TOTAL TO DATE	WORKING DAYS IN CONTRACT	REMAINING OR OVERTIME	

Signed by OWNER'S REPRESENTATIVE _____

Date: _____

Signed by CONTRACTOR _____

Date: _____

Distribution: ☐ OWNER ☐ CONTRACTOR ☐ Construction Manager ☐ Design Professional ☐ Consultant ☐ Other

SECTION 01322 – PHOTOGRAPHIC AND VIDEO DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section outlines the requirements for photographic and video documentation. The Contractor/Design-Builder is solely responsible for the development of an overall plan to fully document Site conditions and the progress of the Work.
- B. The Contractor/Design-Builder shall hire a professional photographer to provide the services and deliverables described herein.
- C. This section does not include work associated with internal closed-circuit television (CCTV) inspections of sewer gravity pipes. Refer to Divisions 2 through Division 16.

1.02 RELATED SECTIONS

- A. Section 00700 – General Conditions.
- B. Section 01015 – Specific Project Requirements.
- C. Section 01300 – Submittals.
- D. Section 01019 – Closeout Procedures
- E. Section 01021 - Operation and Maintenance Data
- F. Section 01664 – Training
- G. Section 01757 - Commissioning
- H. Section 01320 – Construction Progress Documentation.
- I. Section 01335 – Document Management.
- J. Section 02686 – CCTV Inspection of Sewer Mains.

1.03 DEFINITIONS

- A. Pre-Construction Video: A video taken to document Site(s) conditions prior to the start of construction.
- B. Pre-Construction Photographs: 360 Degree photographs taken to document Site conditions prior to the start of construction. All Pre-Construction Photographs shall be digital, indexed on an interactive map and shown on a View Location Map.
- C. Construction Progress Photographs: 360 Degree digital photographs taken to document the progress of construction.
- D. Construction Activity Photographs: Digital photographs taken to document specific construction activities.
- E. Post-Construction Photographs: Digital photographs taken after final restoration to document the finished condition of the Site.
- F. Record Photographs: Digital Photographs of all assets effected by the project. Photos taken after Substantial Completion are preferred for assets that are visible then obscured by the project. Assets obscured during the project will have their record photos taken as needed throughout the project.
- G. Affidavit of Authenticity: The photographer's signed and notarized affidavit, attesting to the production of the original photographs, videos and their authenticity.

1.04 SUBMITTALS

- A. Submit as specified in Section 01300 – Submittals.
- B. Other required Submittals:

1. **Photographer's Qualifications:** Submit for review and approval the qualification information demonstrating the photographer meets the requirements of paragraph 1.06 of this Section.
2. **Phasing Plan:** If applicable, submit for review and approval a phasing plan for Pre-Construction Photographs and Videos.
3. **Pre-Construction Photographs:** Submit for review and approval digital pre-construction photographs with an interactive index map, Photograph Navigation System (see paragraph 2.05 of this Section) and affidavit of authenticity.
4. **Pre-Construction Video:** Submit for review and approval a pre-construction video with a Video Navigation System (see paragraph 2.05 of this Section) and affidavit of authenticity (see paragraph 1.04 of this Section).
5. **Construction Progress Photographs:** On a monthly basis, submit digital construction photographs, interactive index map and affidavit of authenticity.
6. **Construction Activity Photographs:** On a monthly basis, submit digital activity photographs (if different than progress photographs), interactive index map and affidavit of authenticity.
7. **Record Photographs:** Maintain an active directory of tagged Record Photographs by asset.
8. **Post-Construction Photographs/Video:** Submit for review and approval digital post-construction photographs or video, interactive index map and affidavit of authenticity.

1.05 QUALITY ASSURANCE

- A. The Contractor/Design-Builder is responsible for the quality assurance and quality control of the Work.
- B. **General Quality:** Photographs and video shall be clear and of sufficient quality to show relevant detail. They shall not be blurred, taken in shadow or too far away to provide conclusive information. The City may require that the photographs or video be retaken should the quality be insufficient. Costs for such re-takes are the Contractor/Design-Builder's sole responsibility and shall be done at no extra cost to the City.
- C. **Qualifications of Photographer:** The Contractor/Design-Builder shall engage the services of a professional photographer with a minimum of 3 years of experience in construction photography to document the conditions of the project site. Upon request, samples of the photographer's prior work and/or references shall be submitted.
- D. **Affidavit of Authenticity:** The Contractor/Design-Builder shall provide the photographer's signed and notarized affidavit, attesting to the production of the original photographs, videos and their authenticity. An affidavit of authenticity shall be provided with each submittal/deliverable.

1.06 MINIMUM REQUIREMENTS

- A. The section specifies several different sets of photographic and video documentation requirements. The extent of documentation will depend upon the size and type of the project. The following table summarizes the basic documentation requirements.

Set of Documentation	Mandatory
Pre-Construction Video	✓
Pre-Construction Photographs	✓
Interactive Index Map	✓
Construction Progress/Activity Photographs	✓

Set of Documentation	Mandatory
Record Photos	✓
Post-Construction Photographs/Video	✓

1.07 OWNERSHIP

- A. The photographs and videos shall become the sole property of the City.

1.08 SCHEDULES

- A. Schedule of Values: Photographic/Video documentation shall be listed as one line item in the Schedule of Values.
- B. Construction Progress Documentation: Each set of photographs or videos shall be listed in the Preliminary Project Schedule as a discrete activity. See Section 01320 – Construction Progress Documentation.

1.09 PHASING

- A. Based on the nature and scope of the Work, the Contractor/Design-Builder may phase the Pre-Construction Photographs and Video if pre-approved by the City's Representative. If phasing is to be implemented, the following shall apply:
 - 1. The Contractor/Design-Builder shall submit a Phasing Plan that identifies each area of the Work.
 - 2. For each phase, Pre-Construction Photographs and Videos shall be taken within 21 days of the start of construction activities unless otherwise approved in writing by the City's Representative.
- B. Under no circumstances shall construction begin in any area until the Pre-Construction Photographs and/or Video have been submitted and approved by the City or Designee.

PART 2 - PRODUCTS

2.01 PHOTOGRAPH QUALITY

- A. Photographic images shall be captured in digital format, with a minimum of 10-megapixel resolution and taken without JPG compression.
- B. Each photograph shall include a date/time stamp in the image, showing when the image was taken.

2.02 VIDEO QUALITY

- A. All video recordings shall be captured in full 1080-dpi Hi-Definition digital format, without compression or file-reduction whether applied in-camera or after capture during editing.
- B. The original video segments shall be retained in the format captured in camera (such as MP4) without compression or modification that would reduce resolution or quality. The video shall include a date/time stamp in the image, showing when the image was taken. Video shall include verbal description and narrative of what is being captured.

2.03 METADATA

- A. Digital files for photographs (Non-Record Photos) and videos shall, at a minimum, contain the following metadata:
 - 1. Project Name.
 - 2. Project Area
 - 3. Date and Time Taken.

4. All other metadata inherently provided by the camera/video equipment.
- B. Record Photos shall be metadata tagged per the City's Record File Tagging.

2.04 MEDIA LOG

- A. The Contractor/Design-Builder shall maintain a media log (photographs and videos) for the project. The log shall include, but is not limited to, the following information for each photograph and/or video:
 1. Project Name.
 2. Project Number.
 3. Contract Number.
 4. Name of City and Department.
 5. Name of Contractor/Design-Builder.
 6. Name of Design Professional.
 7. Photograph file name (the specific format should be tied to the project name).
Photograph file name shall be unique to each digital file and shall be embedded in the digital image in a manner that is permanent and clearly legible when the file is opened.
 8. Include a date designator in file names.
 9. Date the photograph was taken.
 10. The name of the photographer who took the photograph.

2.05 PHOTOGRAPH AND VIDEO NAVIGATION SYSTEM

- A. The Contractor/Design-Builder shall provide an electronic photographic and video navigation system (navigation system) for searching and viewing recorded imagery.
- B. Interactive Index Map: The navigation system shall indicate the general location of each area photographed or video recorded using icons and other suitable mark-ups on the actual construction drawings in PDF-format. The map shall be filterable by project area, system, and sub-system.
- C. The navigation system shall utilize standard PDF-reader software (such as Adobe Reader, Acrobat, or Bluebeam Vu) or other software that shall be included with the deliverables. Icons shall be individually hyperlinked to the respective photograph, video, affidavit of authenticity and media log file for immediate playback in Windows Media Player, VLC or other players.
- D. The navigation system shall include the following:
 1. Project Name.
 2. Project Number.
 3. Contract Number.
 4. Name of City.
 5. Name of Contractor/Design-Builder.
 6. Name of Design Professional.
 7. Ranges of dates for which the photographs or videos were taken.
 8. Facility
 9. System
 10. Sub-System
 11. Asset if intelligible
 12. The name of the photographer.
 13. Affidavit of Authenticity.
 14. Media Log.
 15. Photographs.
 16. Videos.
- E. A navigation system shall be provided for each set of photographs and videos taken.

PART 3 - EXECUTION

3.01 PRIOR TO PHOTOGRAPHIC AND VIDEO DOCUMENTATION

- A. Construction Limits: Prior to the Pre-Construction Photographs and Video, the Contractor/Design-Builder shall flag or mark the construction limits and excavation.
- B. Mark Utilities: Prior to the Pre-Construction Photographs or Video, the Contractor/Design-Builder shall notify utilities and have them marked so that utility locations are documented.
- C. Coordinate with City to be present during the Pre-Construction Photos; the Contractor/Design-Builder shall provide the City a minimum of 2 days' notice.

3.02 PRE-CONSTRUCTION VIDEO

- A. Scope: Prior to the start of construction, the Contractor/Design-Builder shall prepare a color video recording with audio of all the areas to be affected by construction. All pre-construction video recordings shall have sufficient detail to reveal the condition (including defects and damage) of all existing features, such as pavement, driveways, culverts, inlets, sidewalks, landscaping, vegetation, creek banks, trees, structures, foundations and other such items along the construction route and in the immediate adjacent areas, which might be affected by the construction operations. In addition, the videographer shall move beyond the construction zone as needed to ensure documentation of features and areas that may not be adequately recorded from the centerline rotations. Videos shall be taken on both sides of the street when construction is in or along a roadway (use this approach along drainage channels and in other similar situations).
- B. Schedule: Taken after utilities and other underground structures/assets have been marked and prior to the placement of materials or equipment on the Site. Videos shall be submitted to the City for review and approval. Under no circumstances shall construction begin until the pre-construction video has been submitted and approved.
- C. The pre-construction video recording shall be done in the presence of a representative of the City.
- D. The Contractor/Design-Builder shall document all pre-existing site conditions/elements of the Site, the same as listed for the Pre-construction Photographs.
- E. The video documentation shall provide a clear and continuous view of the project showing all visible utilities and features within the limits of construction.
- F. To preclude the possibility of tampering or editing in any manner, all video recordings shall, by electronic means, generate and display continuously and simultaneously on the screen or in the video file metadata properties digital information to include the date and time of recording. The time information shall consist of hours, minutes and seconds, separated by colons (i.e., 10:35:18).
- G. The audio/video recording shall consist of one video and one audio track which shall be recorded simultaneously. All tracks shall consist of the original live recordings and thus shall not be copies of other audio or video recordings.
- H. The audio track shall contain the narrative commentary. Ample descriptive narrative shall be recorded simultaneously during all recordings. Narration shall include clearly audible comments that will deliver station number and/or street address, locations, direction of view and rotation.
- I. Typical video segments should not exceed 10 minutes in length.
- J. Rotations of 360-degrees shall be at all locations being photographed and necessary to see all site conditions.
- K. Panning rate, zoom-in rate and zoom-out rate shall be controlled sufficiently such that playback will provide clarity of the object viewed.

- L. All recording shall be done during times of good visibility. No recording shall be done during periods of precipitation unless authorized by the City.

3.03 PRE-CONSTRUCTION PHOTOGRAPHS

- A. Scope: The purpose for pre-construction photo documentation is to record existing conditions, damage and features on or adjacent to the project site. The principal reason for obtaining photographs is so that existing conditions located in the Project Site may be clearly shown and documented in the event of a dispute. Contractor is required to notify the City within 2 weeks if the Pre-Construction Video or Photographs differ from the bid documents.
- B. Schedule: Take photographs after underground assets and utilities have been marked, prior to placement of materials or equipment on the Site and prior to the start of construction activities in an area. Photographs shall be submitted to the City for review and approval. Construction shall not begin until the pre-construction photographs have been submitted and approved.
- C. Pre-construction photographs shall be taken at sufficient intervals to be able to carefully document the pre-construction conditions of the Site before commencement of the Work. Photos shall be 360 views.
- D. In addition, select photographs shall be taken as needed along the construction limits.
- E. Overlapping composition techniques shall be employed to ensure maximum photographic coverage.
- F. Pre-construction photographs shall be taken after underground utilities and assets have been marked.
- G. Pre-construction photographs shall be taken with a representative of the City present unless otherwise authorized by the City.
- H. All Pre-Construction Photographs shall have sufficient detail to reveal the condition (including defects and damage) of all existing features.
- I. Pre-Construction Photos shall have an overlapping 360 view of the project area inside and outside structures/buildings.
 - 1. Views of structures, both inside and adjacent to the ROW/easement in areas where the Contractor/Design-Builder will be working within five (5) feet of said structure.
 - 2. Other views as requested by the City.

3.04 CONSTRUCTION PROGRESS PHOTOGRAPHS

- A. Scope: The Contractor/Design-Builder shall provide construction progress photographs to depict the progress of the work. The Contractor/Design-Builder shall be responsible for photographs of the Site to show the existing and general progress of the Work. The City will advise as to which views are of interest.
- B. Schedule: Photographs shall be taken at the time of the Pre-construction Photographs, a minimum of once per month throughout the duration of the Project, and at the time of the Post Construction Photographs. Construction Progress Photographs are to be submitted each month with the Contractor/Design-Builder's Application for Payment.
- C. This set of photographs will be taken as close as possible to the same locations and views of the pre-construction photography.

3.05 CONSTRUCTION ACTIVITY PHOTOGRAPHS

- A. Scope: The Contractor/Design-Builder shall provide photographs taken to document Site conditions and specific construction activities throughout the duration of the Project.
- B. Schedule: Photographs shall be taken two times per month (every two weeks) for the duration of the Project.

- C. Construction Activity Photographs are to be submitted each month with the Contractor/Design-Builder's Application for Payment.
- D. Photographs shall be taken to depict the work accomplished during the month. These photographs are to include, but are not limited to, the following:
 - 1. Work not yet obscured.
 - 2. All assets that will be obscured by future work shall be photographed after work on the asset is completed and prior to the asset being obscured.
 - 3. When mechanical, electrical, plumbing or building inspections are scheduled.
 - 4. The beginning of installation of major items of equipment.
 - 5. After installation of major items of equipment.
 - 6. Other significant construction activities.
 - 7. As directed by the City.

3.06 POST-CONSTRUCTION PHOTOGRAPHS

- A. Scope: The Contractor/Design-Builder shall provide Post-Construction Photographs of the project area that documents the final restoration and construction improvements. Post-Construction photographs shall show the general condition of the construction zone (recording finished landscape and other restoration, plus construction improvements), and other areas that may have been affected by construction activities.
- B. Schedule
 - 1. Photographs shall be taken after completion of the Substantial Completion punch list when the project is complete, the Site is restored to the satisfaction of the City, and before submission of the Application for Final Payment.
 - 2. Post-construction photographs shall be taken after all items have been address from the Substantial Completion inspection, after cleanup and site restoration, and before application for final payment.
- C. Post-Construction Photographs are to be submitted with the Contractor/Design-Builder's Application for Final Payment.
- D. The Contractor/Design-Builder shall coordinate the schedule of the post-construction photographs with the City's Project Manager and shall provide at least 5 days written notice to allow the City's Representative to be present when the photographs are taken.

3.07 POST-CONSTRUCTION VIDEO

- A. Scope: The Contractor/Design-Builder shall prepare a color video recording with audio of all the areas affected by construction. All Post-Construction video recordings shall have sufficient detail to reveal the final, restored condition of all existing assets and in the immediate adjacent areas, which might have been affected by the construction operations. In addition, videographer shall move beyond the construction zone as needed to ensure documentation of features and areas that may not be adequately recorded.
- B. Schedule: The post-construction video shall be taken in conjunction with the post-construction photographs.
- C. Post-construction videos are to be submitted with the Contractor/Design-Builder's Application for Final Payment.
- D. Unless otherwise authorized by the City, the post-construction video recording shall be done with a representative of the City present.
- E. The Contractor/Design-Builder shall document all post-construction site conditions/elements of the Site as listed for the post-construction Photographs.
- F. The video documentation shall provide a clear and continuous view of the project alignment showing all visible utilities and features within the limits of construction.

- G. To preclude the possibility of tampering or editing in any manner, all video recordings shall, by electronic means, generate and display continuously and simultaneously on the screen digital information to include the date and time of recording. The time information shall consist of hours, minutes and seconds, separated by colons (i.e., 10:35:18).
- H. The audio video recording shall consist of one video and one audio track which shall be recorded simultaneously. All tracks shall consist of original live recordings and thus shall not be copies of other audio and video recordings.
- I. The audio track shall contain the narrative commentary. Ample descriptive narrative shall be recorded simultaneously during all recordings. Narration shall include clearly audible comments that will deliver station number and/or street address locations, direction of view and rotation.
- J. Typical video segments should not exceed 10 minutes in length.

3.08 RECORD PHOTOGRAPHS

- A. Scope: Record photographs are a subset of post-construction and construction progress photos that give a view of an effected, modified, updated, or new asset in a project.
- B. The photos are to be post-construction photos wherever practical. Construction Progress Photos shall be utilized when an asset will be obstructed by later portions of the project.
- C. Record Photos shall be taken of the asset from every feasible angle.
- D. All Record Photos shall be tagged per City Record File Tagging Standards.

3.09 DELIVERABLES

- A. Delivery of the documentation record shall be made as soon as is practical after the images are recorded. Deliverables include original photographs in JPG format, photographs converted to pdf format, interactive map index and navigation system.
- B. Electronic Storage Devices: Submit the navigation system on a non-returnable USB compatible flash drive. Submittals shall conform to the following:
 - 1. Submit with the monthly invoice two sets of digital photographs and/or videos. Each set shall be contained on a separate electronic storage device.
 - 2. Each set shall be cumulative of all photographs and/or videos taken to date.
 - 3. Affidavit(s) of Authenticity shall be included in a digital format.
- C. Document Management System: Unless otherwise noted in Section 01015 – Specific Project Requirements, all deliverables shall be provided in an electronic format using the specified document management system and in accordance with paragraph 1.05 of this Section.

END OF SECTION

SECTION 01329 – SAFETY PLAN

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the development and maintenance of a Construction Safety Plan.

1.02 REFERENCES

- A. National Fire Protection Association (NFPA):
 - 1. 70E - Standard for Electrical Safety in the Workplace.
- B. Occupational Safety and Health Administration (OSHA).
- C. Section 01300 Submittal Procedures.

1.03 CONSTRUCTION SAFETY PLAN

- A. Detail the Methods and Procedures to comply with NFPA 70E, Federal, and Local Health and Safety Laws, Rules and Requirements for the duration of the Contract Times. Include reference to and comply with latest Owner safety policies. Include the following:
 - 1. Identification of the Certified or Licensed Safety Consultant (Safety Officer) who will prepare, initiate, maintain and supervise safety programs, and procedures.
 - 2. Procedures for providing workers with an awareness of safety and health hazards expected to be encountered over the course of construction.
 - 3. Safety equipment appropriate to the safety and health hazards expected to be encountered during construction including hydrogen sulfide (H₂S), asbestos, and lead. Include warning devices, barricades, safety equipment in public right-of-way and protected areas, safety equipment used in multi-level structures, and personal protective equipment (PPE) as required by NFPA 70E.
 - 4. Methods for minimizing employees' exposure to safety and health hazards expected during construction including entrance to tanks, such as digesters, and confined spaces used in the operation of the treatment plant and demolition.
 - 5. Procedures for reporting safety or health hazards.
 - 6. Procedures to follow to correct a recognized safety and health hazard.
 - 7. Procedures for investigation of accidents, injuries, illnesses, and unusual events that have occurred at the construction site.
 - 8. Periodic and scheduled inspections of general work areas and specific workstations.
 - 9. Training for employees and workers at the jobsite.
 - 10. Methods of communication of safe working conditions, work practices and required personal protection equipment.
 - 11. Provision of a site-specific emergency action and evacuation plan during normal operations as well as when site access is blocked by trains.
- B. Submit draft Safety Plan to Owner in accordance to Section 01300 Submittal Procedures for review prior to the Pre-Construction Meeting. The Safety Plan shall be a discussion topic on the agenda for the Pre-Construction Meeting. Following the Pre-Construction Meeting, Design-Builder shall submit final Safety Plan for Owner review within two weeks.

- C. Design-Builder Assume assumes sole responsibility for every aspect of Health and Safety on the jobsite, including the health and safety of subcontractors, suppliers, and other persons on the jobsite:
 - 1. Forward available information and reports to the Safety Consultant Officer who shall make the necessary recommendations concerning worker health and safety at the jobsite.
 - 2. Employ additional health and safety measures specified by the Safety Consultant Officer, as necessary, for workers in accordance with OSHA guidelines.
- D. Timely Transmit to Owner and Engineer copies of reports and other documents related to accidents or injuries encountered during construction in accordance with Section 01300 Submittal Procedures.
- E. Smoking
 - 1. There is no smoking allowed in buildings or within 50 feet of Digesters and NFPA classified areas and envelopes.
 - 2. No smoking will be allowed in facilities once they are closed in.
 - 3. No smoking will be permitted anywhere on the site following delivery of chemicals.
 - 4. Smoking is only allowed in Owner designated areas.
 - 5. Design-Builder shall provide signage identifying designated smoking areas, and when any changes to the designated areas are made.
 - 6. Design-Builder will be responsible for cleaning up cigarette butts..

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

End of Section



TRANSMITTAL LETTER

Project Number _____

Project Title _____

TO: _____ Date _____

ATTN: _____ Re: _____

We are sending you ☐ Attached ☐ Under separate cover via _____ the following items:
☐ Shop Drawings ☐ Prints ☐ Drawings ☐ Samples ☐ Specifications
☐ Copy of Letter ☐ Change Order ☐ _____

Copies	Date	No.	Description

These are transmitted as checked below:

☐ For Approval ☐ Approved as Submitted ☐ Resubmit _____ Copies for Approval
☐ For Your Use ☐ Approved as Noted ☐ Submit _____ Copies for Distribution
☐ As Requested ☐ Returned for Corrections ☐ Return _____ Corrected Prints
☐ For Review and Comment ☐ _____

Remarks: _____

By: _____

Distribution: ☐ Owner
☐ Contractor
☐ Construction Manager
☐ Design Professional
☐ Consultant
☐ Other

SECTION 01335 –DOCUMENT MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. An internet-based coordination and document management systems (DMS), e-builder & B2G, will be used for the Project. This system will be used to manage project documentation among the City (and/or Designee) , Contractor (or Design-Builder) and Engineer of Record. The Contractor or Design-Builder shall utilize the document management system for all project related correspondence and documentation.
- B. The DMS will be utilized to create, track and organize project documentation (City's Representative will provide the exceptions), including, but not limited to, the following:
 - 1. Schedules.
 - 2. Applications for Payment.
 - 3. Meeting minutes with action items.
 - 4. Project correspondence.
 - 5. Shop Drawing and Sample(s) Submittals.
 - 6. Transmittals.
 - 7. Change Management:
 - (a) General Contractor Requests for Interpretation.
 - (b) Proposal Requests.
 - (c) Work Change Directives. (Storage only)
 - (d) Change Orders.
 - 8. Reporting:
 - (a) Certified Payroll Report. (B2G)
 - (b) Subcontractors and Major Material Suppliers List. (B2G)
 - (c) Daily Labor Force Reports. (B2G)
 - (d) Daily Inspection Reports.
 - (e) Photographs and Video.
 - (f) Certificate of Achievement of Full Operation.
 - (g) Contractor Affidavit for Final Payment.
 - (h) Subcontractor Affidavit for Final Payment.
 - (i) Punch Lists.
 - 9. Notifications:
 - (a) Correction of Defective Work.
 - (b) Notification of Non-Compliant Work.

1.02 RELATED SECTIONS

- A. General Conditions of Contract Between Owner and Design-Builder
- B. Section 01300 – Submittals.

1.03 COORDINATION MEETING

- A. Prior to the pre-construction conference, the City will facilitate a meeting with the Contractor or Design-Builder to review requirements for project coordination, document control and use of the DMS. The meeting should be scheduled to allow

the Contractor or Design-Builder time to submit the initial project correspondence, other requirements and preliminary schedules in accordance with General Conditions

- B. At this meeting, the City will present the procedures to be used for document management for the Project.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01340 - PROJECT BIM COORDINATION

PART 1 - GENERAL

1.01 SUMMARY OF WORK

- A. This section covers Building Information Modeling (BIM) enabled projects.

1.02 Related Sections

- A. 01000 – General Requirements
- B. 01019 – Closeout Procedures
- C. 01615 – Equipment Identification & Tagging
- D. 01340.A - Attributes
- E. Kansas City Water Services Department Design Standards – CAD Drawing Standards

1.03 CODES AND SECTIONS

- A. Not Applicable

1.04 DEFINITIONS

A. General Definitions

1. BIM – Building Information Model
2. Design Phase – The overall design is broken into separate stages. Each phase is a certain level of development.
3. LIDAR - This is an acronym for Light Detection and Ranging. This method measures distances using laser light and measuring the reflection with a sensor. This is also called 3-D Laser Scanning.
4. Modeled Object – An equipment asset created in BIM. Modeled objects are tagged using a parent-child-grandchild data structure with CMMS tag level 6 is the parent, CMMS tag level 7 is the child, CMMS tag level 8 is the grandchild. The grandchild inherits data from the child and the child inherits data from the parent.
5. Overlay – Placing an object over the surface of another of another object thus allowing the object to be visible on drawings or other deliverables by viewer.
6. Point Cloud - A set of data points in space used for capturing existing conditions of any site.
7. Relative File Path – a defined location relative to BIM’s current directory
8. Site Types
 - a. Brownfield – Project locations with hazardous materials at in existing in-use facilities by City.
 - b. Grayfield - Project locations with existing in-use facilities by City.
 - c. Greenfield – Project locations with no in-use facilities by City.
9. Standard Component – Any valve, pipe, duct, fitting, cable, cable tray, conduit, wiring, or structural member where aforementioned component is dimensionally defined in a Design Standard.
10. State Plane Coordinate System – U.S. Coordinate system used by each U.S. state and has between one to six zones depending on size and shape.

B. Software Definitions

1. Software Packages
 - a. BIM 360 – Autodesk BIM software that shows the latest published Revit 3D models for design collaboration between Owner and Contractors.
 - b. CMMS – Computerized Maintenance Management System used for operation and maintenance of facility assets. CITY’s current CMMS is Hansen Infor™.
 - c. Revit – Autodesk software used for Building design, Foundation design, Structural design, and MEP design.
2. CMMS
 - a. CMMS Parameters – Fields within Autodesk Revit associated with identifying and describing an asset or equipment item. These fields allow for the creation of unique identifiers for each piece of equipment, and allowing for synching with CITY’s CMMS. Refer to Section 013124.A – BIM Attributes.
 - b. CMMS Synching – Process that integrates the BIM model with CMMS.
3. CMMS Facility Key – Unique identifier used in City’s asset management system. The asset management system relies on this unique identifier to incorporate all information collected into the asset management system. This may hereinafter also be referred to as the Comp Key.
4. Dynamic – Any item, field, attribute, or other component which receives an active input from a source other than by a manual user.
5. Parameter – Fields with populated values in BIM modeling software. In Autodesk Revit, these are commonly referred to as family parameters.
6. Publish – The process of pushing any model changes into cloud-based BIM software for the purpose of coordination between interdisciplinary and inter-organizational teams
7. Static – Any item, field, attribute, or other component which requires manual edit to change its value.

1.05 BIM INFORMATION PROVIDED BY OWNER

A. Existing

1. Existing survey information, GIS data, 2D drawing documents, and existing BIM models will be shared with BIM responsible person(s).
2. Non-available information will be determined prior to commencing any site visits. If needed, non-available information will be collected while on site and incorporated into the BIM model. Site visits may also identify any additional information needed for completion of Work and needed to be included in the BIM model.
3. CITY may provide a template from Revit, or BIM 360 before commencement of Work by Design Professional.
4. CITY encourages the use of LIDAR for documenting conditions due to increased efficiency over other methods.
5. CITY will provide CMMS Facility Key information for existing assets in CMMS.

1.06 BIM INFORMATION PROVIDED BY DP

A. General

1. All BIM-related design shall be performed in Autodesk Revit.

- a. Prior to commencing Work, DP shall confirm which software version to perform Work in.
 - b. Scope of BIM Work that may be performed using Autodesk Revit and loaded to a cloud-based location.
2. DP shall keep a published file for each BIM model revision used for design reviews for the purpose of traceability.
3. All standard pipe, fittings and other components shall be easily identifiable and in addition to geometric dimensions, each standard component shall be specified enough such that it may be furnished and installed from provided design documentation. These components may be pulled from existing catalogs; however, they shall adhere to all data requirements.
 - a. Pipe and fittings
 - b. Conduit, Cable Tray
 - c. Ductwork
 - d. Major Structural, and Architectural Elements
 - e. Electrical Housing
 - f. Instrumentation & Controls Housing
4. DP shall not add any level 7 equipment tags to BIM without CITY approval.
5. Tolerances
 - a. Equipment locations shall be within a 1" tolerance. If equipment is installed on foundations with cast-in-place, tolerances shall be tightened such that the equipment aligns with foundations.
 - b. All equipment component dimensions in BIM model shall have tolerances no greater than 1/4" and representative of the dimensions for all buildings, tanks, equipment, piping, valves, and appurtenances used during project construction.
 - c. BIM tolerances will be within the GIS snapping tolerances required for a utility trace. DP shall tighten the tolerance of only the equipment items needed for a GIS utility trace.
- B. Existing Facility Assets
 1. If the project has a tie-point to an existing asset, it is the DP's responsibility to include all component information needed to complete the tie-in into the BIM model.
 2. Existing underground utilities shall use 2D representation.
 3. For parameters of exiting assets with missing information and requires an input by software, DP may use the text "N/A".
- C. Equipment and Component Specifications
 1. All final submittals from Suppliers shall be provided to DP for integration into the BIM model.
 2. For equipment packages, actuated valves, instruments, and piping specialty items, a hyperlink shall be used to connect aforementioned items in the BIM model to the project network location for all equipment with a Level 8 code.
- D. BIM Parameters
 1. DP shall assign equipment tags per Section 01615 – Equipment Identification and Tagging.
 2. There shall be a BIM parameter for each field found in CITY's CMMS.
 3. Equipment O&M Hyperlinks

- a. All equipment must have parameters added and grouped in accordance with the CITY attribute standards.
- b. In Revit, all CMMS parameters will be located within the “Identity Data” parameter group.
- c. In Revit, All facility asset parameters will be located within the “Data” parameter group.
- d. In Revit, all layer parameters will be located within the “Layer” parameter group.
4. Parameters that are not applicable for components shall be filled in with the text “N/A”

1.07 COORDINATION

- A. The coordinate system used for all BIM projects shall be the Missouri Coordinate System of 1983, West Zone and NAVD 88 Datum.
- B. CITY and DP will coordinate project phases and the corresponding LOD for each phase before starting any pre-design work or design work using BIM.
- C. CITY preference is to have read-only access to current working models and to be able to download a copy of recently published versions of models.
- D. It is CITY’s responsibility to integrate BIM with City CMMS. Procedure following is provided as a courtesy.
 1. Tagging of all new equipment shall be per Section 01615 – Equipment Identification and Tagging.
 2. Newly assigned tags are provided to CITY for creation of new assets in CMMS.
 3. CITY issues Facility Key for input into BIM model.
 4. DP will add CMMS Facility Key input as BIM parameter.
 5. BIM will use Facility Key and network location for integration into CMMS.
- E. If the project involves the installation of new assets, then DP shall coordinate with CITY to have new CMMS Facility Keys assigned to the new assets. CMMS Facility Keys will be assigned by CITY after equipment tags have been assigned.

1.08 RECORD BIM DATA

- A. General: Transmit published BIM and all related files for CITY’s reference during normal working hours. Any construction-related needs will be deferred to construction drawings for interpretation by DP.
- B. At the end of the project, Record BIM Data shall be incorporated to include but not limited to: 3D representation of Work, all data parameters completed and all linked information in relative file paths.
- C. Data Parameters
 1. BIM and its data shall be conformed to construction records prior to BIM turnover.
 2. For BIM facility asset parameters, fill out all data parameters as defined in 01340.A – Attribute Standard including relative hyperlinks per the file structure for all information the DPs/Contractors have.
 3. Any hyperlink will direct the user to the designated file location.
 4. Transmittals required by DP must be included in the CITY’s Record Submittal Zip File. All files stored in Windows 10 shall have tag metadata that includes CMMS Level 1 through CMMS Level 8 asset information.

5. The folder containing the designated file locations will appear as shown in Figure 01.

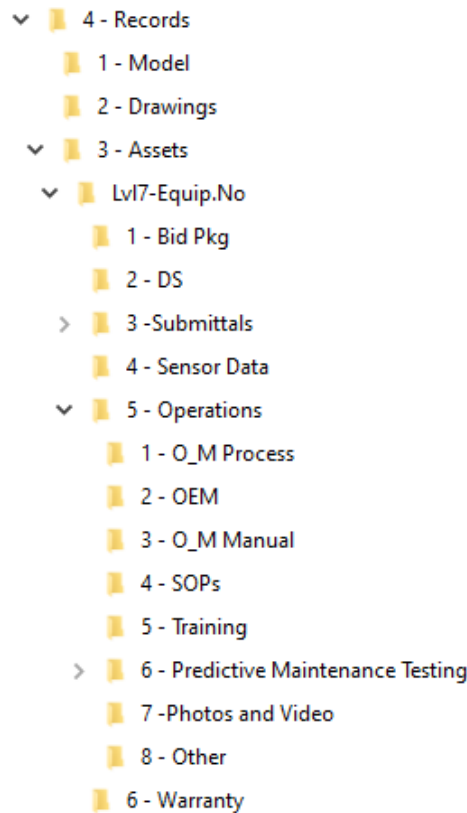


Figure 01: Record Submittal Zip File Structure

D. Submission

1. BIM model must be cross-checked against field records and is free of conflicting data.
2. Each BIM parameter with a link to a file shall be confirmed to work using relative file paths. Relative file paths will be used when during turnover of the Revit model and equipment documentation. Refer to CITY's Attribute Standard and CITY zip submittal.
3. Naming of BIM files must be coordinated with CITY's representative prior to submission at Closeout. At CITY's discretion, the file names will change at request by CITY.
4. Give particular attention to information on equipment components that cannot be readily identified in the field and recorded later.

- E. For requirements regarding closeout procedures, refer to Section 01019.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

Equipment Parameters			
Notes: 1. For the parameters listed herein, the parameters shall be found within the following parameter groups in Revit. - Project Procurement Parameters -> General - Model Content Parameters -> Layers - Asset Identification Parameters -> Identity Data - Facility Asset Paramters -> Data - Asset Data Parameters -> Construction - GIS Parameters -> Graphics			

Asset Identification Parameters			
ID Attribute	Attribute Description	Example Data	Comment
00CMMSAssetTag	CMMS Asset Tag	(Lvl.1)-(Lvl.2)-(Lvl.3)-(Lvl.4)-(Lvl.5)-(Lvl.6)-(Lvl.7)-(CMMS Equipment Number)	Text
00CMMSFacilityKey	CMMS Facility Key	(Assigned by KCWater)	Text
00CMMSPortal	CMMS Portal		URL
01CMMSDept	CMMS Department (Lvl. 1)	WSD	Text
02CMMSDiv	CMMS Division (Lvl. 2)	Wastewater	Text
03CMMSSec	CMMS Section (Lvl. 3)	Treatment	Text
04CMMSSubArea	CMMS Sub-Area (Lvl. 4)	PXXX	Text
05CMMSProc	CMMS Process/Function (Lvl. 5)		Text
06CMMSSubProc	CMMS Systems (Lvl. 6)		Text
07CMMSEquip	CMMS Equipment (Lvl. 7)		Text
08CMMSNumb	CMMS Equipment Number		Number
09CMMSDescription	CMMS Description		Text

Model Content			
Design Attribute	Attribute Description	Example Data	Comment
00DisciplineCategory	Discipline Category		Text
01DisciplineDesignator(Lvl1)	Discipline Designator Level 1		Text (Options: A, C, D, E, F, G, H, IC, M, P, Q, R, S, T, V)
02DisciplineDesignator(Lvl2)	Discipline Designator Level 2		Text

Project Procurement			
Design Attribute	Attribute Description	Example Data	Comment
01Project Number	Project Number		Integer
02BidPkgNumber	Bid Package Number		Text (This is the Contract Advertising Number for Contractor and/or Subcontractor)
03ProvidedBy	Provided By		Text (Options: Contractor, Design-Builder, Manufacturer, Owner)
04InstalledBy	Installed By		Text (Options: Contractor, Design-Builder, Manufacturer, Owner)
05LocalRep	Local Representative		Text
06Installation Date	Installation Date		Text
07Commission Date	Commission Date		Text
08Decommission Date	Decommission Date		Text
09Warranty Start Date	Warranty Start Date		Text
10Warranty Expiration Date	Warranty Expiration Date		Text
11Procurement Package	Procurement Package		Text (This is the advanced work package number associated with equipment item)
12Equipment Datasheet	Equipment Datasheet		

Asset Data			
Design Attribute	Attribute Description	Example Data	Comment
01Expected Asset Category	Expected Asset Category		Text
02Expected Life In Years	Expected Life in Years		Text
03Install Date (20XX.XX.XX)	Installation Date		Text

04	Warranty Expiration Date (20XX.XX.XX)	Warranty Expiration Date		Text
05	Location	Location		Text
06	Principle Cause of Failure	Principle Cause of Failutre		Text
07	Expected Design Life	Expected Design Life		Text
08	Remaining Useful Life (RUL)	Remaining Useful Life (RUL)		Text
09	Remaining Asset Value (RAV)	Remaining Asset Value (RAV)		Text
10	Equipment Cost	Equipment Cost		Text
11	Serial Number	Serial Number		Text
12	Manufacturer	Manufacturer		Text
13	Model	Model		Text

Facility Design Parameters			
Design Attribute	Attribute Description	Example Data	Comment
01	Normal Design Flow		Integer
02	Normal Design Flow UoM	Normal Design Flow Unit of Measure	Text
03	Peak Design Flow		Integer
04	Peak Design Flow UoM	Peak Design Flow UoM	Text
05	Biological Oxygen Demand (BOD)	Biological Oxygen Demand (BOD)	Integer
06	Biological Oxygen Demand (BOD) UoM	Biological Oxygen Demand (BOD) Unit of Measure	Text
07	Chemical Oxygen Demand (COD)	Chemical Oxygen Demand (COD)	Integer
08	Chemical Oxygen Demand (COD) UoM	Chemical Oxygen Demand (COD) Unit of Measure	Text
09	Total Suspended Solids (TSS)	Total Suspended Solids (TSS)	Integer
10	Total Suspended Solids (TSS) UoM	Total Suspended Solids (TSS) Unit of Measure	Text
11	Volatile Suspended Solids (VSS)	Volatile Suspended Solids (VSS)	Integer
12	Volatile Suspended Solids (VSS) UoM	Volatile Suspended Solids (VSS) Unit of Measure	Text
13	Total Kjedahl Nitrogen (TKN)	Total Kjedahl Nitrogen (TKN)	Integer
14	Total Kjedahl Nitrogen (TKN) UoM	Total Kjedahl Nitrogen (TKN) Unit of Measure	Text
15	NH3N	NH3N	Integer
16	NH3N UoM	NH3N Unit of Measure	Text
17	Alkalinity	Alkalinity	Integer
18	Alkalinity UoM	Alkalinity Unit of Measure	Text
19	pH	pH	Integer

GIS Parameters			
Design Attribute	Attribute Description	Example Data	Comment
01	BIM (Prefix)	BIM (Prefix)	(Revit)
02	BIM (UnID)	BIM (UnID)	(Revit)
03	BIM (Suffix)	BIM (Suffix)	(Revit)
04	EDMS Drawings (Prefix)	EDMS Drawings (Prefix)	(Currently utilizing Sharepoint)
05	EDMS Drawings (UnID)	EDMS Drawings (UnID)	(Currently utilizing Sharepoint)
06	EDMS Drawings (Suffix)	EDMS Drawings (Suffix)	(Currently utilizing Sharepoint)
07	EDMS O&M Documents (Prefix)	EDMS O&M Documents (Prefix)	SOPs, O&M Manuals, Training, Digital Media, Other (Currently utilizing Sharepoint)
08	EDMS O&M Documents (UnID)	EDMS O&M Documents (UnID)	SOPs, O&M Manuals, Training, Digital Media, Other (Currently utilizing Sharepoint)
09	EDMS O&M Documents (Suffix)	EDMS O&M Documents (Suffix)	SOPs, O&M Manuals, Training, Digital Media, Other (Currently utilizing Sharepoint)
10	CMMS O&M Logs (Prefix)	CMMS O&M Logs (Prefix)	Predictive, Preventative, Corrective, (Currently utilizing infoR)
11	CMMS O&M Logs (UnID)	CMMS O&M Logs (UnID)	Predictive, Preventative, Corrective, (Currently utilizing infoR)
12	CMMS O&M Logs (Suffix)	CMMS O&M Logs (Suffix)	Predictive, Preventative, Corrective, (Currently utilizing infoR)
13	Mixed Reality (Prefix)	Mixed Reality (Prefix)	
14	Mixed Reality (UnID)	Mixed Reality (UnID)	
15	Mixed Reality (Suffix)	Mixed Reality (Suffix)	

SECTION 01352 – SELECTIVE ALTERATIONS AND DEMOLITION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Cutting or modifying existing or new work.
 - 2. Partial demolition of structures.

1.02 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. A10.6 - Safety and Health Program Requirements for Demolition Operations.
- B. International Concrete Repair Institute (ICRI):
 - 1. Guideline No. 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.
 - 2. Guideline No. 310.3R - Guide for the Preparation of Concrete Surfaces for Repair Using Hydro Demolition Methods.

1.03 RELATED SECTIONS

- A. General Conditions of Contract Between Owner and Design-Builder
- B. Section 01020 – Record Documents.
- C. Section 01140 – Work Restrictions.
- D. Section 01300 – Submittals.
- E. Section 01329 – Safety Plan.
- F. Section 01354 – Hazardous Material Procedures.
- G. Section 01566 – Cleanup Operations.
- H. Section 01580 – Project Signs.
- I. Section 02300 – Earthwork.

1.04 DEFINITIONS

- A. Chipping hammer: A hand-operated electrical or pneumatic demolition device for removal of hardened concrete or masonry materials having a weight of less than 15 pounds and an impact frequency of greater than 2,000 blows/minute.
- B. Concrete breaker: A hand-operated electrical or pneumatic demolition device for removal of hardened concrete or masonry materials having a weight greater or impact frequency less than the limits defined for a chipping hammer.
- C. Coring equipment: Non-impact rotary drill with diamond cutting edges.
- D. Heavy abrasive blast: Cleaning procedure by which various abrasives materials, or steel shot, are forcibly propelled by high pressure against a surface to remove loose material and produce a concrete surface roughened to ICRI Surface Profile CSP-7, or higher, as specified in ICRI 301.3R.
- E. Salvage materials: Materials removed from existing facility.

1.05 DESCRIPTION OF WORK

- A. The work includes partial demolition, cutting, and modifying of existing facilities, utilities, and/or structures.
- B. These facilities may be occupied and/or operational. Satisfactory completion of the work will require that the Contractor plan activities carefully to work around unavoidable obstacles and to maintain overall stability of structures and structural elements. It will further require restoration of existing facilities, utilities, and structures that are to remain in place and that are damaged by demolition or removal operations.

1.06 SUBMITTALS

- A. General:
 - 1. Submit as specified in Section 01300 - Submittals.
- B. Shop drawings include:
 - 1. Demolition Plan outlining the proposed sequence of events and procedures to be utilized for any demolition activities required as part of the Work. This plan shall include a plan for proper notification of Owner and other affected parties relative to the respective Work.
 - 2. The location of all embedded items shall be documented using diagrams and/or other media that clearly show dimensions and locations of existing structural elements, existing embedded items, and any new embedded items and their relationship to each other.
- C. Submittals for information only:
 - 1. Permits and notices authorizing demolition.
 - 2. Certificates of severance of utility services.
 - 3. Permit for transport and disposal of debris.
- D. Quality assurance submittals:
 - 1. Qualifications of non-destructive testing agency/agencies.
- E. Project record documents.
- F. Drawings and/or other media documenting locations of service lines and capped utilities.

1.07 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Assign relocation, removal, cutting, coring, and patching to trades and workers qualified to perform the Work in a manner that causes the least damage and that provides means of returning surfaces to an appearance at least equal to that of the surrounding areas unaffected by the Work.
 - 2. Non-destructive testing agencies shall have a minimum of 5 years' experience performing non-destructive testing for location of steel reinforcement in existing concrete under conditions that are similar to that required for this Work.

1.08 SEQUENCING

- A. Perform Work in sequences and within times specified in Section 01140 - Work Restrictions.
- B. If the facility or utility to be modified cannot be removed from service, perform the Work while the facility is in operation using procedures and equipment that do not jeopardize operation or materially reduce the efficiency of that facility.
- C. Coordinate the Work with operation of the facility:

1. Do not begin alterations of designated portions of the Work until specific permission for activities in each area has been granted by Owner in writing.
 2. Engineer will coordinate the planned procedure with facility manager.
 3. Complete Work as quickly and with as little delay as possible.
- D. Operational functions of the facility that are required to be performed to facilitate the Work will be performed by facility personnel only.
- E. Owner will cooperate in every way practicable to assist in expediting the Work.
- F. When necessary for the proper operation or maintenance of portions of the facility, reschedule operations so the Work will not conflict with required operations or maintenance.

1.09 REGULATORY REQUIREMENTS

- A. Dispose of debris in accordance with governing regulatory agencies.
- B. Comply with applicable air pollution control regulations.
- C. Obtain permits for building demolition, transportation of debris to disposal site and dust control.

1.10 PREPARATION

- A. Non-destructive evaluation of existing concrete and masonry:
1. Prior to cutting, drilling, coring, and/or any other procedure that penetrates existing concrete [or masonry], retain and pay for the services of a qualified non-destructive testing agency to perform investigations to determine the location of existing steel reinforcement, plumbing, conduit, and/or other embedment's in the concrete.
 2. Submit documentation of the investigations to the Engineer for review and approval as specified in Section 01300 - Submittals before any work involving penetration of existing concrete is initiated.
- B. Obtain permission from adjacent property owners, including railroads, when outriggers, swinging cranes, and other equipment may have to traverse or extend into adjacent property.

1.11 PROJECT CONDITIONS

- A. Do not interfere with use of adjacent structures and elements of the facility not subject to the Work described in this Section. Maintain free and safe passage to and from such facilities or adequate barriers to prevent unsafe passage.
- B. Provide, erect, and maintain barricades, lighting, guardrails, and protective devices as required to protect building occupants, general public, workers, and adjoining property:
1. Do not close or obstruct roadways without permits.
 2. Conduct operations with minimum interference to public or private roadways.
- C. Prevent movement, settlement, or collapse of structures adjacent services, sidewalks, driveways and trees:
1. Provide and place bracing or shoring.
 2. Cease operations and notify Engineer immediately when safety of structures appears to be endangered. Take precautions to properly support structure. Do not resume operations until safety is restored.
 3. Assume liability for movement, settlement, or collapse.

4. Promptly repair damage.
- D. Provide and arrange for capping and plugging utility services. Disconnect and stub off.
 1. Notify affected utility company in advance and obtain approval before starting demolition.
 2. Place markers to indicate location of disconnected services.
- E. Unknown conditions:
 1. The drawings may not represent all conditions at the site and adjoining areas. Compare actual conditions with drawings before commencement of Work.
 2. Existing utilities and drainage systems below grade are located on the Drawings based on information from existing documents and from surface facilities such as manholes, valve boxes, area drains, and other surface fixtures.
 3. If existing active services encountered are not indicated or otherwise made known to the Contractor and interfere with the permanent facilities under construction, notify the Engineer in writing, requesting instructions on their disposition. Take immediate steps to ensure that the service provided is not interrupted, and do not proceed with the Work until written instructions are received from the Engineer.

PART 2 - PRODUCTS

2.01 SALVAGE MATERIALS

- A. No materials shall be designated for salvage.

PART 3 - EXECUTION

3.01 EXAMINATIONS

- A. Prior to beginning selective demolition operations, perform a thorough inspection of the facility and site, and report to the Engineer defects and structural damage to, or deterioration of existing construction to remain.
- B. Examine areas affected by the Work and verify the following conditions prior to commencing demolition:
 1. Disconnection of utilities as required.
 2. Utilities serving occupied or active portions of surrounding facilities will not be disturbed, except as otherwise indicated.
- C. If unsatisfactory conditions exist, notify the Engineer, and do not begin demolition operations until such conditions have been corrected.

3.02 PREPARATION

- A. General:
 1. Review Section 01354 – Hazardous Material Procedures, before beginning selective alterations and demolition work.
- B. Protection:
 1. Erect weatherproof closures to protect the interior of facilities and elements or equipment that are not designed for exposure to the weather. Provide temporary heat, cooling, and humidity control as necessary to prevent damage to existing and new construction. Maintain existing exiting paths and/or provide new paths in compliance with Building Code requirements.

2. Erect and maintain dustproof partitions as required to prevent spread of dust, to other parts of building. Maintain negative pressure in the area where the Work is being performed to prevent the accidental spread of dust and to minimize the spread of fumes related to the Work.
3. Upon completion of Work, remove weatherproof closures and dustproof partitions, and repair damaged surfaces to match adjacent surfaces.
4. Provide and maintain protective devices to prevent injury from falling objects.
5. Locate guardrails in stairwells and around open shafts to protect workers. Post clearly visible warning signs.
6. Cause as little inconvenience to adjacent building areas as possible.
7. Protect landscaping, benchmarks, and existing construction to remain from damage or displacement.
8. Carefully remove designated materials and equipment to be salvaged by Owner or reinstalled.
9. Store and protect materials and equipment to be reinstalled.

C. Layout:

1. The limits of selective demolition are indicated on the Drawings. Confine demolition operations within the limits indicated on the Drawings.
2. Lay out demolition and removal work at the site and coordinate with related Work for which demolition and removal is required. Clearly mark the extent of structural elements to be removed on the actual surfaces that will be removed.
3. Arrange for Engineer's inspection of the lay out extents.
4. Do not begin demolition/removal operations until the lay out markings have been reviewed by the Engineer.

3.03 DEMOLITION

A. General:

1. Perform demolition work in accordance with ANSI A10.6.
2. Demolish designated portions of structures and appurtenances in orderly and careful manner in accordance with the Selective Demolition Plan.
3. Conduct demolition and removal work in a manner that will minimize dust and flying particles.
 - a. Use water or dust palliative when necessary to prevent airborne dust.
 - b. Provide and maintain hoses and connections to water main or hydrant.
4. Demolish concrete and masonry in small sections. Perform demolition with small tools as much as possible. Blasting with explosive charges is not permitted.
5. Sawcut concrete to establish the edges of demolition, wherever possible.
 - a. Do not use a concrete breaker within 6 inches of reinforcing or structural metals that are designated to remain.
 - b. At edges that are not sawcut, remove the final 6 inches of material with a chipping hammer as defined herein. At surfaces where material is removed with a chipping hammer, follow with a heavy abrasive blast to remove all loose material and microcracking.
 - c. Alternate techniques to remove concrete may be used if acceptable to the Engineer; however, techniques other than those deemed by ICRI Guideline No. 310.2R to provide a low risk of introducing microcracking will require a subsequent procedure to remove loose material.

- d. Provide final surface preparation for concrete repairs as specified in Division 3 specifications.
- 6. At locations indicated on the Drawings that the existing reinforcing is to be preserved, remove concrete using methods that do not damage the reinforcing. Use one of the following techniques:
 - a. Hydro demolition techniques as outlined in ICRI Guideline No. 310.3R.
 - b. Chipping hammer, as defined herein, followed by heavy abrasive blast to remove all loose material and microcracking at remaining surfaces impacted by the chipping hammer.
 - c. Alternate methods may be used, only if acceptable to the Engineer.
 - d. For all methods, provide a small, completed area for Engineer's review and acceptance. If the proposed method, in the opinion of the Engineer, damages the reinforcing, revise the removal method to remove the concrete with a less aggressive technique to protect the reinforcing.
- 7. Remove materials carefully, to the extent indicated and as required.
 - a. Provide neat and orderly junctions between existing and new materials.
 - b. Use methods that terminate surfaces in straight lines at natural points of division.
- 8. Do not remove anything beyond the limits of Work indicated without prior written authorization of the Engineer. If in doubt about whether to remove an item, obtain written authorization of the Engineer prior to proceeding.
- 9. Perform work to provide the least interference and most protection to existing facilities to remain.
- 10. Assume possession of demolished materials, unless otherwise indicated on the Drawings or specified.
 - a. Remove demolished materials from site at least weekly and dispose of in accordance with Laws and Regulations.
- 11. Do not burn materials on site.
- B. Sizing of openings in existing concrete or masonry:
 - 1. Make openings large enough to permit final alignment of pipe and fittings without deflections, but without oversizing.
 - 2. Allow adequate space for packing around pipes and conduit to ensure watertightness.
 - 3. If the Engineer deems the opening to be insufficient in size to accomplish these criteria, remove additional material using the procedures outlined in this Section.
- C. Cutting openings in existing concrete or masonry:
 - 1. Do not allow saw cuts to extend beyond limits of openings.
 - 2. Create openings by the following method or other means acceptable to the Engineer that prevents over-cutting of member at corners:
 - a. Core-drill through slab or wall at corners, being careful not to damage materials beyond the area to be removed.
 - b. Saw cut completely through the member, between the core holes at the corners.
 - c. As an alternate to sawcutting through the member, score the edges of the opening with a saw to a 1-inch depth on both surfaces (when accessible).
 - (1) Remove concrete or masonry to within 6 inches of material to remain with a concrete breaker.
 - (2) Remove the remaining material with a chipping hammer.

- d. Remove the remaining material at the corners left by the core-drilling with a chipping hammer.
- 3. Prevent debris from falling into adjacent tanks or channels in service or from damaging existing equipment and other facilities.
- D. Pump out buried tanks. Remove tanks and service piping from site.
- E. Immediately upon discovery, remove and dispose of contaminated, vermin-infested, or dangerous materials using safe means that will not endanger health of workers and public.
- F. Remove trees and shrubs within marked areas; clear undergrowth and dead plant material as specified in Section 02300 - Earthwork.
- G. Backfill open pits and holes caused by demolition as specified in Section 02300 - Earthwork.
- H. Rough grade areas affected by demolition.
- I. Remove demolished materials, tools, and equipment upon completion of demolition.

3.04 RESTORATION

A. General:

- 1. Repair damage caused by demolition to conditions equal to those that existed prior to beginning of demolition.
 - a. Patch and replace portions of existing finished surfaces that are damaged, lifted, and discolored with matching material. Refinish patched portion surfaces in a manner which produces uniform color and texture to entire surface.
 - b. When existing finish cannot be matched, refinish entire surface to nearest change of plane where angle of change exceeds 45 degrees.
- 2. The cost of repairs shall be at the Contractor's expense, and no increase in the Contract Price.
- 3. When new construction abuts or finishes flush with existing construction, make smooth transitions. Match finish of existing construction.
- 4. Where partitions are removed, patch floors, walls, and ceilings with finish materials that match existing materials.
- 5. Where removal of partitions results in adjacent spaces becoming one, rework floors, walls, and ceilings to provide smooth planes without breaks, steps, or bulkheads.
- 6. Where changes of plane exceed 2 inches, request instructions for making transition.
- 7. Trim and refinish existing doors as necessary to clear new floors.
- 8. Match patched construction with adjacent construction in texture and appearance so that patch or transition is invisible at 5-foot distance.
- 9. When finished surfaces are cut so that smooth transition is impossible, terminate existing surface in neat manner along straight line at natural line of division and provide appropriate trim.

B. Restore existing concrete reinforcement as follows:

- 1. Where existing reinforcement is to be incorporated into the new Work, protect, clean, and extend into new concrete.
- 2. Where existing reinforcement is not to be retained, cut off as follows:
 - a. At the removal line where new concrete joins existing concrete, cut reinforcement flush with concrete surface.
 - b. Where concrete surface at the removal line will become the finished surface, cut reinforcement 2 inches below the surface, paint ends with epoxy, and patch holes with dry pack mortar.

- C. Restore areas affected by removal of existing equipment, equipment pads and bases, piping, supports, electrical panels, electric devices, and conduits such that little or no evidence of the previous installation remains:
1. Fill areas in existing floors, walls, and ceilings from removed piping, conduit, and fasteners with non-shrink grout and finish smooth.
 2. Remove concrete bases for equipment and supports by:
 - a. Saw cutting clean, straight lines with a depth equal to the concrete cover over reinforcement minus 1/2 inch below finished surface.
 - (1) Do not cut existing reinforcement on floors.
 - b. Chip concrete within scored lines and cut exposed reinforcing steel and anchor bolts.
 - c. Patch with non-shrink grout to match adjacent grade and finish.
 3. Terminate abandoned piping and conduits with blind flanges, caps, or plugs.

3.05 FIELD QUALITY CONTROL

- A. Do not proceed with demolition without Engineer's inspection of lay out.
- B. Do not deviate from the submitted demolition plan without notifying the Engineer prior to Work.

End of Section

SECTION 01354 – HAZARDOUS MATERIAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes procedures required when encountering hazardous materials, including asbestos and lead-based paint (LBP), at the Work site.

1.02 REFERENCES

- A. Occupational Safety and Health Administration (OSHA) United States Code of Federal Regulations (CFR) including, but not limited to:
1. Title 29 - Labor:
 - a. 1910 – Occupational Safety and Health Standards
 - (1) 1910.1025 – Lead
 - (2) 1910.1001 – Asbestos
 - (3) 1910.1200 – Hazard Communication
 - b. 1926 – Safety and Health Regulations for Construction
 - (1) 1926.62 – Lead
 - (2) 1926.1101 – Asbestos
 - (3) 1926.65 – Hazardous waste operations and emergency response (HAZWOPER)
 - (4) 1926.59 – Hazard Communication
- B. United States Environmental Protection Agency (USEPA) including, but not limited to:
1. Title 40 - Protection of Environment:
 - a. Part 61, Subpart M – National Emission Standard for Asbestos
 - b. Part 261 - Identification and Listing of Hazardous Waste
 - c. Part 763 – Asbestos
- C. Missouri Department of Natural Resources (MDNR):
1. Revised Statutes of Missouri Title XL Additional Executive Departments
 - a. Chapter 643 – Air Conservation
 - (1) 225 – 265 – Asbestos Abatement and Asbestos Removal
- D. Society for Protective Coatings (SSPC):
1. SSPC Guide 6 (SSPC-6) – Guide for Containing Surface Preparation Debris Generated During Paint Removal Operations
 2. SSPC Guide 7 (SSPC-7) – Guide to Disposal of Lead-Contaminated Surface Preparation Debris
- E. Existing KCMO Owner Reports (available upon request from Owner's Project Manager):
1. (Request from City of Kansas City, MO – Water Services Department Project Manager)

1.03 RELATED SECTIONS

- A. General Conditions of Contract Between Owner and Design-Builder
- B. Section 01020 – Record Documents.
- C. Section 01140 – Work Restrictions.
- D. Section 01300 – Submittals.
- E. Section 01329 – Safety Plan.
- F. Section 01565 – Asbestos Abatement.
- G. Section 01566 – Cleanup Operations.
- H. Section 01580 – Project Signs.

1.04 SUBMITTALS

A. Hazardous Materials Management Plan (HMMP):

1. The HMMP will be submitted at least 10 days prior to the commencement of the Work and is the CONTRACTOR's comprehensive plan for the management of hazards encountered during the work, and should include:
 - a. Information about the CONTRACTOR's designated Certified Industrial Hygienist (CIH) per Part 1.05 of this Section and SECTION 01565.
 - b. Spill management procedures in the event of asbestos, lead or any other hazardous materials release.
 - c. Intended methods of hazardous materials removal, containment, and disposal, including description of engineering controls, personal protective equipment (PPE), and compliance monitoring.
 - d. Schedule and sequence of work for all hazardous materials work.
 - e. A copy of the Site-Specific Hazard Communication Plan in accordance with 29 CFR 1910.1200.
 - f. Copies of licenses, certifications, fit test records, medical surveillance records and notifications to handle and control hazardous materials, as applicable.

B. Submit laboratory reports, as applicable.

C. Refer to SECTION 01565 – ASBESTOS ABATEMENT for additional requirements.

1.05 DEFINITIONS

A. Refer to Section 01420 – Definitions and Acronyms

1.06 HAZARDOUS MATERIALS PROCEDURES

A. When hazardous materials are encountered that were identified by existing reports prepared for Owner:

1. Prepare and initiate implementation of the HMMP, as detailed in Part 1.04 of this Section.
2. Complete notifications to Federal, State and local agencies as required by applicable Laws and Regulations within the times stipulated by such Laws and Regulations.
3. CONTRACTOR will designate a CIH, as required per Part 1.04 of this Section, to issue pertinent instructions and recommendations for protection of workers and other affected persons' health and safety.
4. Identify and contact subcontractors and licensed personnel qualified to undertake storage, removal, transportation, disposal, and other remedial work required by, and in accordance with, applicable laws and regulations.

- B. When hazardous materials are encountered that were not identified by existing reports prepared for OWNER:
 - 1. Prepare and initiate implementation of the HMMP as detailed in Part 1.04 of this Section.
 - 2. Notify immediately OWNER, ENGINEER, and other affected parties.
 - 3. Complete notifications to Federal, State and local agencies as required by applicable Laws and Regulations within the times stipulated by such Laws and Regulations.
 - 4. CONTRACTOR will designate a CIH, as required per Part 1.04 of this Section, to issue pertinent instructions and recommendations for protection of workers and other affected persons' health and safety.
 - 5. Identify and contact subcontractors and licensed personnel qualified to undertake storage, removal, transportation, disposal, and other remedial work required by, and in accordance with, applicable laws and regulations.
- C. Forward to OWNER copies of reports, permits, receipts, and other documentation related to remedial work.
- D. CONTRACTOR will assume responsibility for worker health and safety, including health and safety of subcontractors and their workers.
 - 1. Provide training to workers on recognition, reporting, and safety and health procedures required when hazardous materials are encountered, as relevant to the Work.
- E. File requests for adjustments to Contract Times and Contract Price due to the finding of previously unidentified hazardous materials at the Work site in accordance with Contract Documents.
 - 1. CONTRACTOR and subcontractors will minimize delays by continuing performance of the Work in areas not affected by hazardous materials operations.

1.07 LEAD-BASED PAINT REMOVAL AND DISPOSAL

- A. Includes existing paint on the interior and/or exterior surfaces, as outlined in the LBP Survey Report for OWNER per SSPC specifications, which may contain lead in concentrations which will require implementation of hazardous material compliance procedures as legislated by CFR Title 29 and Title 40.
- B. CONTRACTOR and/or its' subcontractors will collect samples of suspected LBP using the methods and frequencies prescribed by CFR Title 29 and Title 40 from the structures identified herein and have samples tested by a certified testing laboratory to determine lead content in samples.
 - 1. Collect a sufficient number of paint samples to provide adequate information regarding lead content in paint on the interior and/or exterior surfaces outlined in the LBP Survey Report for OWNER per SSPC specifications.
 - 2. Ensure that samples contain the total thickness of the paint to the substrate, where removed.
 - 3. Ensure that each sample contains a sufficient quantity of paint to facilitate proper and adequate analyses by testing laboratory.
 - 4. Ensure that samples are adequately identified with location from which it was removed.
- C. Laboratory testing will be completed in accordance with applicable testing standards by a National Lead Laboratory Accreditation Program (NLLAP)–certified laboratory.
 - 1. Submit 10 copies of complete laboratory analyses of paint samples.
- D. Prior to beginning the Work associated the removal, containment, and disposal of LBP and associated debris, prepare and submit to the OWNER 10 copies of the HMMP, as required by Part 1.04 of this Section. The HMMP will detail the following:
 - 1. Listing of LBP removal equipment to be used.
 - 2. Outline of procedures to be used to remove LBP.
 - 3. Data and specifications describing chemical stripping materials to be used, if applicable.

4. Data and specifications describing abrasive blast materials and grit size to be used, if applicable.
 5. Description of planned LBP removal, hazardous waste debris containment, and hazardous waste disposal methods.
 6. Safety plan, consisting of a written plan of action covering operational requirements for safe removal of LBP, safe handling and containment of waste and debris generated by the operation, and safe disposal of hazardous waste and non-hazardous waste materials, complying with the most stringent requirements of the following:
 - a. Equipment and material manufacturer's safety sheets.
 - b. 29 CFR 1910.1025.
 - c. 29 CFR 1926.62.
 7. Certifications of personnel to perform work.
 8. Selection of an appropriately permitted disposal facility.
- E. Carry out LBP removal, containment, and disposal work in accordance with SSPC guidelines.
 - F. Assume responsibility for the proper implementation of the LBP removal method selected. When abrasive blast cleaning is selected to remove LBP, comply with all applicable Federal, State, and local air quality, pollution, and environmental control regulations for blast cleaning. When chemical stripping is selected to remove the LBP, adhere to the chemical manufacturer's recommendations for the application of the product, the removal of the paint, and the containment of the debris.
 - G. LBP removal work shall be performed by a Contractor having prior experience in the removal method selected and shall provide at least 5 references of similar projects completed, 3 of which must have been completed within the past 12 months, documenting their experience.
 - H. Utilize a minimum of Class 3 containment and ventilation system, as described in SSPC-6, during LBP removal and containment procedures, as required for the conditions.
 - I. Do not leave spent abrasive blast material, chemical stripping material, or LBP debris uncontained on the project site overnight.
 - J. Test each container of paint debris, spent blast cleaning abrasive, chemical stripping debris, and other waste material generated by the operation to determine the waste material hazardous waste classification, as required by 40 CFR 261 and the selected disposal facility.
 - K. Assume responsibility for the disposal of LBP waste and associated waste generated by the removal of the LBP and the preparation of the surfaces for recoating. Dispose in accordance with applicable Federal, State, local, and selected disposal facility requirements and regulations.
 - L. Accurately complete the Uniform Hazardous Waste Manifest included at the end of SSPC-7. Indicate on the Manifest that the OWNER is the hazardous waste generator and obtain the OWNER's USEPA identification number for use in completing the Manifest.

1.08 ASBESTOS MATERIALS

- A. It is the specific intent of these Contract Documents to exclude from the Work any and all new products or materials containing asbestos. No products containing asbestos shall be incorporated in the Work.
- B. Refer to the list of reports prepared for Owner, referenced in Part 1.2 of this Section, identifying locations which may have ACM. The reports also designate the condition of the ACM in each location as either friable or non-friable.
- C. Asbestos abatement shall be executed as outlined in SECTION 01565 – ASBESTOS ABATEMENT of these Contract Documents.

PART 2 - PRODUCTS

PART 3 – EXECUTION

3.01 ASBESTOS MATERIALS

A. Notifications:

1. CONTRACTOR shall notify OSHA 24 hours prior to performing ACM removal operations.
2. CONTRACTOR will provide written notification to USEPA Regional Asbestos NESHAP contact at least 20 working days prior to the start of the Work per SECTION 01565.
3. CONTRACTOR shall notify MDNR at least 10 working days prior to the start of performing ACM removal operations.
4. CONTRACTOR shall notify OWNER 3 working days in advance of commencing asbestos material removal operations.

B. Work area:

1. CONTRACTOR will establish a regulated work area, using at a minimum, construction warning tape to establish limits of work area for the asbestos material removal.
2. On-site stockpiling or storage of ACM designated for disposal shall not be allowed.

C. Safety:

1. CONTRACTOR's safety plan will be provided as part of the HMMP (Part 1.02) and will detail requirements, as outlined in 29 CFR 1910.1001, 40 CFR 1926.1101 and 40 CFR 1926.65.

D. Worker qualifications:

1. Refer to SECTION 01565 – ASBESTOS ABATEMENT of these Contract Documents for qualifications for personnel performing asbestos abatement work.

E. Legal disposal:

1. Refer to SECTION 01565 – ASBESTOS ABATEMENT for asbestos disposal requirements.

END OF SECTION

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance - control of installation.
- B. Reference and standards.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals: Submission of manufactures' instructions and certificates.

1.3 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.

1.4 REFERENCES AND STANDARDS

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date for receiving bids, except where a specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. Neither the contractual relationships, duties, nor responsibilities of the parties in Contract nor those of the Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that existing site conditions are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Examine and verify specific conditions described in the applicable individual specification sections.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

End of Section.

SECTION 01410 - REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Regulatory authorities and codes. Any costs associated with code compliance with the Kansas City, Missouri Codes Department are the responsibility of the CONTRACTOR.

1.02 AUTHORITIES HAVING JURISDICTION

- A. Building Department: City of Kansas City, Missouri.

1.03 APPLICABLE CODES

- A. International Code Council (ICC).

- 1. Building code:
 - a. International Building Code (IBC), 2018.
 - 1) With City of Kansas City, Missouri amendments.
 - b. International Existing Building Code (IEBC), 2018.
- 2. With City of Kansas City, Missouri amendments Electrical code:
 - a. National Fire Protection Association (NFPA), NFPA 70: National Electrical Code (NEC), 2017.
 - 1) With City of Kansas City, Missouri amendments.
- 3. Energy code:
 - a. International Energy Conservation Code (IECC), 2021.
 - 1) With City of Kansas City, Missouri amendments.
- 4. Fire code:
 - a. International Fire Code (IFC), 2018.
 - 1) With City of Kansas City, Missouri amendments.
- 5. Fuel gas code:
 - a. International Fuel Gas Code (IFGC) – 2018.
 - 1) With City of Kansas City, Missouri amendments.
- 6. Mechanical code:
 - a. International Mechanical Code (IMC), 2018.
 - 1) With City of Kansas City, Missouri amendments.
- 7. Plumbing code:
 - a. Uniform Plumbing Code (UPC2018).
 - 1) With City of Kansas City, Missouri amendments.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

SECTION 01433 - MANUFACTURERS' FIELD SERVICES

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes procedural requirements including field services for testing, startup, and training for the City of Kansas City Missouri.
- B. The Contractor or Design-Builder shall furnish all labor, materials, equipment, and incidentals as necessary to comply with these requirements.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract; including General and Supplementary Conditions, all applicable Division 1 Sections, and all applicable Division Sections; apply to this Section.
- B. Related Sections include the following:
 - 1. Divisions 2 through 16 Sections for specific requirements for any field services and startup instructions of applicable products in those Sections.
 - 2. Section 01300 – Submittals.
 - 3. Section 01664 – Training.
 - 4. Section 01757 – Commissioning.

1.03 DEFINITIONS

- A. Refer to Section 01420 – Definitions and Acronyms

1.04 SUBMITTALS

- A. Informational submittals:
 - 1. Training Schedule: Submit in accordance with requirements of this Specification not less than 30 days prior to start of equipment installation and revise as necessary for acceptance.
 - 2. Lesson plan: Submit, in accordance with requirements of this Specification, proposed lesson plan not less than 30 days prior to scheduled training and revise as necessary for acceptance. Lesson will also be submitted and approved for training credit by the Missouri Department of Natural Resources Operator Certification Program.

1.05 QUALIFICATIONS OF MANUFACTURER'S REPRESENTATIVE

- A. Authorized representative of the manufacturer, factory trained, and experienced in the technical applications, installation, operation, and maintenance of respective equipment, subsystems, or system, with full authority by the equipment manufacturer to issue the certifications required of the manufacturer. Additional qualifications may be specified in the individual specification section.
- B. Representative subject to acceptance by the City's Representative. No substitute representatives will be allowed unless prior written approval by such has been given.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 FULFILLMENT OF SPECIFIED MINIMUM SERVICES

- A. Furnish manufacturers' services, when required by individual specification section, to meet requirements of this section.
- B. Comply with the requirements in Division 1 Section 01757– Commissioning.
- C. Where time is necessary in excess of that stated in the Specifications for manufacturers' services, or when a minimum time is not specified, time required to perform specified services shall be considered incidental.
- D. Contractor or Design-Builder shall schedule manufacturers' services to avoid conflict with other onsite testing in this project and other training of division personnel or manufacturers' onsite services.
- E. Before scheduling services, determine the conditions necessary to allow successful testing have been met.
- F. Only those days of service approved by the City's Representative will be credited to fulfill specified minimum services.
- G. Contractor or Design-Builder shall coordinate manufacturer's field services with the systems integrator, so both are on-site during field services if desired by the City.
- H. When specified in individual specification sections, manufacturer's onsite services shall include:
 - 1. Assistance during product (system, subsystem, or component) installation to include observation, guidance, instruction of Contractor or Design-Builder's assembly, erection, installation or application procedures.
 - 2. Inspection, checking, and adjustment as required for product (system, subsystem, or component) to function as warranted by manufacturer and necessary to furnish manufacturer's certificate of Proper Installation.
 - 3. Providing, on a daily basis, copies of manufacturers' representatives field notes and data to Owner.
 - 4. Revisiting the Site as required to correct problems and until installation and operation are acceptable to the Engineer of Record or City's Representative.
 - 5. Resolution of assembly or installation problems attributable to or associated with respective manufacturer's products and system.
 - 6. Assistance during functional and performance testing, commissioning, and system startup and evaluation.
 - 7. Training of Owner's personnel in the operation and maintenance of respective product as required.

3.02 MANUFACTURER'S CERTIFICATE OF COMPLIANCE

- A. When so specified, a Manufacturer's Certificate of Compliance form, a copy of which is attached to this section, shall be completed in full, signed by an entity supplying the product, material, or service, and submitted prior to shipment of product or material or execution of the services.
- B. City's Representative may permit use of certain materials or assemblies prior to sampling and testing if accompanied by accepted certification of compliance.
- C. Such form shall certify proposed product, material, or service complies with that specified. Attach supporting reference data, affidavits, and certifications as appropriate.

- D. May reflect recent or previous test results on material or product, if acceptable to the City's Representative.

3.03 MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

- A. When so specified, a copy of the Manufacturer's Certificate of Proper Installation form shall be completed and signed by equipment manufacturer's representative.
- B. This form shall certify signing party is a duly authorized representative of the manufacturer, is empowered by the manufacturer to inspect, approve, and operate their equipment, and is authorized to make recommendations required to ensure equipment is complete and operational.

3.04 TRAINING

- A. Refer to Section 01664– Training for training requirements.

3.05 SUPPLEMENTS

- A. Supplements listed below, following "End of Section", are part of this Specification.
 - 1. Manufacturer's Certificate of Compliance Form.
 - 2. Manufacturer's Certificate of Proper Installation Form.

End of Section

MANUFACTURER'S CERTIFICATE OF COMPLIANCE FORM

OWNER: _____ PROJECT, MATERIAL OR SERVICE SUBMITTED: _____

PROJECT NAME: _____ PROJECT NO. _____

COMMENTS:

I hereby certify that the above referenced product, material, or service called for by the Contract for the named Project will be furnished in accordance with the applicable requirements. I further certify that the product, material, or service are of the quality specified and conform in all respects with the Contract requirements and are in the quantity shown.

Date of Execution _____, 20 ____

Manufacturer: _____

Manufacturer's Authorized Representative (print) _____

Manufacturer's Authorized Representative (Signature) _____

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION FORM

OWNER			EQPT SERIAL NO.	
EQPT TAG NO.			EQPT/SYSTEM	
PROJECT NO.			SPEC. SECTION	

I hereby certify that the above referenced equipment/system has been:

(Check Applicable)

- ☐ Installed in accordance with Manufacturer's recommendations.
- ☐ Inspected, checked, and adjusted.
- ☐ Serviced with proper initial lubricants.
- ☐ Electrical and mechanical connections meet quality and safety standards.
- ☐ All applicable safety equipment has been properly installed.
- ☐ Functional tests.
- ☐ System has been performance tested, and meets or exceeds specified performance requirements.

(When complete system of one manufacturer)

COMMENTS:

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate their equipment, and (iii) authorized to make recommendations required to ensure equipment furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date of Execution _____, 20 ____

Manufacturer: _____

Manufacturer's Authorized Representative (print) _____

Manufacturer's Authorized Representative (Signature) _____

SECTION 01480 – WATER TIGHTNESS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes hydrostatic leakage testing for concrete water-containing structures.

1.02 REFERENCES

A. Definitions.

1. Refer to Section 01420 – Definitions and Acronyms

B. Reference standards.

1. Section 01420 – Definitions and Acronyms
2. Section 03000 - Concrete
3. Section 02300 - Earthwork

1.03 DEFINITIONS

A. Definitions.

1. Damp spots: Surfaces where visible moisture can be picked up by a dry hand.
2. Containment structure lined: Liquid-containing structure with barrier coating or membrane applied to the inside surfaces to prevent leaking of contents to the outside.
3. Containment structure, unlined: Liquid containing structure where only the concrete structure itself is used to prevent leaking of contents to the outside.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination.

B. Pre-installation meetings.

C. Sequencing.

D. Scheduling.

1.05 SUBMITTALS

A. Shop drawings:

1. Description and details of each evaporation/precipitation-measuring device anticipated for use during the test.

B. Tests and evaluation reports:

1. Results of water leakage test for each structure and for each portion of a structure designated for testing.

C. Special procedure submittals:

1. Testing plan for each structure, or portion thereof, required to be tested.
 - a. Describe methods of obtaining water for testing and of releasing water for disposal, including provisions for dechlorination if required.
 - b. Include plans showing locations where measurements will be made and locations of evaporation/precipitation-measuring device.
 - c. Indicate plans for filling and draining structure(s).
 - d. Include schedule showing duration of test for each structure or cell to be tested, date and time for start of each test, dates and times of observations and measurements

during the test, dates and times for closeout of testing procedures, and date for submittal of final results.

2. Proposed procedures and products for repair of leaks.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL

- A. Test structures and portions of structures listed in the following paragraphs for water leakage.
 1. Unless otherwise specified, the Contractor shall:
 - a. Obtain all required permits for discharging testing water.
 - b. Provide dechlorination of such water if required by the permits.
 - c. Prepare and fill the structures.
 - d. Provide access and equipment required for testing and for recording test results.
 - e. Take measurements and make observations required for testing.
 2. At all times during testing, the Engineer shall have access to observe measurements by others or to make independent measurements.
- B. Test all new concrete structures for water leakage:
- C. Required preparation for testing is designated in this Section. Waiver of, or failure to complete preparations shall not change the testing criteria or approval criteria for the areas tested.
- D. Retest structures and portions of structures until the evaluation criteria are satisfied.

3.02 TEST WATER SOURCE AND DISPOSAL

- A. Water used for the first filling of the tank will be furnished by Owner.
 1. Contractor shall obtain water for leakage testing from:
 - a. Disinfected effluent between April 1 and October 31.
 - b. Secondary effluent between November 1 and March 31.
- B. In the event that retesting is required, Contractor shall bear the cost of refilling the tank for subsequent tests.
- C. After leakage testing is complete, Contractor shall dispose of water by discharging to Primary Treatment.

3.03 PREPARATION

- A. For each structure to be tested, prepare and submit a plan showing schedule and sequence of activities, method of filling, and methods of disposing of test water.
- B. Sequencing requirements:
 1. Complete construction of concrete structure and cure concrete to obtain minimum specified 28-day compressive strength as specified in Section 03000 - Concrete.
 - a. Do not begin tests until all portions of structure are complete and have reached their minimum specified 28-day compressive strength.
 - b. Do not begin tests until at least 14 days have passed since completion of the last concrete placement.
 2. Complete tests before:

- a. Covering any surface of the structure with materials that might mask the location of leaks or obscure damp concrete surfaces. Such coverings include, but are not limited to basin bottom grout, masonry veneer, stucco, plaster, and other coatings.
 - b. Installation of equipment, unless otherwise approved by the Engineer.
 - c. Backfilling structures to elevations above the limits indicated in the following paragraphs.
- 3. Liners and coatings:
 - a. Field-coated or installed liners and coatings shall be applied in strict conformance to manufacturer's standards.
 - b. Install liners that are mechanically locked to the concrete surface during placement of plastic concrete and before leakage testing.
 - (1) Examine liners for pinholes, tears, and partially fused splices, complete all required liner integrity testing, and make required repairs before commencing leakage testing.
 - c. Unless otherwise specified, do not install surface-applied protective or decorative coatings and linings until leakage tests have been completed.
- C. Weather requirements:
 - 1. Tests on structures with tops open to the atmosphere shall not be scheduled for periods when the 10-day weather forecast indicates a substantial change in weather patterns.
 - 2. Measurements of water surface levels in the structure shall not be scheduled for periods when the weather forecast indicates a difference of more than 35 degrees Fahrenheit between the ambient temperature readings at the times of initial and final measurements.
 - 3. Tests shall not be scheduled for periods when the 10-day weather forecast indicates that the water surface may freeze before the test is complete.
- D. Groundwater requirements:
 - 1. Bring groundwater to a level not higher than 3 feet below the bottom of the structure and maintain at that level for the duration of the test.
- E. Clean interior of structure:
 - 1. Remove dirt, contaminants, and construction debris.
 - 2. Flush floors and sumps to provide clean surfaces.
 - 3. Remove standing water that would interfere with examination of surfaces, cracks, or joints.
- F. Observe the structure, or portions of the structure being tested, for potential leak locations.
 - 1. Give particular attention to cracks, open joints, voids, and honeycombed and repaired surfaces.
 - 2. Visually observe openings, fitting, and pipe penetrations in the structure at both faces, if possible.
 - 3. Repair potential leak locations in accordance with these Specifications and as approved by the Engineer.
 - 4. Backfill excavations to the top of the structure foundation. Do not place backfill against water-bearing walls or over footings unless approved in advance by the Engineer.
 - a. If requesting backfilling of walls before testing, include a description of methods that will be used to detect leakage in the backfilled areas.
 - b. Engineer's approval of backfilling before testing shall not relieve Contractor of the responsibility to conduct leakage tests, to satisfy the leakage acceptance criteria for the structure, or to repair leaking portions of the structure, including those portions below or behind the backfill.

5. See Drawings and Section 02300 - Earthwork for requirements to provide wall stability before backfilling.
- G. Inlets to/outlets from the structure:
1. Inlets to and outlets from the structure shall be watertight.
 - a. Include valves, sluice, and/or slide gate valves and temporary bulkheads as required.
 - b. Inlets and outlets not required to be operable may be temporarily sealed before testing the compartments to which they open.
 - c. Secure inlets used to fill the structure for testing to ensure that no water is entering or leaving the structure once it has been filled to the test level.
 2. Adjustments to measured leakage at inlets and outlets based on manufacturers or Contractor's estimates will not be allowed.
 - a. Adjustments to measured leakage may be permitted by the Engineer, and, at their discretion, only when the Contractor makes specific measurements of leakage at each individual inlet and outlet using methods approved by the Engineer.

3.04 HYDROSTATIC LEAKAGE TEST FOR OPEN OR COVERED CONTAINMENT STRUCTURES

- A. Isolate sections of water-holding structures that can be isolated in actual operation. Fill and test sections for leakage separately.
1. Fill structures and sections of structures scheduled for testing to the normal operating water level indicated on the Hydraulic Profile indicated on the Drawings.
- B. Initial rate for filling of structures shall not exceed 8 feet in 24 hours.
- C. HST-100 testing includes 2 parts, "Qualitative Testing," and "Quantitative Testing," as described in the following paragraphs:
1. HST-100, Part 1 - Qualitative Testing:
 - a. During the first 24 hours after structures are filled, examine exposed concrete surfaces for damp spots or flowing water.
 - (1) Make observations in early morning, at midday, and in late afternoon.
 - (2) Continue observations through the duration of the Quantitative Testing period.
 - (3) Pay particular attention to conditions at joints, honeycombed areas, cracks, and repaired portions of the structure.
 - b. Evaluation criteria:
 - (1) The structure shall be considered to have failed these Qualitative Testing requirements if any of the following conditions are observed.
 - (a) Water droplets or moist areas on an outside surface that could only have originated inside the structure.
 - (b) Water is flowing or seeping from joints, cracks, or surfaces.
 - (i) Exception: Dampness or wetness on top of a footing, in the absence of flowing water, shall not be considered as failure to meet this criterion.
 - (c) Moisture can be transferred to a dry hand from the outside surfaces of the filled area.
 - c. Repairs and retesting:

- (1) Where damp spots or flowing water as described in the preceding paragraphs are observed, mark locations, provide repairs, and retest the structure as specified in subsequent paragraphs.
2. HST-100 - Part 2: Quantitative Testing:
 - a. If approved by the Engineer, Quantitative Testing may begin before repairs are made to areas failing Part 1 of this test; however:
 - (1) Adjustments to volume loss calculations of Quantitative Testing based on observed leakage will not be permitted.
 - (2) All defects identified for repair during Qualitative Testing shall be repaired to the satisfaction of the Engineer before approval of the structure.
 - b. Report the results of Quantitative Testing on "Leakage Test Report" included as Figure A at the end of this Section, or similar form prepared by the Contractor and containing at least the information included in Figure A.
 - c. Unlined concrete structures:
 - (1) Fill to the designated water surface elevation. Maintain that level for at least 72 hours before recording initial water levels for leakage test.
 - (2) Duration of test:
 - (a) Theoretical time required to lower the water surface in the structure by 3/8 inch when leakage is occurring at the maximum allowable rate specified in subsequent paragraphs of this Section.
 - (b) The duration ("D") of the test in days is determined by the following equation:

$$D = \frac{.375 \text{ inches}}{0.005 \text{ in/in/day} \times H \text{ ft} \times 12 \text{ in/ft}}$$

Where H = Maximum Liquid Depth

 - (i) Round results upward to the next full 24-hour period (day).
 - (ii) Minimum duration of test: 24 hours (1 day).
 - (iii) Maximum duration of test: 120 hours (5 days).
 - d. Lined concrete structures and secondary containment areas:
 - (1) Fill to the designated water surface elevation. Recording of water levels for leakage tests may begin as soon as the designated water surface level is reached and the water surface is calm.
 - (2) Duration of test: 72 hours (3 days).
 - e. Measurements: Water level:
 - (1) Record water levels at 24-hour intervals for the full duration of the test period.
 - (2) Measure water levels at not less than 2 locations on opposite ends of the structure, and preferably at 4 locations spaced equally around the structure. Mark locations on the structure and take measurements at the same locations throughout the duration of the test.
 - (3) Measure, to an accuracy of 1/16 inch, the vertical distance to the water surface from a fixed point on the structure above.
 - f. Measurements: Temperatures:

- (1) As part of the first and last sets of level measurements, record water temperature at a depth of 18 inches below the water surface. Measure temperature at the same locations where level measurements are taken.
 - (2) Record ambient temperature at the time of each water level measurement.
- g. Measurements: Evaporation and precipitation:
 - (1) Measure evaporation and precipitation by floating pans inside the structures during testing.
 - (a) For uncovered structures, measure both evaporation and precipitation.
 - (b) For covered structures that are well ventilated, measure evaporation.
 - (2) Measure using specially constructed clear containers:
 - (a) Provide clear plastic, calibrated, open-top containers not less than 18 inches in diameter and 18-inches deep.
 - (b) Partially fill containers with water and float inside the structure. Make provisions to hold containers in place at each measurement location, but away from structure walls and items passing overhead, such as beams or pipes.
 - (c) Measure initial depth of water in each device. Measure changes in water level in each device at the same time measurements of the water level inside the structure are taken.
- h. Restart of test:
 - (1) The Engineer may order a restart of the test when, in the Engineer's opinion, measurements have become unreliable due to unusual precipitation or other factors.
 - (2) If measurements or observed leakage during the testing period indicate that the allowable leakage requirements will be exceeded, the test may be terminated before completion of the full test period. Take appropriate actions to correct problems before restarting the test.
- i. Calculations of leakage test results:
 - (1) For each section of the structure tested, use water surface level records to calculate average loss of volume per 24-hour interval.
 - (a) For each 24-hour interval during the test, calculate the average of all measured drops in water level around the structure.
 - (b) Use the average drop thus determined to calculate an average loss of volume for each 24-hour interval.
 - (2) Adjustments to leakage calculations:
 - (a) For uncovered basins, calculations shall be corrected for precipitation added to the structure.
 - (b) Calculations may be corrected for evaporation and water temperature.
- j. Evaluation criteria:
 - (1) Unless otherwise specified, the average loss of volume during any 24-hour interval shall not exceed the limits shown in Table A.

Table A - Loss of Volume Criteria for Leakage Tests	
Structure Type	Maximum Loss of Water Volume
- Structure fully lined prior to leakage test. - Secondary containment areas.	No measurable loss over 72-hour test period.
Structure with monolithically placed membrane floor slab.	0.0125 percent of volume per 24-hour period.
Concrete paved canals, drying beds, lagoons, and similar structures.	0.100 percent of volume per 24-hour period.
Other containment structures.	0.050 percent of volume per 24-hour period.

k. Repairs and retesting:

- (1) Structures and portions of structures that have satisfied the qualitative requirements of HST-100, but have failed to satisfy the quantitative requirements of HST-100 may be immediately retested for volume loss.
 - (a) If the structure fails the second test for volume loss, the structure shall be drained, and the Contractor shall observe the interior for probable areas of leakage.
 - (b) The structure shall not be retested until repairs to the probable areas of leakage are complete.

3.05 REPAIRS FOR RETESTING

A. Locations showing damp spots or flowing water:

1. Mark locations of visible leaks and damp spots.
2. Drain structures for repair.
3. Repair defects causing damp spots and flowing water using methods specified in Section 03300 - Cast-in-Place Concrete and approved by the Engineer.
 - a. Repair both interior and exterior surfaces and make structures watertight.
 - b. Submit proposed repair products and procedures for Engineer's review.
 - c. Refill structures for retesting.
4. Repeat filling, observations, and repairs until no leaks or damp spots appear.

B. Structures for which loss of water volume loss exceeds the limits specified after adjustments for evaporation, and precipitation:

1. Determine cause of volume loss.
2. Drain structures of water.
3. Repair defects causing loss of water volume using methods specified in Section 03300 - Cast-in-Place Concrete and approved by the Engineer.
 - a. Submit proposed repair products and procedures for Engineer's review.
4. Refill water-holding structures.

5. Repeat testing and repairs until volume loss does not exceed specified limits.

End of Section

FIGURE A							
WATERTIGHTNESS TEST REPORT							
PROJECT:			SUBMITTED BY:				
STRUCTURE: _____			WITNESSED BY:				
AREA: _____			TEST DATES:				
TEST DURATION: _____			TEST DURATION:				
Surface area of structure tested: _____ (square feet) Volume of structure tested: _____ (cubic feet) Volume of structure tested: _____ (gallons) Measured loss through gates, etc.: _____ (gallons / day) Allowable loss of water volume: _____ (per day) Allowable loss of water volume: _____ (% in 24 hours) Allowable measured loss over test duration (inches): _____ Measured loss of water: _____ (gallons / day - From E below) Measured loss of water volume (%): _____ (in 24 hours - From E below)							
Water Temperature: Start of test: _____ °F End of test: _____ °F							
			Water Surface Elevation (top of structure to top of water)				Initials**
			Location #1	Location #2	Location #3	Location #4	
Day	Date	Time	(inches)	(inches)	(inches)	(inches)	
1							
2							
3							
4							
5							
Changes in Level:							

SECTION 01565 - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. The Contractor shall provide the following:
 - 1. All labor, materials, and incidentals as necessary to comply with these requirements and to remove all ACM as specified.
 - 2. The equipment and safety provisions required for protecting workers while handling asbestos-containing material (ACM) except for respiratory protection.
 - 3. The disposal of Regulated Asbestos Containing Materials (RACM). Disposal includes packaging of RACM. Disposal may be accomplished either by land filling at an appropriately permitted facility or converting RACM to non-Asbestos waste.
 - 4. Obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements known to the OWNER and associated with codes, regulations, and standards. Obtain all necessary permits for disposal of ACM at no additional cost to the OWNER.
- B. The Contractor shall comply with specifications herein and adherence to work practices, procedures and requirements set forth in all applicable Federal, State and local regulation. Applicable codes, regulations and standards take precedence, when available.
- C. The Contractor shall coordinate all activities with Kansas City Missouri Air Quality Division (Health Department) as necessary.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all applicable Division Sections, apply to this section.
- B. Asbestos Abatement Related Documents:
 - 1. (Request from City of Kansas City, MO – Water Services Department Project Manager)

1.03 SUBMITTALS

- A. Submit the following to the OWNER for review before starting work.
 - 1. Certified Statement: Submit certified statement to be notarized-signed by an officer of the abatement contracting firm stating which exposure measurements, medical surveillance, and worker training records are being kept in conformance with 29 CFR 1926.
 - 2. Copy of the CONTRACTOR's or subcontractors current Missouri State Registration for Asbestos Contractors issued by the Missouri Department of Natural Resources (MDNR).
 - 3. Copy of State and/or local license for waste transport subcontractor.
 - 4. Name and address of landfill where RACM are to be disposed. CONTRACTOR to include contact person and contact's telephone number.
 - 5. Chain of Custody Form and Form of Waste Manifest proposed for use.
 - 6. Sample of disposal bag and any added labels to be used.
 - 7. Material Safety Data Sheet: Submit Material Safety Data Sheets, or equivalent, in accordance with the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200) for the following:
 - a. Surfactants
 - b. Encapsulants
 - c. Solvents

8. Surfactant: Submit product data, use instructions and recommendations from manufacturer of surfactant intended for use. Include data substantiating that material complies with requirements.
- B. On a weekly basis, submit copies of all waste manifests and disposal tickets to OWNER.
- C. Waste Shipment Record: Maintain a waste shipment record as required by the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation which indicates the waste generator, transporter, and disposal site; and describes the nature, size, type of container, and form of asbestos waste. Submit to OWNER within 30 days of departure from building.
- D. Submit for the OWNERs records, copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance to standards and regulations bearing upon performance of the Work including:
 1. State and Local Regulations: Submit copies of codes and regulations applicable to the Work.
 2. Submit notices required by Federal, State and local regulations together with proof of timely transmittal to agency requiring the notice.
 3. Submit copies of current valid permits required by state and local regulations.
 4. Submit copies of all Federal, State and local licenses and permits necessary to carry out the Work.

1.04 CODES, REGULATIONS AND STANDARDS

- A. Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, all applicable Federal, State and local codes and regulations have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies are bound herewith.
- B. The CONTRACTOR shall assume full responsibility and liability for the compliance with all applicable Federal, State and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The CONTRACTOR is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State and local regulations. The CONTRACTOR shall hold the OWNER and ENGINEER harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of the CONTRACTOR, the CONTRACTOR's employees, or subcontractors.
- C. Federal Requirements that govern asbestos abatement work, and transportation and disposal of asbestos waste materials include but are not limited to the following:
 1. OSHA United States Code of Federal Regulations (CFR) including, but not limited to:
 - a. Title 29 – Labor:
 - (1) 1910 – Occupational Safety and Health Standards
 - (a) 1910.1001 – Asbestos
 - (b) 1910.132 – General Requirements
 - (c) 1910.134 – Respiratory Protection
 - (d) 1910.145 – Specifications for Accident Prevention Signs and Tags
 - (e) 1910.146 – Permit-Required Confined Spaces
 - (2) 1926 – Safety and Health Regulations for Construction
 - (a) Part 1926.1101 – Asbestos
 - (b) Part 1926.103 – Respiratory Protection
 - (c) Part 1926.95-107 – Personal Protective and Life Saving Equipment
 - (d) 1926.33 – Access to Employee Exposure and Medical Records

- (e) 1926.59 – Hazard Communication
 - (f) 1926.20-35 – General Safety and Health Provisions
- b. Title 49 – Transportation:
 - (1) Part 171 – General Information, Regulations, and Definitions
 - (2) Part 172 – Hazardous Materials Table, Special Provisions, hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans
 - (3) Part 171-180 – General Awareness and Training Requirements for Handlers, Loaders and Drivers, and Editorial and Technical Revisions
- 2. United States Environmental Protection Agency (USEPA) including, but not limited to:
 - a. Title 40 – Protection of Environment:
 - (1) Part 763, Subpart G – Asbestos Worker Protection
 - (2) Part 763, Subpart E – Asbestos Hazard Emergency Response Act (AHERA)
 - (3) Part 763, Subpart E, Appendix C – Asbestos Model Accreditation Plan (MAP)
 - (4) Part 61, Subpart A – National Emission Standards for Hazardous Air Pollutants, General Provisions
 - (5) Part 61, Subpart M – National Emission Standards for Hazardous Air Pollutants, National Emission Standard for Asbestos
- 3. State Requirements which govern asbestos abatement work or transportation and disposal of asbestos waste materials include, but are not limited to:
 - a. Missouri State Law – Chapter 643, Air Conservation
 - b. Missouri Code of State Regulations (CSR) – 10 CSR 10-6, Air Quality Standards, Definitions, Sampling and Reference Methods and Air Pollution Control Regulations for Entire State of Missouri.
- 4. Abide by all local requirements which govern asbestos abatement work or hauling and disposal of asbestos waste materials.

1.05 NOTICES

A. USEPA

- 1. Postmark or Deliver Written Notification as required by USEPA NESHAP Asbestos Regulations (40 CFR 61, Subpart M) to the regional Asbestos NESHAP Contact at least 20 working days prior to beginning any work on asbestos containing materials (ACM). Send notification to the following address with a copy to Owner's Project Manager:

Air Quality Program, Health Department
Suite 3000, 2400 Troost
Kansas City, Missouri 64108
(816) 983-4301

2. Include the following information in the notification sent to the Air Quality Program:
 - a. Indication whether the notification is the original or revised notification.
 - b. Name, address, and telephone number of Owner or operator.
 - c. Name, address, and telephone number of Contractor.
 - d. Type of Operation (demolition or renovation).
 - e. Description of the facility or affected part of the facility being demolished or renovated, including the size (square feet, number of floors), age, present and prior use of the facility.
 - f. Estimate of the approximate amount of RACM to be removed from the facility in terms of linear feet of pipe, and square feet of surface area for other facility components. Also estimate the approximate amount of Category I and Category II non-friable ACM (NACM) in the affected part of the facility that will not be removed before demolition.
 - g. For facilities in which the amount of friable asbestos materials is less than 260 linear feet on pipes and less than 160 square feet or 35 cubic feet if the length and width could not be measured. On other facility components, explain techniques of estimation.
 - h. Location and street address (including building number or name and floor or room number, if appropriate), city, county, and state of the facility being demolished or renovated.
 - i. Scheduled starting and completion dates of asbestos removal work (or any other activity, such as site preparation that would break up, dislodge, or similarly disturb asbestos material) in a demolition or renovation; planned renovation operations involving individual nonscheduled operations shall only include the beginning and ending dates of the report period as described in paragraph (a)(4)(iii) of 40 CFR 61.145.
 - j. Scheduled starting and completion dates of demolition or renovation.
 - k. Nature of planned demolition or renovation and method(s) to be used, including demolition or renovation techniques to be used and description of affected facility components.
 - l. Procedures to be used to comply with the requirements of NESHAP Asbestos Regulations (40 CFR 61 Subpart M).
 - m. Name and location of the waste disposal site where the asbestos containing waste material will be deposited.
 - n. A certification that at least one person trained as required by paragraph (c)(8) of 40 CFR 61.145 will supervise the stripping and removal described by this notification.
3. For emergency renovations described in paragraph (a)(4)(iv) of 40 CFR 61.145, the date and hour that the emergency occurred, a description of the sudden, unexpected event, and an explanation of how the event caused an unsafe condition, would cause equipment damage, or an unreasonable financial burden.
 - a. Description of procedures to be followed in the event that the unexpected RACM is found or Category II NACM becomes crumbled, pulverized, or reduced to powder.
 - b. Name, address, and telephone number of the waste transporter.

1.06 STATE AND LOCAL AGENCIES

- A. Send written notification as required by State and local regulations prior to beginning any work on ACM.

1.07 PERMITS

- A. All ACM is to be transported by an entity maintaining a current "Industrial waste hauler permit" specifically for ACM, as required for transporting of waste ACM to a disposal site.
- B. CONTRACTOR is responsible for obtaining any demolition, building, renovation or other permits, and for paying application fees, if any, where required by State or Local jurisdictions.

1.08 LICENSES

- A. Licenses: Maintain current licenses as required by applicable Federal, State and/or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the Work in this contract.

1.09 POSTING AND FILING OF REGULATIONS

- A. Post all notices required by applicable federal, state and local regulations. Maintain two (2) copies of applicable federal, state and local regulations and standard. Maintain one copy of each at job site and one copy on file in Contractor's office.

1.10 WORKER TRAINING

- A. AHERA Accreditation: All workers are to be accredited Abatement Workers as required by the USEPA MAP Asbestos Abatement Worker Training (40 CFR Part 763, Subpart E, Appendix C).
- B. State and Local License: All workers are to be trained, certified and accredited as required by State of Missouri.
- C. Training - Class I: Complete in accordance with 29 CFR 1926.1101. Provide training for all workers who will perform Class I operations that is the equivalent in curriculum, training method and length to the USEPA MAP asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).
- D. Training - Class II Intact (Non-Friable): Provide training for workers who will be performing Class II work involving only the removal and/or disturbance of one generic category of building material, such as roofing materials, flooring materials, siding materials or cement asbestos panels, which includes at a minimum, the specific work practices and engineering controls which specifically relate to that category. Provide a course that includes "hands-on" training and takes at least 8 hours. Provide training that includes the elements set forth in 29 CFR 1926.1101(k) and the Compliance Directive CPL 2-2.63.
- E. Training - Class II Non-Intact (Friable): Provide training for workers who will be performing Class II work on materials that are friable or will become friable during the work that is the equivalent in curriculum, training method and length to the USEPA MAP asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).
- F. Competent Person: Competent Person for work on removal of ACM must be trained as required by OSHA regulation 29 CFR 1926.1101(k)(9) and 1926.32(f); and as set forth in the Compliance Directive CPL 2-2.63 Appendix D page D-22 to D-23.

PART 2 - PRODUCTS

2.01 PROTECTIVE CLOTHING

- A. General. Provide and require the use of protective clothing, to include coveralls or similar whole-body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos that exceed the total weight average (TWA) and/or excursion limit prescribed by 29 CFR 1926.1101 or for which a required negative exposure assessment is not produced, and for any employee performing Class I operations which involve the removal of over 25 linear or 10 square feet of thermal system insulation (TSI) or surfacing ACM or presumed ACM.
- B. Coveralls: Provide disposable full-body coveralls and disposable head covers. Contractor will require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes, for all workers in the Work Area.
- C. Additional Protective Clothing: Provide each worker with the protective clothing as required by Federal, State and local regulations, including but is not limited to, hardhats, cold weather gear, gloves, boots and goggles.
- D. Disposable coveralls, head covers, and footwear covers shall be provided by the Contractor for the Owner, Engineer and other authorized representatives who may inspect the job site as needed.

2.02 MATERIALS

- A. Provide 6-millimeter (mil) thick leak-tight polyethylene disposal bags with three labels showing the following text. **Peel and stick type labels are prohibited.**
 - 1. First Label: Provide in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard:
“DANGER CONTAINS ASBESTOS FIBERS AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD BREATHING AIRBORNE FIBERS IS HAZARDOUS TO YOUR HEALTH”.
 - 2. Second Label: Provide in accordance with U. S. Department of Transportation regulation on hazardous waste marking. 49 CFR parts 171 and 172. Hazardous Substances
“RQ-ASBESTOS WASTE CLASS 9 NA2212-PG III”.
 - 3. Third Label: Provide the name of the waste generator (Owner's name), the location from which the waste was generated and the names and addresses of the transporter. This label must be durable, able to repel dirt and moisture (e.g., permanent marker). Label must be placed directly on disposal bag(s) in a legible format.
- B. Polyethylene Sheet: Provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6-mil thick, frosted or black as indicated.
- C. Duct Tape: Provide duct tape in 2-inch or 3-inch widths as indicated, with an adhesive which is formulated to stick firmly to sheet polyethylene.
- D. Spray Cement: Provide spray adhesive in aerosol cans which is specifically formulated to stick firmly to sheet polyethylene.
- E. Fiberboard Drums: Provide heavy duty leak tight fiberboard drums with tight sealing locking metal tops.
- F. Paper board Boxes: Provide heavy duty corrugated paper board boxes coated with plastic or wax to retard deterioration from moisture. Provide in sizes that will easily fit in disposal bags.

PART 3 – EXECUTION

3.01 GENERAL

A. Worker Protection

1. Provide worker protection as required by the most stringent OSHA and/or USEPA standards applicable to the Work. The following procedures are the minimum standards to be adhered to regardless of asbestos fiber count in the Work Area.
2. Each time the Work Area is entered remove all personal clothes in designated Changing Room provided by Contractor, and put on new disposable coverall, new head cover, and a clean respirator. Proceed through shower room to equipment room and put on work boots.
3. Warning Signs: Near the Work Area a sign complying with requirements of the USEPA NESHAP regulation (40 CFR Part 61) shall be visible in a manner and location that a person can read the following:
“DANGER ASBESTOS CANCER AND LUNG DISEASE HAZARD AUTHORIZED PERSONNEL ONLY RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA”.

B. Transportation and Disposal of RACM

1. All waste is to be transported by a waste transportation contractor or subcontractor with all required licenses from all state and local authorities with jurisdiction.
2. Mix all liquid ACM waste with a blendable material so that it forms a blendable (non-liquid) form and have the concurrence of the landfill operator prior to disposal.
3. Load all adequately wetted RACM in disposal bags or leak-tight containers. All materials are to be contained in one of the following:
 - a. Two 6-mil disposal bags; or
 - b. Two 6-mil disposal bags and a fiberboard drum; or
 - c. Sealed steel drum with no bag.
4. Protect interior of truck or dumpster with critical and primary barriers, as required by authorities having jurisdiction.
5. Carefully load containerized waste in fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to ensure that no unauthorized persons have access to the material.
6. Warning Signs: During loading and unloading mark dumpsters, receptacles and vehicles with a sign to comply with requirements of the USEPA NESHAP regulation (40 CFR Part 61), in a visible location that reads:
“DANGER ASBESTOS DUST HAZARD CANCER AND LUNG DISEASE HAZARD AUTHORIZED PERSONNEL ONLY”
7. Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to a sealed truck or dumpster.
8. Do not transport disposal bagged materials on open trucks. Label drums with same warning labels as bags. Uncontaminated drums may be reused. Treat used drums that have been contaminated as RACM and dispose of in accordance with this specification.
9. Advise the landfill operator or processor, at least ten days in advance of transport, of the quantity of ACM to be delivered.
10. At disposal site unload containerized waste:
 - a. At a disposal site, sealed plastic bags may be carefully unloaded from the truck. If bags are broken or damaged, return to work site for rebagging. Clean entire truck and contents using procedures set forth under Project Decontamination.
11. Retain receipts from landfill or processor for amount of ACM disposed.

12. At completion of hauling and disposal of each load, submit copy of waste manifest, chain of custody form, and landfill receipt to Owner.

3.02 SEQUENCING

- A. Isolate air intakes
 1. Shut down air handling units that draw in fresh air from any area within 30 feet of the Work Area. Seal all air intakes with 6-mil plastic sheeting.
 2. Provide horizontal or vertical extension to relocate the opening of air intakes outside or above the Work Area.
- B. Install critical barriers over all openings into building or equipment within 30 feet of the Work Area. Do not cover building surfaces. Erect temporary screens of reinforced plastic sheeting as required to prevent wind carrying products of work to any entries of the building or other occupied portions of the site.
- C. Do not sand, abrade or grind asbestos containing materials.
- D. Airborne Fiber Levels: Maintain airborne fiber levels as set forth herein.
- E. Use Manual methods which do not render asbestos containing materials “non-intact.” These include the use of spud, spade, flat-blade or slicing tools, such as axes, mattocks, pry bars, spud bars, crow bars, shovels, flat-blade knives, and utility knives, to slice, cut, strip-off, shear-under, or pry up the material.
- F. Remove ACM in an intact state to the extent feasible.
- G. Perform all removal work on non-intact ACM using wet methods, or that which will be rendered non-intact during removal, unless wet methods are not feasible or will create safety hazards.
 1. For removal of ACM in outside conditions, perform all removal work on non-intact asbestos containing materials when outside temperatures are warm enough that the ACM is above the phase change (glass) point. Carryout removal of ACM in a manner that will minimize pulverizing, breaking or abrading of involved materials.
 2. Wet surface with amended water. Use sufficient water to completely wet surface but not cause ponding or running of water. Cut into sections able to fit in disposal boxes as applicable. Use rotary blade to cut. Do not saw or use powered rippers. Lift sections and place in disposal boxes as applicable. Use a high-efficiency particulate air (HEPA) vacuum or wet sweep into sweep shovels to pick up debris as applicable. Bag and dispose of as specified herein.
 3. For insulation, wet insulation with amended water sufficiently to enable it to be removed in a crumbly damp mass. Remove by scraping with hoes. Dispose of insulation as a non-asbestos waste.
- H. When removing with a power cutter:
 1. Continuously mist the blade of the cutting machine during use unless the competent person determines that misting substantially decreases worker safety.

2. Collect dust and debris resulting from the cutting operation:
 - a. Aggregate Surface: Collect all dust resulting from the cutting operation with a HEPA dust collector or by HEPA vacuuming along cut line.
 - b. Smooth Surface: Collect all dust resulting from the cutting operation with a HEPA dust collector, by HEPA vacuuming along cut line, or by gently sweeping and then carefully and completely wiping up the wetted dust and debris left along the cut line.
3. Immediately bag dust and debris resulting from the cutting operation or place in covered containers.
- I. Intact ACM shall be removed from Work Area as soon as it is practical, but no later than the end of the work shift.
- J. ACM that is non-intact shall be removed from the Work Area as soon as it is practical, but in any event no later than at the end of the work shift. Non-intact ACM remaining in the Work Area will be kept wet, and placed in an impermeable waste bag, or wrapped in plastic sheeting.

3.03 DECONTAMINATION PROCEDURES

- A. Require all workers to adhere to the following personal decontamination procedures at a minimum whenever they leave the Work Area:
 1. Type B or C Supplied Air or Powered Air-Purifying Respirators (PAPR):
 - a. When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.
 - b. Still wearing respirators, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers while showering. The following procedure is required at a minimum:
 - (1) Thoroughly wet body including hair and face. If using a PAPR hold blower unit above head to keep canisters dry.
 - (2) With respirator still in place thoroughly wash body, hair, respirator face piece, and all parts of the respirator except the blower unit and battery pack on a PAPR. Pay particular attention to seal between face and respirator and under straps.
 - (3) Take a deep breath, hold it and/or exhale slowly, completely wet hair, face, and respirator. While still holding breath, remove respirator and hold it away from face before starting to breath.
 - (4) Carefully wash face piece of respirator inside and out.
 - c. If using PAPR, shut down in the following sequence:
 - (1) Cap inlets to filter cartridges, and then turn off blower unit (this sequence will help keep debris which has collected on the inlet side of filter from dislodging and contaminating the outside of the unit). Thoroughly wash blower unit and hoses. Carefully wash battery pack with wet rag. Be extremely cautious of getting water in battery pack as this will short out and destroy battery.
 - (2) Shower completely with soap and water.
 - (3) Rinse thoroughly.
 - (4) Rinse shower room walls and floor prior to exit.
 - (5) Proceed from shower to Changing Room and change into street clothes or into new disposable work items.
- B. Remote Shower: The procedures above are to be used if the decontamination facility is used as a remote shower. If a worker cannot gain direct access to the Equipment Room, require that they enter

Decontamination Unit and proceed directly through Shower Room to Equipment Room.

Decontamination procedure is then completed as required above.

C. Within Work Area:

1. Require that workers NOT eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the Work Area. To eat, chew, drink or smoke, workers shall follow the procedure described above, and then dress in street clothes before entering the non-Work Areas of the building.

END OF SECTION

SECTION 01566 – CLEANUP OPERATIONS

PART 1 - GENERAL

1.01 SUMMARY

- A. The Contractor shall provide all material, labor and equipment necessary for cleanup operations. The Contractor shall maintain a neat and clean job site at all times.

1.02 SPECIFICATION MODIFICATIONS

- A. It is understood that throughout this section these Specifications may be modified by appropriate items in Section 01015 – Specific Project Requirements or as otherwise indicated on the Contract Drawings.

1.03 RELATED SECTIONS

- A. General Conditions of Contract Between Owner and Design-Builder
- B. Section 01000 – General Project Requirements.
- C. Section 01300 – Submittals.
- D. Section 02510 – PCC Sidewalks, Driveways, Ramps.
- E. Section 02930 – Seeding.
- F. Section 02931 – Sodding.
- G. Section 03000 – Concrete.

1.04 CODES AND STANDARDS

- A. Not used.

1.05 DEFINITIONS

- A. Not used.

1.06 INFORMATION PROVIDED BY THE CITY

- A. As provided in the Contract Documents.

1.07 SUBMITTALS

- A. The Contractor shall submit as specified in Section 01300 – Submittals, if proposing alternate methods and facilities for concrete washout facilities. See paragraph 3.03.E. 3 in this Section.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SITE MAINTENANCE

- A. Cleanup operations shall be conducted in accordance with Section 00700 General Conditions, Article 6 – Contractor’s Responsibilities.
- B. Adequate cleanup shall be a condition for the processing of the Contractor’s monthly progress payment applications.
- C. The Contractor shall, at all times, keep the premises from accumulations of excavated materials, waste materials and other debris resulting from the Work. Site maintenance shall include, but is not limited to, the following:

1. The Contractor shall sweep streets daily to maintain the Site in a neat and clean condition.
 2. Provide adequate trash receptacles on the Site and promptly empty when filled.
 3. Conduct periodic cleanup of the Site to avoid hazards, interference with traffic or operations at the Site.
 4. Keep construction materials such as pipe, forms and scaffolding neatly stacked.
 5. Conduct immediate cleanup to protect the Work by removing splattered concrete, asphalt, oil, paint, corrosive liquids and cleaning solutions from all surfaces (linear construction) including walls, floors and metal surfaces (vertical construction) before the surfaces are marred.
 6. Volatile wastes shall be properly stored in covered metal containers and removed from the Site daily.
 7. Wastes shall not be buried on the site or disposed of into storm drains, sanitary sewers, streams or waterways. All wastes shall be removed from the site and disposed of in a manner complying with all local permits, ordinances and anti-pollution laws.
 8. Overloading of trucks is prohibited to prevent spillages on all access and haul routes. The Contractor shall provide periodic inspection of traffic areas to enforce the requirements of this Section.
 9. The Contractor shall prevent all excess material from washing into stream beds, storm water facilities, streets, culverts, etc.
- D. All excavated material not incorporated into the Work shall be removed and disposed of by the Contractor so that the site will be left in equal or better condition than its original state.
- E. Any deficiency in the quantity of material for filling depressions caused by settlement shall be supplied by the Contractor.
- F. The Contractor shall remove all mobilized equipment, surplus materials, debris and temporary facilities from the site. The construction site shall be left in its original condition or better condition than before the Work commenced.
- G. In addition, as directed by the City, the Contractor may be required to obtain a City approved release form, signed by the property owners affected by the Work.

3.02 DUST CONTROL

- A. The Contractor shall take all reasonable measures to prevent unnecessary dust. Earth surfaces subject to dusting shall be kept moist with water or by the approved application of an approved chemical suppressant. When practical, dusty materials in piles or in transit shall be covered to prevent blowing.
- B. The Contractor shall make provisions so that buildings or operating facilities that may be adversely affected by dust shall be adequately protected from dust. Existing or new machinery, motors, instrument panels or similar equipment shall be protected by suitable dust screens. Proper ventilation shall be included with dust screens.
- C. Contractor shall maintain and keep all streets clean throughout the Work period. The Contractor shall perform street sweeping on a daily basis to remove dust and debris from paved areas within the Work site as well as on all access and haul routes.

3.03 CONCRETE WORK

- A. See Section 02510 – PCC Sidewalks, Driveways and Handicap Access Ramps for additional requirements.
- B. See Section 03000 – Miscellaneous Concrete for additional requirements.

- C. Three (3) working days after all subsurface work has been completed, the contractor shall initiate the following restoration work: seed and/or sod (depending on contract requirements and/or written agreements with property owners), replacing concrete sidewalks, curbs, gutters, driveways and other surfaces impacted by the Work.
- D. Three (3) working days after the placement of concrete, the Contractor shall conduct cleanup operations related to the completed concrete work as follows:
 - 1. Removal of forms, backfilling of the form excavation and debris removal from streets, sidewalks and parkway areas shall be accomplished within three (3) working days after the concrete placement. The backfilled areas within one foot of new concrete shall not be compacted until the concrete has cured a minimum of five (5) days.
 - 2. Five (5) working days after the concrete is placed, the Contractor shall complete all joint caulking, pavement restoration, seeding and sodding. If construction is being performed during periods other than designated seeding and sodding seasons, all locations without turf cover shall be completed within ten (10) working days after the beginning of the next seeding and sodding season. Refer to Section 02930 – Seeding and Section 02931 - Sodding for additional requirements.
 - 3. If cleanup, backfilling, sodding, joint caulking or pavement restoration is not accomplished within the above limits, all tear-out and installation operations shall cease until these items are finished. Proceeding without these items being completed is at the sole discretion of the City.
 - 4. All excavated material shall be removed and disposed of by the Contractor so that the grounds will be left in equal or better condition than its original state. Any deficiency in the quantity of material for filling depressions caused by settlement shall be supplied by the Contractor.
 - 5. Surplus materials, equipment, tools, temporary facilities and structures shall be removed by the Contractor; all debris shall be hauled away by the Contractor and the construction site shall be left in equal or better condition than its original state. Payment of completed items on the Schedule of Values shall be subject to the completion of the cleanup operations.
 - 6. Tear-out and installation shall not begin if unfavorable conditions for concrete placement are forecast for the next day.
 - 7. All cleanup operations, as stated above, shall be completed five (5) working days after concrete placement.
- E. Concrete Washout Facilities:
 - 1. The Contractor shall provide facilities for concrete washout to collect and retain all the concrete washout water and solids in leak proof containers.
 - 2. Lined wash pits or washout boxes are acceptable.
 - 3. Alternate methods for washout facilities may be considered by the City. The Contractor shall submit for review and approval, per Section 01300 – Submittals, the alternate methods and facilities to be used.
 - 4. The location of washout facilities shall be indicated on the Construction Site Plan (See Section 01000 – General Project Requirements, paragraph CONSTRUCTION SITE PLAN).
 - 5. Concrete washout facilities shall be inspected daily and after heavy rains to check for leaks, identify any plastic linings or sidewalls that have been damaged by construction activities and determine whether they have been filled to over 75 percent capacity.

6. When the washout container is filled to over 75 percent of its capacity, the wash-water shall be vacuumed out or allowed to evaporate to avoid overflows. When the remaining cementitious solids have hardened, they shall be removed from the Site.
7. Damages to the washout container shall be repaired promptly.
8. Before heavy rains, the washout container's liquid level shall be lowered or the container shall be covered to avoid an overflow during the rain storm.
9. Washout facilities shall be removed from the Site upon completion of the Work and the area restored as specified herein.

END OF SECTION

SECTION 01570 - TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 – GENERAL

1.01 SUMMARY

- A. The Contractor shall provide erosion and sediment control measures for all areas within and adjacent to the Project site. The Contractor shall assume that the work is to be done under the City's General Operating Permit (Permit No: MOR100006). The Contractor does not need to make separate application to the Missouri Department of Natural Resources (MDNR).
- B. Specific erosion and sediment control measures are specified in APWA 5100 and Standard Erosion and Sediment Control (ESC) Drawings. These measures shall be implemented in order to control erosion and water pollution.
- C. No separate payment shall be made for Erosion and Sediment Control. The Contractor shall include in the lump sum total bid price: all labor, material and equipment necessary to comply with this Section and all other Work indicated in the Contract Documents.

1.02 DESCRIPTION

- A. The Contractor shall install and maintain temporary erosion and sediment control devices prior to commencing construction operations and continue through the construction period until such time as seeding and sodding has been completed and turf is established on all graded areas.
- B. The Contractor shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) utilizing the latest version of the City's SWPPP template to develop the plan. The plan must include a narrative of the types and appropriate uses of Best Management Practices (BMPs) for erosion and sediment control and stormwater management. The requirements of the SWPPP must be as stringent as those described in the City's General Operating Permit (No: MOR100006) and 10 CSR 20-6.200. Additionally, the SWPPP must comply with the City of Kansas City's MS4 permit.
- C. Failure to control erosion and water pollution will result in the Contractor being noncompliant. Any noncompliance constitutes grounds for the following enforcement actions. The Contractor shall have 24 hours after receiving a notice of noncompliance from the City's representative (i.e. Project Manager, Design Professional, Inspector/ Representative of the City) to correct the problem. If weather conditions prevent the correction of BMPs within 7 calendar days, the reasons for the delay must be documented (including pictures) and there must be a narrative explaining why the work cannot be accomplished within the 7 day time period. The documentation must be filed with the regular inspection reports. The Contractor shall correct the problem as soon as weather conditions allow. If the Contractor fails to correct the problem after the time prescribed, the City will hire a remediation expert to fix the problem. In such an event, the Contractor shall be liable to the City for the remediation costs plus a 10 percent mark-up of the total contract price. If the Contractor continues to be noncompliant, the Director (or an authorized agent thereof) may issue a stop work order and delay any payment until control measures are properly functioning and any damage has been mitigated. In such an event, any delay to the Project schedule will result in liquidated damages assessed against the Contractor.

1.03 SPECIFICATION MODIFICATIONS

- A. It is understood that throughout this section, these Specifications may be modified by appropriate items in Section 01015 – Specific Project Requirements or as otherwise indicated on the Contract Drawings.

1.04 RELATED SECTIONS

- A. Section 01000 – General Project Requirements.
- C. Section 01300 – Submittals.
- D. Section 02200 – Earthwork.
- E. Section 02575 – Surface Restoration.
- F. Section 02930 – Seeding.
- G. Section 02931 – Sodding.

1.05 QUALITY ASSURANCE

- A. The Contractor is responsible for the quality assurance and quality control of the Work. The Work shall be performed by a contractor with a proven record of performance for similar erosion and sedimentation control work.

1.06 INFORMATION PROVIDED BY THE CITY

- A. As provided in the Contract Documents.

1.07 CONTRACTOR SUBMITTALS

- A. The Contractor shall submit to the City/Design Professional for review and approval, in accordance with Section 01300 – Submittals, all specifications and data covering the proposed materials to be used for erosion and sedimentation control work.
- B. The Contractor shall submit the following to the City/Design Professional for review and approval prior to the preconstruction conference:
 - 1. The Contractor shall prepare a Stormwater Pollution Prevention Plan (SWPPP) for Projects that disturb one or more acres of land or disturb less than one acre when part of a larger Project which will disturb one or more acres over the life of the Project.
 - 2. The SWPPP shall meet the requirements of this Section, applicable references on the plans, the City's adopted Erosion and Sediment Control Specifications (ESCS), and all sections of the APWA-KCMO specifications that reference erosion control requirements. The Contractor shall develop, implement, and adhere to the erosion control and stormwater pollution prevention plan based upon the City's guidelines and requirements.
 - 3. No work can begin until the SWPPP is approved by the City/Design Professional.
 - 4. The Contractor shall update and maintain the SWPPP as necessary to develop ongoing site-specific control measures until final acceptance of the Project.

PART 2 – PRODUCTS

- A. Unless otherwise specified, acceptable products for Inlet Protection include the following:
 - 1. Gutter Buddy, Dandy Curb® or approved equal.

PART 3 – EXECUTION

3.01 SAFETY

- A. Perform all work in accordance with applicable Occupational Safety and Health Administration (OSHA) standards.

3.02 PERFORMANCE

- A. City Projects are covered by a general NPDES permit maintained by the Water Services Department's Storm Water Division. The Permit imposes a number of obligations including, but not limited to, the following:
 - 1. New Projects must be reported to the MDNR 90 days before the Project starts.
 - 2. Each site must have and follow a written Storm Water Pollution Prevention Plan (SWPPP). Each site must be inspected weekly and following each rain event, for compliance with the SWPPP. Written inspection reports must be kept.
 - 3. All personnel on site must be briefed on the requirements of the SWPPP.
 - 4. A copy of the SWPPP must be on site at all times.
 - 5. All deficient items shall be promptly corrected. In no case shall the correction period exceed two calendar days.
 - 6. Quarterly reports must be filed by the City with MDNR identifying and giving the status and percent complete of each Project.
 - 7. MDNR must be notified if hazardous substances or contaminated soil are discovered on site.
- B. The Contractor shall follow the approved SWPPP, as well as all erosion control measures included in the Contract Documents and implement other BMP measures as directed by the City/Design Professional.
- C. The Contractor shall prevent erosion during his operations until vegetation is re-established. The Contractor shall prepare erosion control plans and submit in writing to the City/Design Professional any proposed modifications to the plans. The proposed modifications shall describe materials that will be used and the tasks that will be performed to control runoff on the site.
- D. Erosion control devices shall be in place before land is disturbed.
- E. All earthen structures shall be seeded or sodded. See Section 02930 – Seeding or Section 02931 – Sodding for additional requirements.
- F. Vegetation shall be established to provide adequate protection or develop other suitable means.
- G. Sediment trapping devices shall be installed in the proper location prior to grading.
- H. The Contractor shall establish perimeter sediment trapping measures that function properly.
- I. The Contractor shall prevent sediment from leaving the site and/or from damaging adjacent property.
- J. The Contractor shall prevent and or remove mud on public roads or at intersections with public roads that is related to the Project work being completed.
- K. The Contractor shall provide a temporary construction entrance to reduce/eliminate the transport of mud from the construction site onto public right of ways.
- L. The Contractor shall provide dust control measures for any graveled areas or exposed soil areas. See Section 01000 – General Project Requirements, paragraph DUST CONTROL for additional requirements.
- M. The Contractor shall temporarily or permanently stabilize all areas with exposed soil. See Section 02930 – Seeding or Section 02931 – Sodding for additional requirements.
- N. The Contractor shall adequately stabilize all finished cut and fill slopes.
- O. All on-site drainage channels and outlets shall be adequately stabilized.
- P. Route stream around work areas.
- Q. Repair stream channel damages per the Contract Documents.
- R. Provide stabilization or a temporary stream channel crossing where needed.

3.03 INSTALLATION

- A. Methods, materials and maintenance shall be the sole responsibility of the Contractor. The Contractor and the City/Design Professional shall conduct weekly onsite inspections using the “Erosion and Sediment Control Checklist” provided by the Owner. Remove any onsite pollutant sources (debris piles with petroleum cans, chemical containers, fueling trucks/tanks or other possible sources of pollution). Upon notification of a weather forecast with a reasonable likelihood of rain, or at the direction of the City/Design Professional, the Contractor shall construct temporary berms and install erosion control fencing as necessary to control the potential eroded sediment and prevent it from leaving the construction area. If the Contractor’s construction operations are complete to the point where seeding or sodding is the major item at hand before final acceptance can be made, and seeding or sodding is out-of-season or disallowed by the City/Design Professional, the Contractor shall construct one of the following erosion control measures:
1. Incorporate the use of erosion control fencing immediately downstream of vulnerable areas that are susceptible to the formation of small streams. Maintain the erosion control devices until seeding or sodding season returns. Upon return of the sodding season, the area shall be re-graded to the lines and grades established in the Contract Drawings and sodded at the direction of the City/Design Professional. See Section 02930 – Seeding and Section 02931 – Sodding for additional requirements.
 2. Terrace the ground with graded berms and incorporate the use of both temporary slope drains (See ESCS Section 10.03.4.3 and Section 02200 – Earthwork for additional requirements) and erosion control fencing (as specified in this Section). Maintain the erosion control devices until seeding or sodding season returns. Upon return of the seeding or sodding season, the area shall be re-graded to the lines and grades established in the Contract Drawings and seeded/sodded at the direction of the City/Design Professional. See Section 02930 – Seeding and Section 02931 – Sodding for additional requirements.
 3. Fertilize, place seed or sod, and irrigate as directed by APWA-KCMO 2400. Maintain the erosion control devices until seeding or sodding season returns. Upon return of the seeding or sodding season the Contractor shall re-establish the grade and replace all dead seed or sod at the direction of the City/Design Professional. See Section 02930 – Seeding and Section 02931 – Sodding for additional requirements.
- B. Silt fence shall be installed, inspected and maintained in accordance with APWA ESC–10.
- C. Berms shall be constructed in accordance to APWA ESC–29:
1. Berms are required if the silt fence is not installed or properly maintained.
 2. Inspection shall be frequent and repair or replacement shall be made promptly as needed.
 3. Remove sediment deposits as necessary to provide adequate storage volume for the next rain.
 4. The Contractor shall remove berms when they have served their usefulness.
 5. Sediment trapped by this practice shall be uniformly distributed on the source area prior to seeding or sodding.
- D. The Rock Check Dam shall be constructed, inspected and maintained in accordance to APWA ESC–15.
- E. Inlet Protection. Work covered under this item consists of installing a Gutter Buddy, Dandy Curb® or equal inlet protection system for inlets and median barrier inlets without

grates. The purpose is to keep silt, sediment and construction debris out of the storm system:

1. The inlet protection system shall be a sewn fabric unit enclosing a porous structure in the form of a cylindrical tube placed in front of and extending beyond the inlet opening on both sides.
2. Place inlet protection unit on the street with aggregate pouch near the inlet it will be installed to protect.
3. For oil and sediment, place absorbent in the sock tube.
4. Center the unit against curb or median inlet opening so that the curb side of the unit creates a seal with the curb or median barrier and inlet structure. There will be approximately twelve (12) inches of the inlet protection unit overhanging on each side of the opening. If the unit is not installed in this manner, it will not function properly.
5. The Contractor shall remove all accumulated sediment and debris from in front of the unit and from the street surface in the vicinity of every installed unit after each rain event or as directed by the City/Design Professional. Dispose of the unit at an appropriate recycling or solid waste facility when the unit is no longer being used.
6. Oil and sediment. Remove and replace absorbent when near saturation.

3.04 MAINTENANCE AND REPAIR

- A. The Contractor is responsible for maintaining all erosion and sediment control measures until acceptance of the Project by the City.
- B. Erosion control measures showing evidence of overtopping, breaks or erosion shall be repaired or replaced with suitable materials.
- C. All storm sewer inlets shall be regularly maintained so that sediment will not enter the system.
- D. Repair and clean-out all control measures that are not functioning properly.
- E. Remove temporary measures that are no longer needed.
- F. Seeded or sodded areas requiring maintenance (fertilizer, re-sodding, re-seeding or additional mulch and watering) shall be promptly addressed. See Section 02930 – Seeding and Section 02931 – Sodding for additional requirements.

3.05 WARRANTY

- A. Seeding and sodding work shall have taken root and established satisfactory coverage before acceptance by the City. The Contractor shall maintain as described in paragraph 3.04 above and shall guarantee seeding and sodding for one (1) year after acceptance. The Contractor shall scarify, re-seed or re-sod, fertilize and mulch (seeded areas) any barren area greater than 1 square foot. See Section 02575 – Surface Restoration for requirements on early acceptance.

END OF SECTION

CITY OF KANSAS CITY, MISSOURI



STORMWATER POLLUTION PREVENTION PLAN **(SWPPP)**

For Capital Improvement Projects Disturbing One or More Acres

Missouri State General Operating Permit (Land Disturbance Permit) MO-R100000

(July 2022 – Jun 2027)

(Insert Project Name)

(Insert Project Site Address)

(Insert Owner Department)

(Insert Project Site Telephone Number {if applicable})

Contacts in case of spills:

For **hazardous substances releases**, under the Missouri Spill Bill, responsible parties or spillers are required to report to Missouri Department of Natural Resources 24-hour Environmental Emergency Response Spill Line at (573) 634-2436, or the National Response Center at (800)-424-8802.

For **non-hazardous substances releases**, should a spill or an unauthorized discharge cause or permit any contaminants, other than sediment, or hazardous substance to discharge or enter waters of the state, the unauthorized discharge must be reported to the Missouri Department of Natural Resources regional office as soon as practicable but no more than 24 hours after the discovery of the discharge. Call Kansas City Regional Office (816) 251-0700, or the Department's Environmental Services Program (573) 526-3315.

CERTIFICATIONS
(To be Completed by ALL PARTIES)

Design Professional's Declaration:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Design Professional: _____

Print Name: _____ Title: _____

Signature: _____ Date: _____

City's Review:

I have reviewed this SWPPP for compliance with the requirements contained in the City's Missouri State Operating Permit for land disturbance activities and have found the plan complete prior to commencement of land disturbance activities.

Owner Department: _____

Print Name: _____ Title: _____

Signature: _____ Date: _____

General Contractor's Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

General Contractor: _____

Print Name: _____ Title: _____

Signature: _____ Date: _____

Note: Name the person(s) responsible for inspection, operation, and maintenance of BMPs. The SWPPP shall list the names and describe the role of all owners/primary operators (such as general contractor, project manager) responsible for environmental or sediment and erosion control at the land disturbance site.

Subcontractors Certification:

I hereby certify that I understand the requirements stated in this SWPPP, that I am responsible for completing the requirements, which have been listed in the plan as being a part of my scope of work.

Subcontractor/Project Role: _____
Signature: _____ Title: _____
Print Name: _____ Date: _____

Subcontractor/Project Role: _____
Signature: _____ Title: _____
Print Name: _____ Date: _____

Subcontractor/Project Role: _____
Signature: _____ Title: _____
Print Name: _____ Date: _____

Subcontractor/Project Role: _____
Signature: _____ Title: _____
Print Name: _____ Date: _____

Subcontractor/Project Role: _____
Signature: _____ Title: _____
Print Name: _____ Date: _____

Subcontractor/Project Role: _____
Signature: _____ Title: _____
Print Name: _____ Date: _____

Subcontractor/Project Role: _____
Signature: _____ Title: _____
Print Name: _____ Date: _____

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PART I: GENERAL PROJECT INFORMATION

(To be completed by Owner Department or Design Professional)

1. Project Site Name: _____

Project Site Address/Location: _____

City: _____ **State:** _____ **Zip Code:** _____ **County:** _____

Section, Township, Range: _____

Project Number: _____

Owner Department: _____

Address: _____

City: _____ **State:** _____ **Zip Code:** _____

Phone: _____ **Fax:** _____

E-mail: _____ **Cell Phone:** _____

2. Record of Important Dates: fill in during construction activities.

Completed SWPPP approval	
Groundbreaking activities begin	
Stabilization measures initiated	
Permanent stabilization achieved	

3. Describe the Nature of the Land Disturbance Activity:

- (a) The function of the project (e.g., low density residential, shopping mall, highway, etc.),
- (b) The intended sequence and timing of activities that disturb the soils at the site; and
- (c) Estimates of the total area expected to be disturbed by excavation, grading, or other land disturbance support activities including off-site borrow and fill areas.

(Use additional sheets as necessary)

(a)	
(b) 1)	7)
2)	8)
3)	9)
4)	10)
5)	11)
6)	12)

Estimated Project Start Date: _____

Estimated Project Completion Date: _____

(c) Total Site Area (in acres): _____

Estimated Total Area (in acres) to be disturbed by all activities: _____

PART II: GENERAL REQUIREMENTS

(Applicable to All PARTIES)

1. Conditions for SWPPP Update

The SWPPP shall be amended and updated as appropriate during the term of the land disturbance activity. All SWPPP modifications shall be signed and dated. The SWPPP shall be amended to incorporate any significant site condition changes which impact the nature and condition of stormwater discharges. At a minimum, these changes include whenever:

- (a) The location, design, operation, or maintenance of BMPs is changed;
- (b) Design of the construction project is changed that could significantly affect the quality of the stormwater discharges;
- (c) Site inspections indicate deficiencies in the SWPPP or any BMP;
- (d) Missouri Department of Natural Resources notifies the permittee in writing of deficiencies in the SWPPP;
- (e) The SWPPP is determined to be ineffective in minimizing or controlling erosion and sedimentation (e.g., there is visual evidence of excessive site erosion or sediment deposits in streams, lakes, or downstream waterways, sediment or other wastes off site); and/or
- (f) Missouri Department of Natural Resources determines violations of water quality standards may occur or have occurred.

2. Record of SWPPP Update: fill in Appendix A

3. Restriction and Limitations

The land disturbance permit does NOT allow placement of fill material into any stream or wetland, alteration of a stream channel, or obstruction of stream flow unless authorized by a CWA Section 404 Permit, or placement of fill in floodplains unless authorized by appropriate federal and/or state floodplain development authorities.

The land disturbance permit does NOT supersede any requirement of the National Environmental Policy Act; the Endangered Species Act; the National Historic Preservation Act; the Comprehensive Environmental Response, Compensation and Liability Act; the Resource Conservation and Recovery Act; or any other relevant acts.

4. Erosion and Sediment Controls

Ensure the **design, installation, and maintenance** of effective erosion and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:

- (a) Control stormwater volume, velocity, and peak flow rates to minimize soil erosion;
- (b) Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion and scour;
- (c) Minimize the amount of exposed soil during construction activity;
- (d) Minimize the disturbance of steep slopes;
- (e) Minimize sediment discharges from the site. Address factors such as:
 - 1) The amount, frequency, intensity, and duration of precipitation;
 - 2) The nature of resulting stormwater runoff;
 - 3) Expected flow from impervious surfaces, slopes, and drainage features; and
 - 4) Soil characteristics, including the range of soil particle size expected to be present on the site.
- (f) Provide and maintain natural buffers around surface waters as detailed in the Permit – Part V. BMP REQUIREMENTS Condition 7, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration and filtering, unless infeasible; and
- (g) Minimize soil compaction and preserve topsoil where practicable.

PART III: PROJECT PLANNING & DESIGN
(To be completed by DESIGN PROFESSIONAL)

1. General Information

Design Professional develops the initial SWPPP, including narrative description and SITE MAP (s) containing all the information as required by the MO-R100000 (effective July 2022).

Designer's Name: _____
Company Name: _____
Address: _____
City: _____ **State:** _____ **Zip Code:** _____
Phone: _____ **Fax:** _____
E-mail: _____ **Cell Phone:** _____

2. Soil Disturbing Activities:

Soil disturbing activities for this project will include the following (Check all that apply):

- ☐ Clearing and grubbing of existing trees ☐ Stripping of topsoil within the limits of construction
- ☐ Stockpiling and re-spreading ☐ Utility trench excavation and backfill
- ☐ Preparing sub grade for streets and sidewalks ☐ Backfilling curbs and sidewalks
- ☐ Disposal areas for excess excavated material ☐ Borrow areas for fill material
- ☐ Construction of sediment basins or storm water ☐ Construction of compacted fill areas for residential building
- ☐ Minimize soil compaction and preserve topsoil ☐ Provide and maintain natural buffers around surface waters
- ☐ Other: _____

3. Downstream Information:

Name of primary receiving water body: _____

Does this Project require 404 Permit? ☐ Permit Number: _____

☐ Water Quality Certification Number: _____

List and Describe the location of all outfalls:

Outfall Location	Receiving Waterbody	Distance to receiving waterbody
1)		
2)		
3)		
4)		
5)		

4. Determine the 2-year, 24-hour Storm Event

A 2-year, 24-hour storm event can be determined for the project location using the National Oceanic and Atmospheric Administration's National Weather Service Atlas 14 https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html, or can be determine using local rainfall distribution for a 2-year, 24 hours storm event using multi-decade local high density rain gauge data, as approved by Missouri Department of Natural Resources.

Specify the method used to determine the 2-year, 24-hour storm event for the project location:

- ☐ NOAA Atlas 14
- ☐ Based on multi-decade local high density rain gauge data, as approved by the Department

Specify the 2-year, 24-hour storm event for the project location: _____ inch

5. Authorized Non-stormwater Discharges

Authorized non-stormwater discharges associated with construction activities: check all occurring on site, and note where these discharges occur.

- ☐ (a) Discharges from emergency fire-fighting activities;

Where: _____

- ☐ (b) Hydrant flushing and water line flushing, provided the discharged water is managed to avoid instream water quality impacts;

Where: _____

- ☐ (c) Landscape watering, including to establish vegetation;

Where: _____

- ☐ (d) Water used to control dust;

Where: _____

- ☐ (e) Waters used to rinse vehicles and equipment, provided there is no discharge of soaps, solvents, or detergents used for such purposes;

Where: _____

- ☐ (f) External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances (e.g., paint or caulk containing polychlorinated biphenyls (PCBs))

Where: _____

- ☐ (g) Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. Directing pavement wash waters directly into any Waters of the State, storm drain inlet, or stormwater conveyance (constructed or natural site drainage features), unless the conveyance is connected to an effective control, is prohibited;

Where: _____

- ☐ (h) Uncontaminated air conditioning or compressor condensate;

Where: _____

- ☐ (i) Uncontaminated, non-turbid discharges of ground water or spring water;

Where: _____

- ☐ (j) Foundation or footing drains where flows are not contaminated with process materials;

Where: _____

and

☐ (k) Uncontaminated construction dewatering water discharged in accordance with requirements found in this permit for specific dewatering activities.

Where: _____

6. Requirements for Best Management Practices (BMPs)

BMPs for land disturbance are a schedule of activities, practices, or procedures that reduces the amount of soil available for transport or a device that reduces the amount of suspended solids in runoff before discharge to waters of the state. BMPs are divided into two main categories: structural or non-structural; and they are also classified as temporary or permanent. Temporary BMPs may be added and removed as necessary with updates to the Stormwater Pollution Prevention Plan (SWPPP).

(1) Site Preservation:

- (a) **EXISTING VEGETATION, TREES, AND TOPSOIL SHALL BE PRESERVED WHERE PRACTICABLE.**
- (b) The disturbance of steep slopes shall be minimized.

(2) Riparian Buffer or a Structural Equivalent for Surface Waters of the State:

For surface Waters of the State, defined in Section 644.016.1(27) RSMo, located on or adjacent to the site, a riparian buffer or structural equivalent must be maintained in accordance with at least one of the following options.

- (a) Provide and maintain a 50-foot undisturbed natural buffer; or
- (b) Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
- (c) If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
- (d) Exempt from compliance with (a), (b), or (c) above if one or more of the following exceptions apply and documentation is provided in the SWPPP:
 - 1) As authorized per CWA Section 404 Department of the Army permit and its associated Section 401 Water Quality Certification from the Department.
 - 2) If there is no discharge of stormwater to waters of the state through the area between the disturbed portions of the site and Waters of the State located within 50 feet of the site. This includes situations where permanent control measures have been implemented that will prevent such discharges, such as a berm or other barrier.
 - 3) Where no natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for the current development of the site.
 - a. Where some natural buffer exists but portions of the area within 50 feet of the Waters of the State are occupied by preexisting development disturbances the permittee is required to comply with (a), (b), or (c) above.
 - 4) For linear projects where site constraints make it infeasible to implement a buffer or equivalent provided the permittee limit disturbances within 50 feet of any Waters of the State and/or supplemental erosion and sediment controls are provided to treat stormwater discharges from earth disturbances within 50 feet of the Waters of the State. It must also be documented in the SWPPP the rationale for why it is infeasible to implement (a), (b), or (c) and describe any buffer width retained and supplemental BMPs installed.
- (e) Where the permittee is retaining a buffer of any size, the buffer should be measured perpendicularly from any of the following points, whichever is further landward from the water:
 - 1) The ordinary high water mark of the water body, defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or
 - 2) The edge of the stream or river bank, bluff, or cliff, whichever is applicable.

(3) Perimeter Control:

Sediment controls shall be used along any perimeter areas of the site that are downgradient from any exposed soil or other disturbed areas. Prevent stormwater from circumventing the edge of the perimeter control. For sites where perimeter controls are infeasible, other practices shall be implemented to minimize discharges to perimeter areas of the site.

(4) Stockpile Management:

Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil.

- (a) Locate the piles outside of any natural buffers zones, established under the condition above, and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated;
- (b) Install a sediment barrier along all downgradient perimeter areas;
- (c) Divert surface flows around stockpiles to reduce and minimize erosion of the stockpile.

(5) Sedimentation Basins:

A sedimentation basin shall be included for each drainage area with ten or more acres disturbed at one time.

- (a) The sedimentation basin shall be sized, at a minimum, to treat a local 2-year, 24-hour storm.
- (b) Sediment basins shall not be constructed in any Waters of the State or natural buffer zones.
- (c) Discharges from dewatering activities shall be managed by appropriate controls. The SWPPP shall include a description of any anticipated dewatering methods and specific BMPs designed to treat dewatering water.
 - 1) Appropriate controls include, but are not limited to, sediment socks, dewatering tanks, tube settlers, weir tanks, filtration systems (e.g., bag or sand filters), and passive treatment systems that are designed to remove or retain sediment.
 - 2) Erosion controls and velocity dissipation devices (e.g., check dams, riprap, and vegetated buffers) to minimize erosion at inlets, outlets, and discharge points from shall be utilized.

Where use of a sediment basin is infeasible, the SWPPP shall evaluate and specify other similarly effective BMPs to be employed to control erosion and sediment. These similarly effective BMPs shall be selected from appropriate BMP guidance documents authorized by this permit. The BMPs must provide equivalent water quality protection to achieve compliance with this permit. The SWPPP shall require both temporary and permanent sedimentation basins to have a stabilized spillway to minimize the potential for erosion of the spillway or basin embankment.

(6) Concrete Washout Facilities:

Concrete washout facilities shall be used to contain concrete waste from the activities onsite, unless the washout of trucks and equipment is managed properly at an off-site location. The washout facility shall be managed to prevent solid and/or liquid waste from entering Waters of the State by the following:

- (a) Direct the wash water into leak-proof containers or pits designed so that no overflows can occur due to inadequate sizing or precipitation;
- (b) Locate washout activities away from Waters of the State, stormwater inlets, and/or stormwater conveyances where practicable. If not practicable, use BMPs to reduce risk of waste leaving the washout facility;
- (c) Designate the washout area(s) and conduct such activities only in these areas.
- (d) Ensure contractors are aware of the location, such as by marking the area(s) on the map or signage visible to the truck and/or equipment operators.

(7) Sediment Trackout from the Site:

Minimize sediment trackout from the site and sediment transport onto roadways.

- (a) Restrict vehicle traffic to designated exit points.
- (b) Use appropriate stabilization techniques or BMPs at all points that exit onto paved roads or areas outside of the site.
- (c) Use additional controls or BMPs to remove sediment from vehicle and equipment tires prior to exit from facility where necessary.
- (d) Stormwater inlets susceptible to receiving sediment or other pollutants from the permitted land disturbance site shall have curb inlet protection. This may include inlets off the active area where track out from vehicles and equipment could impact the stormwater runoff to those inlets.

(8) Selection of BMPs:

Appropriate BMPs shall be selected for use at the site.

- (a) Stormwater volume and velocity shall be considered when selecting effective BMPs.
- (b) A BMP that has demonstrated ineffectiveness in preventing or minimizing sediment or other pollutants from leaving a given site shall be replaced with a more effective BMP, or additional and sequential BMPs and treatment devices may be incorporated as site conditions allow.
- (c) A schedule for performing erosion control measures shall be considered in selecting BMPs.

(d) Stormwater discharges which leave the site from disturbed areas shall pass through an appropriate impediment to sediment movement such as a sedimentation basin, sediment traps (including vegetative buffers), or silt fences prior to leaving the land disturbance site.

(9) Types of BMPs:

Check all the types of BMPs used at the site:

• ***Soil Stabilization and Slope Protection BMPs***

☐ Scheduling	☐ Hydro-seeding	☐ Earth Dikes/Swales & Lined Ditches
☐ Straw Mulch	☐ Hydraulic/Wood Mulch	☐ Outlet Protection/Velocity
☐ Slope Drains	☐ Streambank Stabilization	☐ Preservation of Existing Vegetation
☐ Soil Binders	☐ Geotextiles, ECBs or TRMs	☐ Other (specify): _____

• ***Perimeter Controls & Sediment Barriers***

☐ Silt Fence	☐ Sandbag Barrier	☐ Storm Drain Inlet Protection	☐ Fiber Rolls
☐ Sediment Traps	☐ Check Dam	☐ Sediment/Desilting Basin	☐ Gravel Bag Berm
☐ Street Sweeping and Vacuuming	☐ Direct Stormwater to vegetated areas		
☐ Maintain natural buffers around surface waters	☐ Other (specify): _____		

• ***Establish Stabilized Construction Exits***

☐ Stone Pads	☐ Entrance/Outlet Tire Wash	☐ Other (specify): _____

• ***Non-Storm Water Management BMPs***

☐ Pile Driving	☐ Concrete Finishing	☐ Demolition/Removal Over Water
☐ Dewatering	☐ Concrete Curing	☐ Illicit/Illegal Discharge
☐ Clean Water	☐ Paving & Grinding	☐ Vehicle & Equipment Cleaning
☐ Dust Control	☐ Water Conservation Practices	☐ Temporary Stream Crossing
☐ Material/Equipment Use Over water	☐ Vehicle & Equipment Fueling & Maintenance	
☐ Other (specify): _____		

• ***Waste Management & Materials Pollution Control BMPs***

☐ Spill Prevention & Control	☐ Liquid Waste Management	☐ Sanitary/Septic Waste Management
☐ Stockpile Management	☐ Concrete Waste Management (Washout Area)	☐ Hazardous Waste Management
☐ Solid Waste Management	☐ Material Delivery/Storage/Use	☐ Contaminated Waste Management

☐ Other (specify): _____

- ***Permanent Stabilization BMPs***

☐ Retaining Walls ☐ Infiltration Basins ☐ Outlet Protection/Velocity Dissipation

☐ Biofilters ☐ Vegetative Buffers ☐ Earth Dikes, Drainage Swales & Lined Ditches

☐ Porous Pavement ☐ Slope Protection ☐ Detention/Retention Devices

☐ Other (specify): _____

(10) Description of BMPs:

Describe both structural and non-structural BMPs that will be used at the site.

(a) Provide the following general information for each BMP type which will be used one or more times at the site:

BMP Type 1:

Physical description:

Site conditions required:

Installation/construction procedures (including typical drawing):

Operation/maintenance procedures and schedules:

BMP Type 2:

Physical description:

Site conditions required:

Installation/construction procedures (including typical drawing):

Operation/maintenance procedures and schedules:

(b) Provide the following information for each specific instance where a BMP is to be installed:

- 1) The BMP is temporary or permanent
- 2) When the BMP will be installed in relation to each phase of the land disturbance procedures to complete the project
- 3) Site conditions required before removal of the temporary BMP

BMP 1:

The BMP is temporary ☐, or permanent ☐.

Describe when the BMP will be installed in relation to each phase of the land disturbance procedures to complete the project:

Installation/construction procedures (including typical drawing):

Operation/maintenance procedures and schedules:

BMP 2:

The BMP is temporary ☐, or permanent ☐.

Describe when the BMP will be installed in relation to each phase of the land disturbance procedures to complete the project:

Installation/construction procedures (including typical drawing):

Operation/maintenance procedures and schedules:

7. Site Map Requirements:

Create a legible site map or multiple maps if necessary, identifying:

- (a) Site boundaries of the property;
- (b) Locations of all waters of the state (including wetlands) within the site and half a mile downstream of the site's outfalls;
- (c) Location of all outfalls;
- (d) Location of stormwater inlets and conveyances including ditches, pipes, man-made conduits, and swales;
- (e) Areas of soil disturbance and areas that will not be disturbed (or a statement that all areas of the site will be disturbed unless otherwise noted);
- (f) Locations of on-site and off-site material, waste, borrow, concrete washout facility, disposal of the material removed from sediment basins, equipment storage areas and stockpiles;
- (g) Designated points where vehicles will exit the site;
- (h) Location of structural and non-structural BMPs, including natural buffer areas, identified in the SWPPP;
- (i) Direction(s) of stormwater flow (use arrows) and approximate slopes before and after grading activities;
- (j) Location and timing of stabilization measures;
- (k) Areas where final stabilization has been achieved;
- (l) Change of a drainage course; and
- (m) The sloped areas for all phases of the project.

Add the maps to Appendices C and D.

8. Resources:

The contractor must select, install, use, operate, and maintain appropriate BMPs for the permitted sites. The following manuals are acceptable resources for the selection of appropriate BMPs, but should not be considered exclusive:

- Kansas City Metro Chapter of the American Public Works Association:
Design Guidance Documents: Division 5100 Erosion and Sediment Control manual.

Standard Drawings: Erosion and Sediment Control Details (2/2017)
http://kcmetro.apwa.net/Content/Chapters/kcmetro.apwa.net/File/Specifications%2FErosion%20and%20Sediment%20Control_Details_APWA%20021517.pdf
- National Menu of Best Management Practices (BMPs) for Stormwater-Construction. United States Environmental Protection Agency USEPA (1/27/2022).
<https://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater-construction>
- Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites. United States Environmental Protection Agency (USEPA), EPA 833-R-06-004 (May 2007).
https://www.epa.gov/sites/production/files/2015-10/documents/sw_swppp_guide.pdf
- Developing a Stormwater Pollution Prevention Plan (SWPPP)
<https://www.epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swppp>
- Protecting Water Quality: A field guide to erosion, sediment and stormwater best management practices for development sites in Missouri. Missouri Department of Natural Resources. 1/7/2016
<https://dnr.mo.gov/document-search/protecting-water-quality-field-guide>

PART IV: PROJECT INFORMATION
(To be completed by OWNER DEPARTMENT & GENERAL CONTRACTOR)

1. Project Contact Information

City Department: _____
Project Manager's Name: _____
Address: _____
Phone: _____ **Fax:** _____
E-mail: _____ **Cell Phone:** _____

Note: The project manager is responsible for notifying the landowner and each contractor or entity (including utility crews and city employees or their agents) who will perform work at the site, of the existence of the SWPPP, and what actions or precautions shall be taken while on site to minimize the potential for erosion and the potential for damaging any BMP. The project manager and owner department are responsible for any damage a subcontractor may do to established BMPs, and any subsequent water quality violation resulting from the damage.

General Contractor's Name: _____
Company Name: _____
Address: _____
City: _____ **State:** _____ **Zip Code:** _____
Phone: _____ **Fax:** _____
E-mail: _____ **Cell Phone:** _____

Contractor's Environmental Lead

Designated Individual: _____
Address: _____
City: _____ **State:** _____ **Zip Code:** _____
Phone: _____ **Fax:** _____
E-mail: _____ **Cell Phone:** _____

Note: The General Contractor must designate an environmental lead who has primary responsibility for ensuring compliance with the Storm Water Pollution Prevention Plan (SWPPP) during construction. This environmental lead shall have knowledge in erosion, sediment, and stormwater control principles, knowledge of the permit, and the site's SWPPP. The environmental lead shall ensure all personnel and contractors understand any requirements of this permit may be affected by the work they are doing. The environmental lead or designated inspector(s) knowledgeable in erosion, sediment, and stormwater control principles, shall inspect all structures that function to prevent or minimize pollution of Waters of the State.

State Contacts for Spills, Overflows, and Other Unauthorized Discharges:

Should an unauthorized discharge cause or permit any contaminants, other than sediment, or hazardous substance to discharge or enter waters of the state, the unauthorized discharge must be reported to the Missouri Department of Natural Resources regional office, **(816) 251-0700**, as soon as practicable but no more than 24 hours after the discovery of the discharge.

If the spill or overflow needs to be reported after normal business hours or on the weekend, the facility must call the Department's Environmental Emergency Response hotline at **(573) 634-2436**. Leaving a message on a Department staff member voice-mail does not satisfy this reporting requirement.

Note: A record of all spills shall be retained with the SWPPP and made available to the Department upon request.

Subcontractors: Check all items for which subcontractors will be used and provide a list of all the subcontractor’s company names:

- ☐ Gas
- ☐ Grading
- ☐ Sanitary sewers
- ☐ Concrete flatwork
- ☐ Concrete drainage structures
- ☐ Water
- ☐ Blasting
- ☐ Storm sewers
- ☐ Sediment controls
- ☐ Seeding & Mulching
- ☐ Electric
- ☐ Paving
- ☐ Curb & Gutters
- ☐ Other (specify): _____

List All Additional subcontractors used on the project whose scope of work includes land disturbance activities (keep list updated throughout the project):

Contact Name / Project Role (including inspection, operation, and maintenance of BMPs)	Phone Number
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Other Utilities and Contractors: List all other utility companies and contractors which will be doing work on the site with their own sub-contractors involving land disturbance:

Contact Name / Project Role	Phone Number
_____	_____
_____	_____
_____	_____
_____	_____

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

2. Sequence of Construction:

The General Contractor must complete the following intended construction sequence and timing for major activities, including any opportunities for phasing, grading and stabilization activities to minimize the overall amount of disturbed soil that will be subject to potential erosion at one time.

Phase	BMP's & Stabilization Methods
1) _____	_____
2) _____	_____
3) _____	_____
4) _____	_____
5) _____	_____
6) _____	_____
7) _____	_____
8) _____	_____
9) _____	_____
10) _____	_____
11) _____	_____
12) _____	_____
13) _____	_____
14) _____	_____
15) _____	_____
16) _____	_____
17) _____	_____

PART V: BMP PERFORMANCE REQUIREMENTS (To be Implemented by GENERAL CONTRACTOR)

1. On-site Record Keeping

- (1) The SWPPP must be developed and implemented prior to conducting any land disturbance activities and must be specific to the land disturbance activities at the site.
- (2) The SWPPP shall be updated any time site conditions warrant adjustments to the project or BMPs. See Part I. General Requirements – 1. SWPPP Update and 2. Record of SWPPP Update.
- (3) An electronic copy or a paper copy of the SWPPP, and any required reports, must be accessible to anyone on site at all times when land disturbance operations are in process or other operational activities that may affect the maintenance or integrity of the BMP structures and made available.
- (4) A log of each inspection and/or copy of the inspection report shall be kept readily accessible and must be made available upon request by the Missouri Department of Natural Resources. Electronic logs are acceptable, as long as reports can be provided within 24 hours. The inspection report shall be signed by the environmental lead or designated inspector.
- (5) A record of all spills shall be retained with the SWPPP.

2. General Requirements

(1) Notification Sign:

A public notification sign shall be posted at the main entrance to the site, or a publicly visible location, with the specific MOR100 permit number. See Appendix B. for the sign. The public notification sign must be visible from the public road that provides access to the site's main entrance. An alternate location is acceptable provided the public can see it and it is noted in the SWPPP. The public notification sign must remain posted at the site until the site is finalized.

(2) Housekeeping Practices:

Good housekeeping practices shall be maintained at all times to keep waste from entering waters of the state.

- (a) Provide solid and hazardous waste management practices, including providing trash containers, regular site cleanup for proper disposal of solid waste such as scrap building material, product/material shipping waste, food/beverage containers, spent structural BMPs;
- (b) Provide containers and methods for proper disposal of waste paints, solvents, and cleaning compounds.
- (c) Manage sanitary waste. Portable toilets shall be positioned so they are secure and will not be tipped or knocked over and so they are located away from waters of the state and stormwater inlets and stormwater conveyances.
- (d) Ensure the storage of construction materials be kept away from drainage courses, stormwater conveyances, storm drain inlets, and low areas.

(3) Fueling Facilities:

All fueling facilities present shall, at all times adhere to applicable federal and state regulations concerning underground storage, above ground storage, and dispensers.

(4) Equipment and Vehicle Washing:

No detergents, additives, or soaps of any kind shall be discharged. Rinse waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge.

(5) Hazardous Wastes:

Any hazardous wastes that are generated onsite shall be managed, stored, and transported according to the provisions of the Missouri Hazardous Waste Laws and Regulations.

(6) Material and Chemical Storage:

- (a) Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater;
- (b) Store all paints, solvents, petroleum products, petroleum waste products, and storage containers (such as drums, cans, or cartons) so they are not exposed to stormwater or provide other prescribed BMPs (such as plastic lids and/or portable spill pans) to prevent the commingling of stormwater with container contents. Commingled water may not be discharged.

- (c) Provide spill prevention, control, and countermeasures to contain the spill. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall prevent the contamination of groundwater.

(7) Leak and Spill Prevention:

Implement measures intended to prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicles and equipment to thereby prevent the contamination of stormwater from these substances. This may include prevention measures such as, but not limited to, utilizing drip pans under vehicles and equipment stored outdoors, covering fueling areas, using dry clean-up methods, use of absorbents, and cleaning pavement surfaces to remove oil and grease.

(8) Spills, Overflows, and Other Unauthorized Discharges:

- (a) Any spill, overflow, or other discharge not specifically authorized in the permit are unauthorized.
- (b) Spills must be cleaned up as soon as possible to prevent entrainment in stormwater.
- (c) Should a spill or an unauthorized discharge cause or permit any contaminants, other than sediment, or hazardous substance to discharge or enter waters of the state, the unauthorized discharge must be reported to the Missouri Department of Natural Resources regional office as soon as practicable but no more than 24 hours after the discovery of the discharge. If the spill or overflow needs to be reported after normal business hours or on the weekend, the facility must call the Department's Environmental Emergency Response hotline at (573) 634-2436. Leaving a message on a Department staff member voice-mail does not satisfy this reporting requirement.
- (d) A record of all spills shall be retained with the SWPPP and made available to the Missouri Department of Natural Resources upon request.

3. Structural BMP Installation and Maintenance

All BMPs shall be properly installed and operational at the locations and relative times specified in the SWPPP. Installation of BMPs necessary to prevent soil erosion and sedimentation at the downgradient project boundary (e.g. buffers, perimeter controls, exit point controls, storm drain inlet protection) must be complete prior to the start of all phases of construction. By the time construction activity in any given portion of the site begins, downgradient BMPs must be installed and operational to control discharges from the initial site clearing, grading, excavating, and other earth-disturbing activities. Additional BMPs shall be installed as necessary throughout the life of the project.

All BMPs shall be maintained and remain in effective operating condition during the entire duration of the project, with repairs made within the timeframes specified elsewhere in this permit, until final stabilization has been achieved. BMPs must be protected from activities that would reduce their effectiveness. Any sediment must be removed per the BMP manufacturer's instructions or before it has accumulated to one-half of the above-ground height of any BMP that collects sediment (i.e., silt fences, sediment traps, etc.). The project is considered to achieve final stabilization when Condition 5 listed below is met.

(1) Perimeter Control BMPs:

- (a) Perimeter control BMPs for runoff from disturbed areas shall be installed before general site clearing is started. Note this requirement does not apply to earth disturbances related to initial site clearing and establishing entry, exit, or access of the site, which may require that stormwater controls be installed immediately after the earth disturbance.
- (b) For phased projects, BMPs shall be properly installed as necessary prior to construction activities.
- (c) Install sediment controls along any perimeter areas of the site that are downgradient from any exposed soil or other disturbed areas. Prevent stormwater from circumventing the edge of the perimeter control. For sites where perimeter controls are infeasible, other practices shall be implemented to minimize discharges to perimeter areas of the site.
- (d) Stormwater discharges which leave the site from disturbed areas shall pass through an appropriate impediment to sediment movement such as a sedimentation basin, sediment traps (including vegetative buffers), or silt fences prior to leaving the land disturbance site.

(2) Stockpiles or Land Clearing Debris Piles of Sediment or Soil:

- (a) Install a sediment barrier along all downgradient perimeter areas;
- (b) Divert surface flows around stockpiles to reduce and minimize erosion of the stockpile.
- (c) For piles that will be unused for 14 or more days, provide cover with appropriate temporary stabilization.
- (d) It is prohibited to rinse, sweep, or otherwise place any soil, sediment, debris, or stockpiled product which has accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or Water of the State.

(3) Sedimentation Basins:

A sedimentation basin shall be used for each drainage area with ten or more acres disturbed at one time.

- (a) Sediment basins shall not be constructed in any Waters of the State or natural buffer zones.
- (b) Both temporary and permanent sedimentation basins shall have a stabilized spillway to minimize the potential for erosion of the spillway or basin embankment.
- (c) The basin shall be maintained until final stabilization of the disturbed area served by the basin.
- (d) Accumulated sediment shall not exceed 50% of total volume or as prescribed in the design, whichever is less.
- (e) Dewatering:
 - 1) Discharges from dewatering activities shall be managed by appropriate controls as specified in the SWPPP. Appropriate controls may include, but are not limited to, sediment socks, dewatering tanks, tube settlers, weir tanks, filtration systems (e.g. bag or sand filters), and passive treatment systems that are designed to remove or retain sediment.
 - 2) Erosion controls and velocity dissipation devices (e.g., check dams, riprap, and vegetated buffers) to minimize erosion at inlets, outlets, and discharge points from shall be utilized.
 - 3) Water with an oil sheen, or visible floating solids and foam shall not be discharged.
 - 4) Prevent discharges to the receiving stream causing excessive visual turbidity. Visual turbidity refers to a sediment plume or other cloudiness in the water caused by sediment that can be identified by an observer.
 - 5) Until final stabilization has been achieved, sediment basins and impoundments shall utilize outlet structures or floating skimmers that withdraw water from the surface when discharging. Under frozen conditions, it may be considered infeasible to withdraw water from the surface and an exception can be made for that specific period as long as discharges that may contain sediment and other pollutants are managed by appropriate controls. If determined infeasible due to frozen conditions, documentation must be provided in the SWPPP to support the determination, including the specific conditions or time period when this exception applies.

(4) Sediment Trackout and Sediment Transport:

Minimize sediment trackout from the site and sediment transport onto roadways.

- (a) Restrict vehicle traffic to designated exit points.
- (b) Use appropriate stabilization techniques or BMPs at all points that exit onto paved roads or areas outside of the site.
- (c) Use additional controls or BMPs to remove sediment from vehicle and equipment tires prior to exit from facility where necessary.
- (d) Any sediment or debris that is tracked out past the exit pad or is deposited on a roadway after a precipitation event shall be removed by the shorter of either the same business day (for business days only), or by the end of the next business day if track-out occurs on a non-business day, and before predicted rain events. Remove the track-out sediment by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. Sediment or debris tracked out on pavement or other impervious surfaces shall not be disposed of into any stormwater conveyance, storm drain inlet, or Waters of the State.
- (e) Stormwater inlets susceptible to receiving sediment or other pollutants from the permitted land disturbance site shall have curb inlet protection. This may include inlets off the active area where track out from vehicles and equipment could impact the stormwater runoff to those inlets.

(5) Concrete Washout Facilities:

Concrete washout facilities shall be used to contain concrete waste from the activities onsite, unless the washout of trucks and equipment is managed properly at an off-site location. The washout facility shall be managed to prevent solid and/or liquid waste from entering Waters of the State by the following:

- (a) Direct the wash water into leak-proof containers or pits designed so that no overflows can occur due to inadequate sizing or precipitation;
- (b) Locate washout activities away from Waters of the State, stormwater inlets, and/or stormwater conveyances where practicable. If not practicable, use BMPs to reduce risk of waste leaving the washout facility;
- (c) Washout facilities shall be cleaned, or new facilities must be constructed and ready for use, once the washout is 75% full;
- (d) Designate the washout area(s) and conduct such activities only in these areas.
- (e) Ensure contractors are aware of the location, such as by marking the area(s) on the map or signage visible to the truck and/or equipment operators.

(6) Immediate Stabilization After Soil Disturbing Activities:

Soil disturbing activities on site that have ceased either temporarily or permanently shall initiate stabilization immediately in accordance with the options below.

- (a) For soil disturbing activities that have been temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days:
 - 1) BMPs shall be constructed to establish interim stabilization;
 - 2) Interim stabilization must be initiated immediately and completed within 14 calendar days.
- (b) For soil disturbing activities that have been permanently ceased on any portion of the site:
 - 1) Final stabilization of disturbed areas shall be implemented;
 - 2) Final stabilization must be initiated immediately and completed within 14 calendar days.
- (c) If the slope of the area is greater than 3:1 (three feet horizontal to one foot vertical), then interim stabilization shall be established within seven calendar days of ceasing operations on that part of the site.
- (d) Allowances to the 14-day completion period for temporary and final stabilization may be made due to weather and equipment malfunctions. The use of allowances shall be documented in the SWPPP. Allowances may be determined unnecessary after review by the Department.
- (e) The following activities would constitute the immediate initiation of stabilization:
 - 1) Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable;
 - 2) Applying mulch or other non-vegetative product to the exposed areas;
 - 3) Seeding or planting the exposed areas;
 - 4) Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.
- (f) Until stabilization is complete, interim sediment control shall consist of well-established and maintained BMPs that are reasonably certain to protect waters of the state from sediment pollution over an extended period of time. This may require adding more BMPs to an area than is normally used during daily operations. The types of BMPs used must be suited to the area disturbed, taking into account the number of acres exposed and the steepness of the slopes.
- (g) If vegetative stabilization measures are being implemented, stabilization is considered “installed” when all activities necessary to seed or plant the area are completed. Installed does not mean established.
- (h) If non-vegetative stabilization measures are being implemented, stabilization is considered “installed” when all such measures are implemented or applied. Non-vegetative stabilization shall prevent erosion and shall be chosen for site conditions, such as slope and flow of stormwater.
- (i) Final stabilization is not considered achieved until vegetation has grown and established to meet the requirements below.

(7) Final Stabilization:

Prior to removal of BMPs, ceasing site inspections, and removing from the quarterly report, final stabilization must be achieved. Final stabilization shall be achieved as soon as possible once land disturbance activities have ceased. Document in the SWPPP the type of stabilization and the date final stabilization is achieved.

- (a) The project is considered to have achieved final stabilization when perennial vegetation (excluding volunteer vegetation), pavement, buildings, or structures using permanent materials (e.g., riprap, gravel, etc.) cover all areas that have been disturbed. With respect to areas that have been vegetated, vegetation must be at least **70%** coverage of 100% of the vegetated areas on site. Vegetation must be evenly distributed.
- (b) Disturbed areas on agricultural land are considered to have achieved final stabilization when they are restored to their preconstruction agricultural use. If former agricultural land is changing to non-agricultural use, this is no longer considered agricultural land and shall follow condition (a).
- (c) If the intended function of a specific area of the site necessitates that it remains disturbed, final stabilization is considered achieved if all of the following are met:
 - 1) Only the minimum area needed remains disturbed (i.e., dirt access roads, motocross tracks, utility pole pads, areas being used for storage of vehicles, equipment, materials). Other areas must meet the criteria above.
 - 2) Permanent structural BMPs (e.g., rock checks, berms, grading, etc.) or non-vegetative stabilization measures are implemented and designed to prevent sediment and other pollutants from entering waters of the state.
 - 3) Inspection requirements in Part IV. SWPPP MANAGEMENT REQUIREMENT, Condition 11 are met and documented in the SWPPP.
 - 4) Winter weather and frozen conditions do not excuse any of the above final stabilization requirements. If vegetation is required for stabilization the permittee must maintain BMPs throughout winter weather and frozen conditions until thawing and vegetation meets final stabilization criteria above. Document stabilization attempts during frozen conditions in the SWPPP. Consider future freezing when removing vegetation and plan with temporary stabilization techniques before the ground becomes frozen.

PART VI: SITE INSPECTION REPORT **(To be Maintained by GENERAL CONTRACTOR)**

Refer to page 4 in Part III. Project Planning & Design, specify the **2-year, 24-hour storm event** for the project location:
_____ inch.

Specify the notification method when stormwater runoff occurs: _____

1. Site Inspector:

Regularly scheduled inspections shall be conducted by a qualified person (an inspector). An inspector can be the environmental lead or a person trained by and directly supervised by the environmental lead. The inspector shall be knowledgeable in erosion, sediment, and stormwater control principles, and shall have knowledge of the permit, and the site's SWPPP.

2. Scope of Inspection:

Refer to **Appendix E** for the site inspection report. Site inspections shall include, at a minimum, the following:

- (1) Inspect all structures that function to prevent or minimize pollution of Waters of the State.
- (2) For disturbed areas that have not achieved final stabilization, all installed BMPs and other pollution control measures shall be inspected to ensure they are properly installed, appear to be operational, and are working as intended to minimize the discharge of pollutants.
- (3) For areas on site that have achieved either temporary or final stabilization, while at the same time active construction continues on other areas, ensure that all stabilization measures are properly installed, appear to be operational, and are working as intended to minimize the discharge of pollutants.
- (4) Inspect all material, waste, borrow, and equipment storage and maintenance areas that are covered by this permit. Inspect for conditions that could lead to spills, leaks, or other accumulations of pollutants on the site.
- (5) Inspect all areas where stormwater typically flows within the site, including drainage ways designed to divert, convey, and/or treat stormwater.
- (6) All stormwater outfalls shall be inspected for evidence of erosion, sediment deposition, or impacts to the receiving stream. If a discharge is occurring during an inspection, the inspector must observe and document the visual quality of the discharge and take note of the characteristics of the stormwater discharge, including turbidity, color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants.
- (7) When practicable the receiving stream shall also be inspected for a minimum of 50 feet downstream of the outfall.
- (8) The perimeter of the site shall be inspected for evidence of BMP failure to ensure concentrated flow does not develop a new outfall.

3. Inspection Frequency:

All BMPs must be inspected in accordance to one of the schedules listed below. The inspection frequency shall be documented in the table below, and any changes to the frequency of inspections, including switching between the options listed below, must be documented on the inspection report:

- (1) **7-day option:** at least once every seven (7) calendar days and within 48 hours after any storm event equal to or greater than a 2-year, 24-hour storm has ceased during a normal workday or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday; or
- (2) **14-day option:** once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches of precipitation or greater, or the occurrence of runoff from snowmelt. To determine if a storm event of 0.25 inches or greater has occurred on the site, the permittee shall either keep a properly maintained rain gauge on site, or obtain the storm event information from a weather station near the site location.
 - (a) Inspections are only required during the project's normal working hours.
 - (b) An inspection must be conducted within 24 hours of a storm event which has produced 0.25 inches. The inspection shall be conducted within 24 hours of the event end, or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday.
 - (c) If it is elected to inspect every 14 calendar days and there is a storm event at the site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, the permittee shall conduct an inspection

within 24 hours of the end of the storm or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday.

Specify the inspection frequency based on the above (1) 7-Day option, or (2) 14-day option. Any changes to the frequency of inspections, including switching between the options, must be documented both here and on the inspection report:

Option	Date Implemented

- (3) Areas on site that have achieved stabilization, while at the same time active construction continues on other areas, may reduce inspection frequency to monthly, for those stabilized areas, if the following conditions exist:
 - (a) For areas where disturbed portions have undergone temporary stabilization, inspections shall occur at least once a month while stabilized and when re-disturbed shall follow either frequency outlined in (1) or (2) above.
 - (b) Areas on site that have achieved final stabilization must be inspected at least once per month until the permit is terminated.
- (4) If construction activities are suspended due to frozen conditions, the permittee may temporarily reduce site inspections to monthly until thawing conditions begin to occur if all of the following are met:
 - (a) Land disturbances have been suspended; and
 - (b) All disturbed areas of the site have been stabilized per BMP requirements.
 - (c) The change shall be noted in the table above.
- (5) Any basin dewatering shall be inspected daily when discharge is occurring. The discharge shall be observed, and dewatering activities shall be ceased immediately if the receiving stream is being impacted. These inspections shall be noted on a log or on the inspection report.

4. Site Inspection Reports:

A log of each inspection and/or copy of the inspection report shall be kept readily accessible and must be made available upon request by the Department. Electronic logs are acceptable as long as reports can be provided within 24 hours. If inspection reports are kept off site, the SWPPP must indicate where they are stored. The inspection report shall be signed by the environmental lead or designated inspector (electronically or otherwise).

- (1) The inspection report is to include the following minimum information:
 - (a) Inspector's name and title.
 - (b) Date and time of inspection.
 - (c) Observations relative to the effectiveness of the BMPs and stabilization measures. The following must be documented:
 - 1) Whether BMPs are installed, operational, and working as intended;
 - 2) Whether any new or modified stormwater controls are needed;
 - 3) Facilities examined for conditions that could lead to spill or leak;

4) Outfalls examined for visual signs of erosion or sedimentation at outfalls. Excessive erosion or sedimentation may be due to BMP failure or insufficiency. Response to observations should be addressed in the inspection report.

(d) Corrective actions taken or necessary to correct the observed problem.

(e) Listing of areas where land disturbance operations have permanently or temporarily stopped.

5. Inspection Follow-up

Any structural or maintenance deficiencies for BMPs or stabilization measures shall be documented and corrected as soon as possible, but no more than seven (7) calendar days after the inspection.

- (1) Corrective action documentation shall be stored with the associated site inspection report.
- (2) Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events.
- (3) If weather conditions or other issues prevent correction of BMPs within seven calendar days, the reasons for the delay must be documented (this may include pictures) and there must be a narrative explaining why the work cannot be accomplished within the seven-day time period. The problem shall be corrected as soon as weather conditions or issues allow.
- (4) Corrective actions may be required by the Missouri Department of Natural Resources. The site operator must comply with any corrective actions required by the Department as a result of permit violations found during an inspection.

Appendix A – SWPPP Update and Modification Log

SWPPP UPDATE & MODIFICATION LOG

(To be completed, when necessary, during design modification or construction)

Create a log here of the changes and updates to the SWPPP. You should include additions of new BMPs, significant changes in the activities or their timing on the project, changes in personnel, changes in inspection and maintenance procedures, and updates to the SITE MAP, etc.

Summary of Content Updates

Date

Appendix B – Public Notification Sign



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

STORMWATER DISCHARGES FROM
THIS LAND DISTURBANCE SITE ARE
AUTHORIZED BY THE MISSOURI
STATE OPERATING PERMIT NUMBER:

ANYONE WITH QUESTIONS OR
CONCERNS ABOUT STORMWATER
DISCHARGES FROM THIS SITE,
PLEASE CONTACT THE MISSOURI
DEPARTMENT OF NATURAL
RESOURCES AT

1-800-361-4827

Appendix C – General Location Map

Attach the General Location Map

Appendix D – Site Map(s)

SITE MAP REQUIREMENTS:

The first should show the undeveloped site and its current features. An additional map or maps should be created to show the developed site. These maps should include the following:

- ☐ Site boundaries of the property;
- ☐ Locations of all Waters of the State (including wetlands) within the site and half a mile downstream of the site's outfalls;
- ☐ Location of all outfalls;
- ☐ Location of stormwater inlets and conveyances including ditches, pipes, man-made conduits, and swales;
- ☐ Areas of soil disturbance and areas that will not be disturbed (or a statement that all areas of the site will be disturbed unless otherwise noted);
- ☐ Locations of on-site and off-site material, waste, borrow, concrete washout facility, disposal of the material removed from sediment basins, equipment storage areas and stockpiles;
- ☐ Designated points where vehicles will exit the site;
- ☐ Location of structural and non-structural BMPs, including natural buffer areas, identified in the SWPPP;
- ☐ Direction(s) of stormwater flow (use arrows) and approximate slopes before and after grading activities;
- ☐ Location and timing of stabilization measures;
- ☐ Areas where final stabilization has been achieved;
- ☐ Change of a drainage course; and
- ☐ The sloped areas for all phases of the project.

Attach SITE MAPs.

Appendix E – Site Inspection Reports

Instructions

Using the Inspection Report

This inspection report is designed to be customized according to the BMP's and conditions at your site. For ease of use, you should take a copy of your site plan and number all of the stormwater BMPs and areas of your site that will be inspected. A brief description of the BMP or area should then be listed in the site-specific section of the inspection report. For example, specific structural BMPs such as construction site entrances, sediment ponds, or specific areas with silt fence (e.g., silt fence along Main Street; silt fence along slope in NW corner, etc.) should be numbered and listed. You should also number specific non-structural BMPs or areas that will be inspected (such as trash areas, material storage areas, temporary sanitary waste areas, etc.).

You can complete the items in the "General Information" section that will remain constant, such as the project name, NPDES tracking number, and inspector (if you only use one inspector). Print out multiple copies of this customized inspection report to use during your inspections.

When conducting the inspection, walk the site by following your SITE MAP and numbered BMPs/areas for inspection.

Also note whether the overall site issues have been addressed (customize this list according to the conditions at your site). Note any required corrective actions, the date, and responsible person for the correction in the Corrective Action Log.

Stormwater Construction Site Inspection Report

General Information			
Project Name:			
NPDES Tracking No.:		Location:	
Date of Inspection:		Start/End Time:	
Inspector's Name(s):			
Inspector's Title(s):			
Inspector's Contact:			
Inspector's Qualifications:			
Describe present phase of construction:			
Type of Inspection: ☐ Regular - ☐ 7-day, ☐ 14-day ☐ Pre-storm Event ☐ During Storm Event ☐ Post-storm Event			
Weather Information			
Has there been a storm event since the last inspections? ☐ Yes ☐ No			
If yes, provide: Storm Start Date & Time Storm Duration (hrs) Approximate Amount of Precipitation (in.)			
Weather at time of this Inspection? ☐ Clear ☐ Cloudy ☐ Rain ☐ Sleet ☐ Fog ☐ Snowing ☐ High Winds ☐ Other: _____ Temperature: _____			
Have any discharges occurred since the last inspection?		☐ Yes ☐ No	
If yes, describe:			
Are there any discharges at the time of inspection?		☐ Yes ☐ No	
If yes, describe the visual quality of the discharge including turbidity; color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants:			

Site-specific BMPs

- Number the structural and non-structural BMPs identified in your SWPPP on your SITE MAP and list them below (add as many BMPs as necessary). Carry a copy of the numbered SITE MAP with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.
- Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.

	BMP	BMP Installed Properly?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		☐ Yes ☐ No	☐ Yes ☐ No	
2		☐ Yes ☐ No	☐ Yes ☐ No	
3		☐ Yes ☐ No	☐ Yes ☐ No	
4		☐ Yes ☐ No	☐ Yes ☐ No	
5		☐ Yes ☐ No	☐ Yes ☐ No	
6		☐ Yes ☐ No	☐ Yes ☐ No	
7		☐ Yes ☐ No	☐ Yes ☐ No	

8		☐ Yes ☐ No	☐ Yes ☐ No	
9		☐ Yes ☐ No	☐ Yes ☐ No	
10		☐ Yes ☐ No	☐ Yes ☐ No	
11		☐ Yes ☐ No	☐ Yes ☐ No	
12		☐ Yes ☐ No	☐ Yes ☐ No	
13		☐ Yes ☐ No	☐ Yes ☐ No	
14		☐ Yes ☐ No	☐ Yes ☐ No	
15		☐ Yes ☐ No	☐ Yes ☐ No	
16		☐ Yes ☐ No	☐ Yes ☐ No	
17		☐ Yes ☐ No	☐ Yes ☐ No	
18		☐ Yes ☐ No	☐ Yes ☐ No	
19		☐ Yes ☐ No	☐ Yes ☐ No	
20		☐ Yes ☐ No	☐ Yes ☐ No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Timeline Requirements
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	☐ Yes ☐ No	☐ Yes ☐ No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	☐ Yes ☐ No	☐ Yes ☐ No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	☐ Yes ☐ No	☐ Yes ☐ No	
4	Are discharge points free of sediment deposition, erosion, or impacts on the receiving stream?	☐ Yes ☐ No	☐ Yes ☐ No	
5	If practicable, is the receiving stream (including 50 ft or more downstream) free from the impact of the discharge points?	☐ Yes ☐ No	☐ Yes ☐ No	
5	Are storm drain inlets properly protected?	☐ Yes ☐ No	☐ Yes ☐ No	
6	Is the construction exit equipped to prevent sediment from being tracked out?	☐ Yes ☐ No	☐ Yes ☐ No	

7	Is trash, litter or other type of waste on site properly handled?	☐ Yes ☐ No	☐ Yes ☐ No	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	☐ Yes ☐ No	☐ Yes ☐ No	
9	Are vehicle and equipment fueling, cleaning, storage and maintenance areas free of spills, leaks, or any other deleterious material?	☐ Yes ☐ No	☐ Yes ☐ No	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	☐ Yes ☐ No	☐ Yes ☐ No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	☐ Yes ☐ No	☐ Yes ☐ No	
12	(Other)	☐ Yes ☐ No	☐ Yes ☐ No	

Non-Compliance

CERTIFICATION STATEMENT

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Print name and title: _____

Signature: _____ Date: _____

Appendix F – City’s Construction General Permit & Additional Information

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No. MO-R100000

Owner:
Address:

Continuing Authority:
Address:

Facility Name:
Facility Address:

Legal Description:
UTM Coordinates:

Receiving Stream:
First Classified Stream and ID:
USGS Basin & Sub-watershed No.:

is authorized to discharge from the facility described herein, in accordance with the effluent limitations, inspection, reporting, and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

All Outfalls

Construction or land disturbance activity (e.g., clearing, grubbing, excavating, grading, filling, and other activities that result in the destruction of the root zone and/or land disturbance activity that is reasonably certain to cause pollution to waters of the state).

This permit authorizes stormwater and certain non-stormwater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

July 5, 2022
Effective Date

June 30, 2027
Expiration Date


Chris Wieberg, Director, Water Protection Program

I. APPLICABILITY

A. Permit Coverage and Authorized Discharges

1. This Missouri State Operating Permit (permit) authorizes the discharge of stormwater and certain non-stormwater discharges from land disturbance sites that disturb one or more acres, or disturb less than one acre when part of a larger common plan of development or sale that will disturb a cumulative total of one or more acres over the life of the project.

A Missouri State Operating Permit must be issued before any site vegetation is removed or the site disturbed. Any site owner/operator subject to these requirements for stormwater discharges and who disturbs land prior to permit issuance from the Missouri Department of Natural Resources (Department) is in violation of both State regulations per 10 CSR 20-6.200(1)(A) and Federal regulations per 40 CFR 122.26. The owner/operator of this permit is responsible for compliance with this permit [10 CSR 20-6.200 (3)(B)].

2. This general permit is issued to a city, county, state or federal agency, other governmental jurisdiction, or other private area-wide projects as determined by the Department on a case-by-case basis, for land disturbance projects performed by or under contract to the permittee.
3. This permit authorizes stormwater discharges from land disturbance support activities (e.g., equipment staging yards, material storage areas, excavated material disposal areas, borrow areas, concrete, or asphalt batch plants) provided appropriate stormwater controls are designed, installed, and maintained and the following conditions are met and addressed in the Stormwater Pollution Prevention Plan (SWPPP). The permittee is responsible for compliance with this permit for any stormwater discharges from construction support activity.
 - (a) The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;
 - (b) The support activity is not a commercial operation or serve multiple unrelated construction sites;
 - (c) The support activity does not continue to operate beyond the completion of the construction activity at the project it supports;
 - (d) Sediment and erosion controls are implemented in accordance with the conditions of this permit; and
 - (e) The support activity is strictly stormwater discharges or non-stormwater discharges listed in PART I, APPLICABILITY, Condition A.4. Support activities which discharge process water shall apply for separate coverage (e.g., a concrete batch plant discharging process water shall be covered under a MOG49).
4. This permit authorizes non-stormwater discharges associated with your construction activity from the following activities provided that these discharges are treated by appropriate Best Management Practices (BMPs) where applicable and addressed in the permittee's site specific SWPPP required by this general permit:
 - (a) Discharges from emergency fire-fighting activities;
 - (b) Hydrant flushing and water line flushing, provided the discharged water is managed to avoid instream water quality impacts;
 - (c) Landscape watering, including to establish vegetation;
 - (d) Water used to control dust;
 - (e) Waters used to rinse vehicles and equipment, provided there is no discharge of soaps, solvents, or detergents used for such purposes;
 - (f) External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances (e.g., paint or caulk containing polychlorinated biphenyls (PCBs));
 - (g) Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. Directing pavement wash waters directly into any water of the state, storm drain inlet, or stormwater conveyance (constructed or natural site drainage features), unless the conveyance is connected to an effective control, is prohibited;
 - (h) Uncontaminated air conditioning or compressor condensate;
 - (i) Uncontaminated, non-turbid discharges of ground water or spring water;
 - (j) Foundation or footing drains where flows are not contaminated with process materials; and
 - (k) Uncontaminated construction dewatering water discharged in accordance with requirements found in this permit for specific dewatering activities.

B. Permit Restrictions and Limitations

1. This permit does not authorize the discharge of process wastewaters, treated or otherwise.
2. For sites operating within the watershed of any Outstanding National Resource Water (which includes the Ozark National Riverways and the National Wild and Scenic Rivers System), sites that discharge to an Outstanding State Resource Water, or facilities located within the watershed of an impaired water as designated in the Clean Water Act (CWA) Section 303(d) list with an impairment for sedimentation/siltation:
 - (a) This permit authorizes stormwater discharge provided no degradation of water quality occurs due to discharges from the permitted facility per 10 CSR 20-7.031(3)(C).
 - (b) A site with a discharge found to be causing degradation or contributing to an impairment by discharging a pollutant of concern, during an inspection or through complaint investigations, may be required to become a no discharge facility or obtain a site-specific permit with more stringent monitoring and SWPPP requirements.
3. This permit does not allow placement of fill material into any stream or wetland, alteration of a stream channel, or obstruction of stream flow unless the appropriate CWA Section 404 permitting authority provides approval for such actions or determines such actions are exempt from Section 404 jurisdiction. Additionally, this permit does not authorize placement of fill in floodplains unless approved or determined exempt by appropriate federal and/or state floodplain development authorities.
4. This operating permit does not affect, remove, or replace any requirement of the National Environmental Policy Act; the Endangered Species Act; the National Historic Preservation Act; the Comprehensive Environmental Response, Compensation and Liability Act; the Resource Conservation and Recovery Act; or any other relevant acts. Determination of applicability to the above mentioned acts is the responsibility of the permittee. Additionally, this permit does not establish terms and conditions for runoff resulting from silvicultural activities listed in Section 402(l)(3)(a) of the Clean Water Act.
5. Compliance with all requirements in this permit does not supersede any requirement for obtaining project approval from an established local authority nor remove liability for compliance with county and other local ordinances.
6. The Department may require any facility or site authorized by a general permit to apply for a site-specific permit [10 CSR 20-6.010(13)(C)].
7. If a facility or site covered under a current general permit desires to apply for a site-specific permit, the facility or site may do so by contacting the Department for application requirements and procedures.
8. Any discharges not expressly authorized in this permit and not clearly disclosed in the permit application cannot become authorized or shielded from liability under CWA section 402(k) or Section 644.051.16, RSMo, by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including any other permit applications, funding applications, the SWPPP, discharge monitoring reporting, or during an inspection. Discharges at the facility not expressly authorized by this permit must be covered by another permit, be exempt from permitting, or be authorized through some other method.

II. EXEMPTIONS FROM PERMIT REQUIREMENTS

1. Sites that discharge all stormwater runoff directly to a combined sewer system (as defined in 40 CFR 122.26 and 40 CFR 35.2005) connecting to a publicly owned treatment works which has consented to receive such a discharge are exempt from Department stormwater permit requirements.
2. Land disturbance activities that disturb less than one (1) acre of total land area which are not part of a common plan or sale where water quality standards are not exceeded are exempt from Department stormwater permit requirements.

3. Oil and gas related activities as listed in 40 CFR 122.26(a)(2)(ii) where water quality standards are not exceeded are exempt from Department stormwater permit requirements.
4. Linear, strip, or ribbon construction or maintenance operations meeting one (1) of the following criteria are exempt from Department stormwater permit requirements:
 - (a) Grading of existing dirt or gravel roads which does not increase the runoff coefficient and the addition of an impermeable surface over an existing dirt or gravel road;
 - (b) Cleaning or routine maintenance of roadside ditches, sewers, waterlines, pipelines, utility lines, or similar facilities;
 - (c) Trenches two (2) feet in width or less; or
 - (d) Emergency repair or replacement of existing facilities as long as BMPs are employed during the emergency repair.

III. REQUIREMENTS

1. The permittee shall post a public notification sign at the main entrance to the site, or a publically visible location, with the specific MOR100 permit number. The public notification sign must be visible from the public road that provides access to the site's main entrance. An alternate location is acceptable provided the public can see it and it is noted in the SWPPP. The public notification sign must remain posted at the site until the site is finalized.
2. The permittee shall be responsible for notifying the land owner and each contractor or entity (including utility crews and city employees or their agents) who will perform work at the site of the existence of the SWPPP and what actions or precautions shall be taken while on site to minimize the potential for erosion and the potential for damaging any BMP. The permittee is responsible for any damage a subcontractor may do to established BMPs and any subsequent water quality violation resulting from the damage.
3. Ensure the design, installation, and maintenance of effective erosion and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:
 - (a) Control stormwater volume, velocity, and peak flow rates to minimize soil erosion;
 - (b) Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion and scour;
 - (c) Minimize the amount of exposed soil during construction activity;
 - (d) Minimize the disturbance of steep slopes;
 - (e) Minimize sediment discharges from the site. Address factors such as:
 - 1) The amount, frequency, intensity, and duration of precipitation;
 - 2) The nature of resulting stormwater runoff;
 - 3) Expected flow from impervious surfaces, slopes, and drainage features; and
 - 4) Soil characteristics, including the range of soil particle size expected to be present on the site.
 - (f) Provide and maintain natural buffers around surface waters as detailed in Part V. BMP REQUIREMENTS Condition 7, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration and filtering, unless infeasible; and
 - (g) Minimize soil compaction and preserve topsoil where practicable.

A 2-year, 24-hour storm event can be determined for the project location using the National Oceanic and Atmospheric Administration's National Weather Service Atlas 14 which can be located at https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html, or the permittee can determine local rainfall distribution for a 2-year, 24 hours storm event using multi-decade local high density rain gauge data, as approved by the Department.

4. BMPs for land disturbance [10 CSR 20-6.200(1)(D)2] are a schedule of activities, practices, or procedures that reduces the amount of soil available for transport or a device that reduces the amount of suspended solids in runoff before discharge to waters of the state. The term BMPs are also used to describe the sediment and erosion controls and other activities used to prevent stormwater pollution. BMPs are divided into two main categories: structural or non-structural; and they are also classified as temporary or permanent. Temporary BMPs may be added and removed as necessary with updates to the SWPPP as specified in the requirements below.

5. Installation of BMPs necessary to prevent soil erosion and sedimentation at the downgradient project boundary (e.g. buffers, perimeter controls, exit point controls, storm drain inlet protection) must be complete prior to the start of all phases of construction. By the time construction activity in any given portion of the site begins, downgradient BMPs must be installed and operational to control discharges from the initial site clearing, grading, excavating, and other earth-disturbing activities. Additional BMPs shall be installed as necessary throughout the life of the project.
6. All BMPs shall be maintained and remain in effective operating condition during the entire duration of the project, with repairs made within the timeframes specified elsewhere in this permit, until final stabilization has been achieved.
 - (a) Ensure BMPs are protected from activities that would reduce their effectiveness.
 - (b) Remove any sediment per the BMP manufacturer's instructions or before it has accumulated to one-half of the above-ground height of any BMP that collects sediment (i.e., silt fences, sediment traps, etc.)
 - (c) The project is considered to achieve final stabilization when Part V. BMP REQUIREMENTS, Condition 13 is met.
7. Minimize sediment trackout from the site and sediment transport onto roadways.
 - (a) Restrict vehicle traffic to designated exit points.
 - (b) Use appropriate stabilization techniques or BMPs at all points that exit onto paved roads or areas outside of the site.
 - (c) Use additional controls or BMPs to remove sediment from vehicle and equipment tires prior to exit from facility where necessary.
 - (d) Any sediment or debris that is tracked out past the exit pad or is deposited on a roadway after a precipitation event shall be removed by the shorter of either the same business day (for business days only), or by the end of the next business day if track-out occurs on a non-business day, and before predicted rain events. Remove the track-out sediment by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. Sediment or debris tracked out on pavement or other impervious surfaces shall not be disposed of into any stormwater conveyance, storm drain inlet, or water of the state.
 - (e) Stormwater inlets susceptible to receiving sediment or other pollutants from the permitted land disturbance site shall have curb inlet protection. This may include inlets off the active area where track out from vehicles and equipment could impact the stormwater runoff to those inlets.
8. Concrete washout facilities shall be used to contain concrete waste from the activities onsite, unless the washout of trucks and equipment is managed properly at an off-site location. The washout facility shall be managed to prevent solid and/or liquid waste from entering waters of the state by the following:
 - (a) Direct the wash water into leak-proof containers or pits designed so that no overflows can occur due to inadequate sizing or precipitation;
 - (b) Locate washout activities away from waters of the state, stormwater inlets, and/or stormwater conveyances where practicable. If not practicable, use BMPs to reduce risk of waste leaving the washout facility;
 - (c) Washout facilities shall be cleaned, or new facilities must be constructed and ready for use, once the washout is 75% full;
 - (d) Designate the washout area(s) and conduct such activities only in these areas.
 - (e) Ensure contractors are aware of the location, such as by marking the area(s) on the map or signage visible to the truck and/or equipment operators.
9. Good housekeeping practices shall be maintained at all times to keep waste from entering waters of the state.
 - (a) Provide solid and hazardous waste management practices, including providing trash containers, regular site cleanup for proper disposal of solid waste such as scrap building material, product/material shipping waste, food/beverage containers, spent structural BMPs;
 - (b) Provide containers and methods for proper disposal of waste paints, solvents, and cleaning compounds.
 - (c) Manage sanitary waste. Portable toilets shall be positioned so that they are secure and will not be tipped or knocked over and so that they are located away from waters of the state and stormwater inlets and stormwater conveyances.
 - (d) Ensure the storage of construction materials be kept away from drainage courses, stormwater conveyances, storm drain inlets, and low areas.

10. All fueling facilities present shall at all times adhere to applicable federal and state regulations concerning underground storage, above ground storage, and dispensers.
11. Any hazardous wastes that are generated onsite shall be managed, stored, and transported according to the provisions of the Missouri Hazardous Waste Laws and Regulations.
12. Store all paints, solvents, petroleum products, petroleum waste products, and storage containers (such as drums, cans, or cartons) so they are not exposed to stormwater or provide other prescribed BMPs (such as plastic lids and/or portable spill pans) to prevent the commingling of stormwater with container contents. Commingled water may not be discharged under this permit. Provide spill prevention, control, and countermeasures to contain the spill. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall prevent the contamination of groundwater.
13. Implement measures intended to prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicles and equipment to thereby prevent the contamination of stormwater from these substances. This may include prevention measures such as, but not limited to, utilizing drip pans under vehicles and equipment stored outdoors, covering fueling areas, using dry clean-up methods, use of absorbents, and cleaning pavement surfaces to remove oil and grease.
14. Spills, Overflows, and Other Unauthorized Discharges.
 - (a) Any spill, overflow, or other discharge not specifically authorized in the permit above are unauthorized.
 - (b) Should an unauthorized discharge cause or permit any contaminants, other than sediment, or hazardous substance to discharge or enter waters of the state, the unauthorized discharge must be reported to the regional office as soon as practicable but no more than 24 hours after the discovery of the discharge. If the spill or overflow needs to be reported after normal business hours or on the weekend, the facility must call the Department's Environmental Emergency Response hotline at (573) 634-2436. Leaving a message on a Department staff member voice-mail does not satisfy this reporting requirement.
 - (c) A record of all spills shall be retained with the SWPPP and made available to the Department upon request.
 - (d) Other spills not reaching waters of the state must be cleaned up as soon as possible to prevent entrainment in stormwater but are not required to be reported to the Department.
15. The full implementation of this operating permit shall constitute compliance with all applicable federal and state statutes and regulations in accordance with RSMo 644.051.16 and the CWA §402(k); however, this permit may be reopened and modified or alternatively revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under Clean Water Act §§ 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) if the effluent standard or limitation so issued or approved contains different conditions or is otherwise more stringent than any effluent limitation in the permit or controls any pollutant not limited in the permit. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, termination, notice of planned changes, or anticipated non-compliance does not stay any permit condition.

IV. STORMWATER POLLUTION PREVENTION PLAN (SWPPP) MANAGEMENT REQUIREMENTS

1. The primary requirement of this permit is the development and implementation of a SWPPP which incorporates site specific practices to best minimize the soil exposure, soil erosion, and the discharge of pollutants, including solids for each site covered under this permit.

The purpose of the SWPPP is to ensure the design, implementation, management, and maintenance of BMPs in order to prevent sediment and other pollutants in stormwater discharges associated with the land disturbance activities [40 CFR 122.44 (k)(4)] from entering waters of the state above established general and narrative criteria; compliance with Missouri Water Quality Standards; and compliance with the terms and conditions of this general permit.

- (a) **The SWPPP must be developed and implemented prior to conducting any land disturbance activities and must be specific to the land disturbance activities at the site.**
- (b) The permittee shall fully implement the provisions of the SWPPP required under this permit as a condition of this general permit throughout the term of the land disturbance project. Failure to develop, implement, and maintain a SWPPP may lead to immediate enforcement action.

- (c) The SWPPP shall be updated any time site conditions warrant adjustments to the project or BMPs.
 - (d) Either an electronic copy or a paper copy of the SWPPP, and any required reports, must be accessible to anyone on site at all times when land disturbance operations are in process or other operational activities that may affect the maintenance or integrity of the BMP structures and made available as specified under Part VIII. STANDARD PERMIT CONDITIONS, Condition 1 of this permit. The SWPPP shall be readily available upon request and should not be sent to the Department unless specifically requested
2. Failure to implement and maintain the BMPs chosen, which can be revised and updated, is a permit violation. The chosen BMPs will be the most reasonable and cost effective while also ensuring the highest quality water discharged attainable for the facility. Facilities with established SWPPPs and BMPs shall evaluate BMPs on a regular basis and change the BMPs as needed if there are BMP deficiencies.
3. The SWPPP must:
- (a) List and describe the location of all outfalls;
 - (b) List any allowable non-stormwater discharges occurring on site and where these discharges occur;
 - (c) Incorporate required practices identified below;
 - (d) Incorporate sediment and erosion control practices specific to site conditions;
 - (e) Discuss whether or not a 404 Permit is required for the project; and
 - (f) Name the person(s) responsible for inspection, operation, and maintenance of BMPs. The SWPPP shall list the names and describe the role of all owners/primary operators (such as general contractor, project manager) responsible for environmental or sediment and erosion control at the land disturbance site.
4. The SWPPP briefly must describe the nature of the land disturbance activity, including:
- (a) The function of the project (e.g., low density residential, shopping mall, highway, etc.);
 - (b) The intended sequence and timing of activities that disturb the soils at the site; and
 - (c) Estimates of the total area expected to be disturbed by excavation, grading, or other land disturbance support activities including off-site borrow and fill areas;
5. In order to identify the site, the SWPPP shall include site information including size in acres. The SWPPP shall have sufficient information to be of practical use to contractors and site construction workers to guide the installation and maintenance of BMPs.
6. The function of the SWPPP and the BMPs listed therein is to prevent or minimize pollution to waters of the state. A deficiency of a BMP means it was not effective in preventing or minimizing pollution of waters of the state.

The permittee shall select, install, use, operate and maintain appropriate BMPs for the permitted site. The following manuals are acceptable resources for the selection of appropriate BMPs.

Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites, (Document number EPA 833-R-06-004) published by the United States Environmental Protection Agency (USEPA) in May 2007. This manual as well as other information, including examples of construction SWPPPs, is available at the USEPA internet site at https://www.epa.gov/sites/production/files/2015-10/documents/sw_swppp_guide.pdf; and <https://www.epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swppp>.

The latest version of *Protecting Water Quality: A field guide to erosion, sediment and stormwater best management practices for development sites in Missouri*, published by the Department. This manual is available at: <https://dnr.mo.gov/document-search/protecting-water-quality-field-guide>.

The permittee is not limited to the use of these guidance manuals. Other guidance publications may be used to select appropriate BMPs. However, all BMPs must be described and justified in the SWPPP. Although the use of these manuals or other resources is recommended and may be used for BMP selection, they do not supersede the conditions of this permit. They may be used to inform in the decision making process for BMP selection but they are not themselves part of the permit conditions.

The permittee may retain the SWPPP, inspection reports, and all other associated documents (including a copy of this permit) electronically pursuant to RSMo 432.255. The documents must be made available to all interested persons in either paper or electronic format as required by this permit and the permittee must remit a copy (electronic or otherwise) of the SWPPP and inspection reports to the Department upon request.

7. The SWPPP must contain a legible site map, multiple maps if necessary, identifying:
 - (a) Site boundaries of the property;
 - (b) Locations of all waters of the state (including wetlands) within the site and half a mile downstream of the site's outfalls;
 - (c) Location of all outfalls;
 - (d) Direction(s) of stormwater flow (use arrows) and approximate slopes before and after grading activities;
 - (e) Areas of soil disturbance and areas that will not be disturbed (or a statement that all areas of the site will be disturbed unless otherwise noted);
 - (f) Location of structural and non-structural BMPs, including natural buffer areas, identified in the SWPPP;
 - (g) Locations where stabilization practices are expected to occur;
 - (h) Locations of on-site and off-site material, waste, borrow, or equipment storage areas and stockpiles;
 - (i) Designated points where vehicles will exit the site;
 - (j) Location of stormwater inlets and conveyances including ditches, pipes, man-made conduits, and swales; and
 - (k) Areas where final stabilization has been achieved.
8. An individual shall be designated by the permittee as the environmental lead. This environmental lead shall have knowledge in erosion, sediment, and stormwater control principles, knowledge of the permit, and the site's SWPPP. The environmental lead shall ensure all personnel and contractors understand any requirements of this permit may be affected by the work they are doing. The environmental lead or designated inspector(s) knowledgeable in erosion, sediment, and stormwater control principles shall inspect all structures that function to prevent or minimize pollution of waters of the state.
9. Throughout coverage under this permit, the permittee shall amend and update the SWPPP as appropriate during the term of the land disturbance activity. All SWPPP modifications shall be signed and dated. The permittee shall amend the SWPPP to incorporate any significant site condition changes which impact the nature and condition of stormwater discharges. At a minimum, these changes include whenever the:
 - (a) Location, design, operation, or maintenance of BMPs is changed;
 - (b) Design of the construction project is changed that could significantly affect the quality of the stormwater discharges;
 - (c) The permittee's inspections indicate deficiencies in the SWPPP or any BMP;
 - (d) Department notifies the permittee in writing of deficiencies in the SWPPP;
 - (e) SWPPP is determined to be ineffective in minimizing or controlling erosion and sedimentation (e.g., there is visual evidence of excessive site erosion or sediment deposits in streams, lakes, or downstream waterways, sediment or other wastes off site); and/or
 - (f) Department determines violations of water quality standards may occur or have occurred.
10. Site Inspections: The environmental lead, or a designated inspector, shall conduct regularly scheduled inspections. These inspections shall be conducted by a qualified person, one who is responsible for environmental matters at the site, or a person trained by and directly supervised by the person responsible for environmental matters at the site. Site inspections shall include, at a minimum, the following:
 - (a) For disturbed areas that have not achieved final stabilization, all installed BMPs and other pollution control measures shall be inspected to ensure they are properly installed, appear to be operational, and are working as intended to minimize the discharge of pollutants.
 - (b) For areas on site that have achieved either temporary or final stabilization, while at the same time active construction continues on other areas, ensure that all stabilization measures are properly installed, appear to be operational, and are working as intended to minimize the discharge of pollutants.
 - (c) Inspect all material, waste, borrow, and equipment storage and maintenance areas that are covered by this permit. Inspect for conditions that could lead to spills, leaks, or other accumulations of pollutants on the site.
 - (d) Inspect all areas where stormwater typically flows within the site, including drainage ways designed to divert, convey, and/or treat stormwater.

- (e) All stormwater outfalls shall be inspected for evidence of erosion, sediment deposition, or impacts to the receiving stream. If a discharge is occurring during an inspection, the inspector must observe and document the visual quality of the discharge and take note of the characteristics of the stormwater discharge, including turbidity, color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants.
 - (f) When practicable the receiving stream shall also be inspected for a minimum of 50 feet downstream of the outfall.
 - (g) The perimeter of the site shall be inspected for evidence of BMP failure to ensure concentrated flow does not develop a new outfall.
 - (h) The SWPPP must explain how the environmental lead will be notified when stormwater runoff occurs.
11. Inspection Frequency: All BMPs must be inspected in accordance to one of the schedules listed below. The inspection frequency shall be documented in the SWPPP, and any changes to the frequency of inspections, including switching between the options listed below, must be documented on the inspection form:
- (a) At least once every seven (7) calendar days and within 48 hours after any storm event equal to or greater than a 2-year, 24-hour storm has ceased during a normal work day or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday; or
 - (b) Once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches of precipitation or greater, or the occurrence of runoff from snowmelt. To determine if a storm event of 0.25 inches or greater has occurred on the site, the permittee shall either keep a properly maintained rain gauge on site, or obtain the storm event information from a weather station near the site location.
 - 1) Inspections are only required during the project's normal working hours.
 - 2) An inspection must be conducted within 24 hours of a storm event which has produced 0.25 inches. The inspection shall be conducted within 24 hours of the event end, or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday.
 - 3) If it is elected to inspect every 14 calendar days and there is a storm event at the site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, the permittee shall conduct an inspection within 24 hours of the end of the storm or within 72 hours if the rain event ceases during a non-work day such as a weekend or holiday.
 - (c) Areas on site that have achieved stabilization, while at the same time active construction continues on other areas, may reduce inspection frequency to monthly, for those stabilized areas, if the following conditions exist:
 - 1) For areas where disturbed portions have undergone temporary stabilization, inspections shall occur at least once a month while stabilized and when re-disturbed shall follow either frequency outlined in (a),(b), or (c) above.
 - 2) Areas on site that have achieved final stabilization must be inspected at least once per month until the permit is terminated.
 - (d) If construction activities are suspended due to frozen conditions, the permittee may temporarily reduce site inspections to monthly until thawing conditions begin to occur if all of the following are met:
 - 1) Land disturbances have been suspended; and
 - 2) All disturbed areas of the site have been stabilized in accordance with Part V. BMP REQUIREMENTS, Condition 13.
 - 3) The change shall be noted in the SWPPP.
 - (e) Any basin dewatering shall be inspected daily when discharge is occurring. The discharge shall be observed and dewatering activities shall be ceased immediately if the receiving stream is being impacted. These inspections shall be noted on a log or on the inspection report.

If weather conditions or other issues prevent correction of BMPs within seven calendar days, the reasons for the delay must be documented (including pictures), and there must be a narrative explaining why the work cannot be accomplished within the seven day time period. The documentation must be filed with the regular inspection reports. The corrections shall be made as soon as weather conditions or other issues allow.

12. Site Inspection Reports: A log of each inspection and/or copy of the inspection report shall be kept readily accessible and must be made available upon request by the Department. Electronic logs are acceptable as long as reports can be provided within 24 hours. If inspection reports are kept off site, the SWPPP must indicate where they are stored. The inspection report shall be signed by the environmental lead or designated inspector (electronically or otherwise).
- (a) The inspection report is to include the following minimum information:
 - 1) Inspector's name and title.
 - 2) Date and time of inspection.
 - 3) Observations relative to the effectiveness of the BMPs and stabilization measures. The following must be

documented:

- a. Whether BMPs are installed, operational, and working as intended;
- b. Whether any new or modified stormwater controls are needed;
- c. Facilities examined for conditions that could lead to spill or leak;
- d. Outfalls examined for visual signs of erosion or sedimentation at outfalls. Excessive erosion or sedimentation may be due to BMP failure or insufficiency. Response to observations should be addressed in the inspection report.

4) Corrective actions taken or necessary to correct the observed problem.

5) Listing of areas where land disturbance operations have permanently or temporarily stopped.

13. Any structural or maintenance deficiencies for BMPs or stabilization measures shall be documented and corrected as soon as possible but no more than seven (7) calendar days after the inspection.

(a) Corrective action documentation shall be stored with the associated site inspection report.

(b) Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events.

(c) If weather conditions or other issues prevent correction of BMPs within seven calendar days, the reasons for the delay must be documented (this may include pictures) and there must be a narrative explaining why the work cannot be accomplished within the seven day time period. The permittee shall correct the problem as soon as weather conditions or issues allow.

(d) Corrective actions may be required by the Department. The permittee must comply with any corrective actions required by the Department as a result of permit violations found during an inspection.

V. BMP REQUIREMENTS

1. The information, practices, and BMP requirements in this section shall be implemented on site and, where noted, provided for in the SWPPP.

2. Existing vegetation and trees shall be preserved where practicable. The permittee is encouraged to preserve topsoil where practicable.

3. The permittee shall select appropriate BMPs for use at the site and list them in the SWPPP. When selecting effective BMPs, the permittee shall consider stormwater volume and velocity. A BMP that has demonstrated ineffectiveness in preventing or minimizing sediment or other pollutants from leaving a given site shall be replaced with a more effective BMP, or additional and sequential BMPs and treatment devices may be incorporated as site conditions allow. The permittee should consider a schedule for performing erosion control measures when selecting BMPs.

4. The SWPPP shall include a description of both structural and non-structural BMPs that will be used at the site.

(a) The SWPPP shall provide the following general information for each BMP which will be used one or more times at the site:

- 1) Physical description of the BMP;
- 2) Site conditions that must be met for effective use of the BMP;
- 3) BMP installation/construction procedures, including typical drawings; and
- 4) Operation and maintenance procedures and schedules for the BMP.

(b) The SWPPP shall provide the following information for each specific instance where a BMP is to be installed:

- 1) Whether the BMP is temporary or permanent;
- 2) When the BMP will be installed in relation to each phase of the land disturbance procedures to complete the project; and
- 3) Site conditions that must be met before removal of the BMP if the BMP is not a permanent BMP.

5. Structural BMP Installation: The permittee shall ensure all BMPs are properly installed and operational at the locations and relative times specified in the SWPPP.

(a) Perimeter control BMPs for runoff from disturbed areas shall be installed before general site clearing is started. Note this requirement does not apply to earth disturbances related to initial site clearing and establishing entry, exit, or access of the site, which may require that stormwater controls be installed immediately after the earth

disturbance.

- (b) For phased projects, BMPs shall be properly installed as necessary prior to construction activities.
 - (c) Stormwater discharges which leave the site from disturbed areas shall pass through an appropriate impediment to sediment movement such as a sedimentation basin, sediment traps (including vegetative buffers), or silt fences prior to leaving the land disturbance site.
 - (d) A drainage course change shall be clearly marked on a site map and described in the SWPPP.
 - (e) If vegetative stabilization measures are being implemented, stabilization efforts are considered “installed” when all activities necessary to seed or plant the area are completed. Vegetative stabilization is not considered “operational” until the vegetation is established.
6. Install sediment controls along any perimeter areas of the site that are downgradient from any exposed soil or other disturbed areas. Prevent stormwater from circumventing the edge of the perimeter control. For sites where perimeter controls are infeasible, other practices shall be implemented to minimize discharges to perimeter areas of the site.
7. For surface waters of the state, defined in Section 644.016.1(27) RSMo, located on or adjacent to the site, the permittee must maintain a riparian buffer or structural equivalent in accordance with at least one of the following options. The selection and location must be described in the SWPPP.
- (a) Provide and maintain a 50-foot undisturbed natural buffer; or
 - (b) Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
 - (c) If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
 - (d) The permittee is not required to comply with (a), (b), or (c) above if one or more of the following exceptions apply and documentation is provided in the SWPPP:
 - 1) As authorized per CWA Section 404 Department of the Army permit and its associated Section 401 Water Quality Certification from the Department.
 - 2) If there is no discharge of stormwater to waters of the state through the area between the disturbed portions of the site and waters of the state located within 50 feet of the site. This includes situations where the permittee has implemented permanent control measures that will prevent such discharges, such as a berm or other barrier.
 - 3) Where no natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for the current development of the site.
 - a. Where some natural buffer exists but portions of the area within 50 feet of the waters of the state are occupied by preexisting development disturbances the permittee is required to comply with (a), (b), or (c) above.
 - 4) For linear projects where site constraints make it infeasible to implement a buffer or equivalent provided the permittee limit disturbances within 50 feet of any waters of the state and/or the permittee provides supplemental erosion and sediment controls to treat stormwater discharges from earth disturbances within 50 feet of the water of the state. The permittee must also document in the SWPPP the rationale for why it is infeasible for the permittee to implement (a), (b), or (c) and describe any buffer width retained and supplemental BMPs installed.
 - (e) Where the permittee is retaining a buffer of any size, the buffer should be measured perpendicularly from any of the following points, whichever is further landward from the water:
 - 1) The ordinary high water mark of the water body, defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or
 - 2) The edge of the stream or river bank, bluff, or cliff, whichever is applicable.
8. Slopes for disturbed areas must be identified in the SWPPP. A site map or maps defining the sloped areas for all phases of the project must be included in the SWPPP. The disturbance of steep slopes shall be minimized.
9. Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil.
- (a) Locate the piles outside of any natural buffers zones, established under the condition above, and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated;
 - (b) Install a sediment barrier along all downgradient perimeter areas;
 - (c) Divert surface flows around stockpiles to reduce and minimize erosion of the stockpile.

- (d) For piles that will be unused for 14 or more days, provide cover with appropriate temporary stabilization in accordance with Part V. BMP REQUIREMENTS, Condition 13.
 - (e) Rinsing, sweeping, or otherwise placing any soil, sediment, debris, or stockpiled product which has accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or water of the state is prohibited.
10. The site shall include BMPs for pollution prevention measures and shall be noted in the SWPPP. At minimum such measures must be designed, installed, implemented, and maintained to:
- (a) Minimize the discharge of pollutants from equipment and vehicle rinsing; no detergents, additives, or soaps of any kind shall be discharged. Rinse waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
 - (b) Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater;
 - (c) Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures, including, but not limited to, the installation of containment berms and use of drip pans at petroleum product and liquid storage tanks and containers; and
 - (d) Prevent discharges from causing or contributing to an exceedance of water quality standards including general criteria.
11. Sedimentation Basins: The SWPPP shall include a sedimentation basin for each drainage area with ten or more acres disturbed at one time.
- (a) The sedimentation basin shall be sized, at a minimum, to treat a local 2-year, 24-hour storm.
 - (b) Sediment basins shall not be constructed in any waters of the state or natural buffer zones.
 - (c) Discharges from dewatering activities shall be managed by appropriate controls. The SWPPP shall include a description of any anticipated dewatering methods and specific BMPs designed to treat dewatering water.
 - 1) Appropriate controls include, but are not limited to, sediment socks, dewatering tanks, tube settlers, weir tanks, filtration systems (e.g. bag or sand filters), and passive treatment systems that are designed to remove or retain sediment.
 - 2) Erosion controls and velocity dissipation devices (e.g., check dams, riprap, and vegetated buffers) to minimize erosion at inlets, outlets, and discharge points from shall be utilized.
 - 3) Water with an oil sheen shall not be discharged and shall be marked in SWPPP.
 - 4) Visible floating solids and foam shall not be discharged.
 - (d) Until final stabilization has been achieved, sediment basins and impoundments shall utilize outlet structures or floating skimmers that withdraw water from the surface when discharging.
 - 1) Under frozen conditions, it may be considered infeasible to withdraw water from the surface and an exception can be made for that specific period as long as discharges that may contain sediment and other pollutants are managed by appropriate controls. If determined infeasible due to frozen conditions, documentation must be provided in the SWPPP to support the determination, including the specific conditions or time period when this exception applies.
 - (e) Accumulated sediment shall not exceed 50% of total volume or as prescribed in the design, whichever is less. Note in the SWPPP the locations for disposal of the material removed from sediment basins.
 - (f) Prevent discharges to the receiving stream causing excessive visual turbidity. For the purposes of this permit, visual turbidity refers to a sediment plume or other cloudiness in the water caused by sediment that can be identified by an observer.
 - (g) The SWPPP shall require the basin be maintained until final stabilization of the disturbed area served by the basin.

Where use of a sediment basin is infeasible, the SWPPP shall evaluate and specify other similarly effective BMPs to be employed to control erosion and sediment. These similarly effective BMPs shall be selected from appropriate BMP guidance documents authorized by this permit. The BMPs must provide equivalent water quality protection to achieve compliance with this permit. The SWPPP shall require both temporary and permanent sedimentation basins to have a stabilized spillway to minimize the potential for erosion of the spillway or basin embankment.

12. Soil disturbing activities on site that have ceased either temporarily or permanently shall initiate stabilization immediately in accordance with the options below. For soil disturbing activities that have been temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days:
 - (a) The permittee shall construct BMPs to establish interim stabilization; and
 - (b) Stabilization must be initiated immediately and completed within 14 calendar days.
 - (c) For soil disturbing activities that have been permanently ceased on any portion of the site, final stabilization of disturbed areas must be initiated immediately and completed within 14 calendar days.
 - 1) Allowances to the 14-day completion period for temporary and final stabilization may be made due to weather and equipment malfunctions. The use of allowances shall be documented in the SWPPP. Allowances may be determined unnecessary after review by the Department.
 - (d) Until stabilization is complete, interim sediment control shall consist of well-established and maintained BMPs that are reasonably certain to protect waters of the state from sediment pollution over an extended period of time. This may require adding more BMPs to an area than is normally used during daily operations. The types of BMPs used must be suited to the area disturbed, taking into account the number of acres exposed and the steepness of the slopes. If the slope of the area is greater than 3:1 (three feet horizontal to one foot vertical), then the permittee shall establish interim stabilization within seven days of ceasing operations on that part of the site. The following activities would constitute the immediate initiation of stabilization:
 - 1) Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable;
 - 2) Applying mulch or other non-vegetative product to the exposed areas;
 - 3) Seeding or planting the exposed areas;
 - 4) Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.
 - (e) If vegetative stabilization measures are being implemented, stabilization is considered “installed” when all activities necessary to seed or plant the area are completed. Installed does not mean established.
 - (f) If non-vegetative stabilization measures are being implemented, stabilization is considered “installed” when all such measures are implemented or applied.
 - 1) Non-vegetative stabilization shall prevent erosion and shall be chosen for site conditions, such as slope and flow of stormwater.
 - (g) Final stabilization is not considered achieved until vegetation has grown and established to meet the requirements below.
13. Prior to removal of BMPs, ceasing site inspections, and removing from the quarterly report, final stabilization must be achieved. Final stabilization shall be achieved as soon as possible once land disturbance activities have ceased. Document in the SWPPP the type of stabilization and the date final stabilization is achieved.
 - (a) The project is considered to have achieved final stabilization when perennial vegetation (excluding volunteer vegetation), pavement, buildings, or structures using permanent materials (e.g., riprap, gravel, etc.) cover all areas that have been disturbed. With respect to areas that have been vegetated, vegetation must be at least 70% coverage of 100% of the vegetated areas on site. Vegetation must be evenly distributed.
 - (b) Disturbed areas on agricultural land are considered to have achieved final stabilization when they are restored to their preconstruction agricultural use. If former agricultural land is changing to non-agricultural use, this is no longer considered agricultural land and shall follow condition (a).
 - (c) If the intended function of a specific area of the site necessitates that it remain disturbed, final stabilization is considered achieved if all of the following are met:
 - 1) Only the minimum area needed remains disturbed (i.e., dirt access roads, motocross tracks, utility pole pads, areas being used for storage of vehicles, equipment, materials). Other areas must meet the criteria above.

- 2) Permanent structural BMPs (e.g., rock checks, berms, grading, etc.) or non-vegetative stabilization measures are implemented and designed to prevent sediment and other pollutants from entering waters of the state.
- 3) Inspection requirements in Part IV. SWPPP MANAGEMENT REQUIREMENT, Condition 11 are met and documented in the SWPPP.
- (d) Winter weather and frozen conditions do not excuse any of the above final stabilization requirements. If vegetation is required for stabilization the permittee must maintain BMPs throughout winter weather and frozen conditions until thawing and vegetation meets final stabilization criteria above. Document stabilization attempts during frozen conditions in the SWPPP. Consider future freezing when removing vegetation and plan with temporary stabilization techniques before the ground becomes frozen.

VI. SITE FINALIZATION & PERMIT TERMINATION

1. Until a site is finalized, the permittee must comply with all conditions in the permit, including continuation of site inspections and reporting quarterly to the Department. To finalize the site and remove from this permit coverage, the site shall meet the following requirements:
 - (a) For any areas that (1) were disturbed during construction, (2) are not covered over by permanent structures, and (3) over which the permittee had control during the construction activities, the requirements for final vegetative or non-vegetative stabilization in Part V. BMP REQUIREMENTS, Condition 13;
 - (b) The permittee has removed and properly disposed of all construction materials, waste, and waste handling devices and has removed all equipment and vehicles that were used during construction, unless intended for long-term beyond construction phase;
 - (c) The permittee has removed all temporary BMPs that were installed and maintained during construction, except those that are intended for long-term use or those that are biodegradable; and
 - (d) The permittee has removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following the construction activities.
2. The permit may be terminated if;
 - (a) There has been a transfer of control of all areas of the site for which the current permittee is responsible under this permit to another operator, and that operator has obtained coverage under this permit;
 - (b) Active sites obtain coverage under an individual or alternative general NPDES permit, with land disturbance conditions; or
 - (c) This permit may be terminated when all projects covered under this permit are finalized. In order to terminate the permit, the permittee shall notify the Department by submitting a Request for Termination along with the final quarterly report for the current calendar quarter.

VII. REPORTING AND SAMPLING REQUIREMENTS

1. The permittee is not required to sample stormwater under this permit. The Department may require sampling and reporting as a result of illegal discharges, compliance issues related to water quality concerns, or evidence of off-site impacts from activities at a site. If such an action is needed, the Department will specify in writing the sampling requirements, including such information as location and extent. If the permittee refuses to perform sampling when required, the Department may terminate the general permit and require the facility to obtain a site-specific permit with sampling requirements.
2. Electronic Discharge Monitoring Report (eDMR) Submission System. The NPDES Electronic Reporting Rule, 40 CFR Part 127, reporting of any report required by the permit shall be submitted via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data for the NPDES program. The eDMR system is currently the only Department-approved reporting method for this permit unless specified elsewhere in this permit, or a waiver is granted by the Department. The facility must register in the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due.
3. Permittees shall prepare a quarterly report with a list of active land disturbance sites including any off-site borrow or depositional areas associated with the construction project and submit the following information electronically as an

attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:

- (a) The name of the project;
- (b) The location of the project (including the county);
- (c) The name of the primary receiving water(s) for each project;
- (d) A description of the project;
- (e) The number of acres disturbed;
- (f) The percent of completion of the project; and
- (g) The projected date of completion.

The quarterly report(s) shall be maintained by the permittee and readily available for review by the Department at the address provided on the application as well as submitted quarterly via the Department's eDMR system. The permittee shall submit quarterly reports according to Table A.

Table A	Schedule for Quarterly Reporting
Activity for the months of:	Report is due:
January, February, March (1st Quarter)	April 28
April, May, June (2nd Quarter)	July 28
July, August, September (3rd Quarter)	October 28
October, November, December (4th Quarter)	January 28

VIII. STANDARD PERMIT CONDITIONS

1. Records: The permittee shall retain copies of this general permit, the SWPPP and all amendments for the site named in the State Operating Permit, results of any monitoring and analysis, and all site inspection records required by this general permit.
 - (a) The records shall be accessible during normal business hours and retained for a period of at least three (3) years from the date of termination.
 - (b) The permittee shall provide a copy (electronic or otherwise) of the SWPPP to the Department, USEPA, or any local agency or government representative if they request a copy in the performance of their official duties within 24 hours of the request (or next working day), unless given more time by the representative.
 - (c) The permittee shall provide a copy of the SWPPP to those who are responsible for installation, operation, or maintenance of any BMP. The permittee, their representative, and/or the contractor(s) responsible for installation, operation and maintenance of the BMPs shall have a current copy of the SWPPP with them when on the project site.
2. Land Ownership and Change of Ownership: Federal and Missouri stormwater regulations [10 CSR 20-6.200(1) (B)] require a stormwater permit and erosion control measures for all land disturbances of one or more acres. These regulations also require a permit for less than one acre lots if the lot is part of a larger common plan of development or sale where that plan is at least one acre in size.
 - (a) If the permittee sells any portion of a permitted site to a developer for commercial, industrial, or residential use, this land remains a part of the common sale and the new owner must obtain a permit prior to conducting any land disturbance activity. Therefore, the original permittee must amend the SWPPP to show that the property has been sold and, therefore, no longer under the original permit coverage.
 - (b) Property of any size which is part of a larger common plan of development where the property has achieved final stabilization and the original permit terminated will require application of a new land disturbance permit for any future land disturbance activity unless the activity is by an individual residential building lot owner on a site less than one acre.
 - (c) If a portion of a larger common plan of development is sold to an individual for the purpose of building his or her own private residence, a permit is required if the portion of land sold is equal to or greater than one acre. No permit is required, however, for less than one acre of land sold.
3. Permit Transfer: This permit may not be transferred to a new owner.

4. Termination: This permit may be terminated when the project has achieved final stabilization, defined in Part VI. SITE FINALIZATION & PERMIT TERMINATION.
 - (a) In order to terminate the permit, the permittee shall notify the Department by submitting the form Request for Termination of Operating Permit Form MO 780-2814. The form should be submitted to the appropriate regional office or through an approved electronic system if it should become available.
 - (b) The Cover Page (Certificate Page) of the Master General Permit for Land Disturbance specifies the “effective date” and the “expiration date” of the Master General Permit. The “issued date” along with the “expiration date” will appear on the State Operating Permit issued to the applicant. **This permit does not continue administratively beyond the expiration date.**
5. Duty to Reapply: If the project or development completion date will be after the expiration date of this general permit, then the permittee must reapply to the Department for a new permit. This permit may be applied for and issued electronically in accordance with Section 644.051.10, RSMo.
 - (a) Due to the nature of the electronic permitting system, a period of time may be granted at the discretion of the Department in order to apply for a new permit after the new version is effective. Applicants must maintain appropriate best management practices and inspections during the discretionary period.
6. Duty to Comply: The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
7. Modification, Revocation, and Reopening:
 - (a) If at any time the Department determines that the quality of waters of the state may be better protected by reopening this permit, or revoking this permit and requiring the owner/operator of the permitted site to apply for a site-specific permit, the Department may revoke a general permit and require any person to obtain such an operating permit as authorized by 10 CSR20-6.010(13) and 10 CSR 20-6.200(1)(B).
 - (b) If this permit is reopened, modified, or revoked pursuant to this Section, the permittee retains all rights under Chapter 536 and 644 Revised Statutes of Missouri upon the Department’s reissuance of the permit as well as all other forms of administrative, judicial, and equitable relief available under law.
8. Other Information: Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.
9. Duty to Provide Information: The permittee shall furnish to the Department, within 24 hours unless explicitly granted more time in writing, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.
10. Inspection and Entry: The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
 - (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of the permit;
 - (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 - (d) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

11. Signatory Requirement:

- (a) All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
- (b) The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit (including monitoring reports or reports of compliance or non-compliance) shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
- (c) The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

12. Property Rights: This permit does not convey any property rights of any sort or any exclusive privilege.

13. Notice of Right to Appeal: If you were adversely affected by this decision, you may be entitled to pursue an appeal before the administrative hearing commission (AHC) pursuant to Sections 621.250 and 644.051.6 RSMo. To appeal, you must file a petition with the AHC within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Any appeal should be directed to:

Administrative Hearing Commission
U.S. Post Office Building, Third Floor
131 West High Street, P.O. Box 1557
Jefferson City, MO 65102-1557
Phone: 573-751-2422
Fax: 573-751-5018
Website: <https://ahc.mo.gov>



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

STORMWATER DISCHARGES FROM
THIS LAND DISTURBANCE SITE ARE
AUTHORIZED BY THE MISSOURI
STATE OPERATING PERMIT NUMBER:

ANYONE WITH QUESTIONS OR
CONCERNS ABOUT STORMWATER
DISCHARGES FROM THIS SITE,
PLEASE CONTACT THE MISSOURI
DEPARTMENT OF NATURAL
RESOURCES AT

1-800-361-4827

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET FOR MASTER GENERAL PERMIT
MO-R100xxx

The Federal Water Pollution Control Act [Clean Water Act (CWA)] Section 402 of Public Law 92-500 (as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the CWA). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Missouri Department of Natural Resources (Department) under an approved program operated in accordance with federal and state laws (Federal CWA and Missouri Clean Water Law Section 644 as amended). Permits are issued for a period of five (5) years unless otherwise specified.

Per 40 CFR 124.56, 40 CFR 124.8, and 10 CSR 20-6.020(1)(A)2, a Fact Sheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the permit. A Fact Sheet is not an enforceable part of an MSOP.

DEFINITIONS FOR THE PURPOSES OF THIS PERMIT:

Common Promotional Plan: A plan undertaken by one (1) or more persons to offer lots for sale or lease; where land is offered for sale by a person or group of persons acting in concert, and the land is contiguous or is known, designated, or advertised as a common unit or by a common name or similar names, the land is presumed, without regard to the number of lots covered by each individual offering, as being offered for sale or lease as part of a common promotional plan.

Dewatering: The act of draining rainwater and/or groundwater from basins, building foundations, vaults, and trenches.

Effective Operating Condition: For the purposes of this permit, a stormwater control is kept in effective operating condition if it has been implemented and maintained in such a manner that it is working as designed to minimize pollutant discharges.

Emergency-Related Project: A project initiated in response to a public emergency (e.g. earthquakes, extreme flooding conditions, tornado, disruptions in essential public services, pandemic) for which the related work requires immediate authorization to avoid imminent endangerment to human health/safety or the environment or to reestablish essential public services.

Exposed Soils: For the purposes of this permit, soils that as a result of earth-disturbing activities are left open to the elements.

Immediately: For the purposes of this permit, immediately should be defined as within 24 hours.

Impervious Surface: For the purpose of this permit, any land surface with a low or no capacity for soil infiltration including, but not limited to, pavement, sidewalks, parking areas and driveways, packed gravel or soil, or rooftops.

Infeasible: Infeasible means not technologically possible or not economically practicable and achievable in light of best industry practices.

Install or Installation: When used in connection with stormwater controls, to connect or set in position stormwater controls to make them operational.

Land Disturbance Site or Site: The land or water area where land disturbance activities will occur and where stormwater controls will be installed and maintained. The land disturbance site includes construction support activities, which may be located at a different part of the property from where the primary land disturbance activity will take place or on a different piece of property altogether. Off-site borrow areas directly and exclusively related to the land disturbance activity are part of the site and must be permitted.

Larger Common Plan of Development or Sale: A continuous area where multiple separate and distinct construction activities are occurring under one plan, including any off-site borrow areas that are directly and exclusively related to the land disturbance activity. Off-site borrow areas utilized for multiple different land disturbance projects are considered their own entity and are not part of the larger common plan of development or sale. See definition of Common Promotional Plan to understand what a 'common plan' is.

Minimize: To reduce and/or eliminate to the extent achievable using stormwater controls that are technologically available and economically practicable and achievable in light of best industry practices.

Non-structural Best Management Practices (BMPs): Institutional, educational, or pollution prevention practices designed to limit the amount of stormwater runoff or pollutants that are generated in the landscape. Examples of non-structural BMPs include picking up trash and debris, sweeping up nearby sidewalks and streets, maintaining equipment, and training site staff on stormwater control practices.

Operational: for the purposes of this permit, stormwater controls are made "operational" when they have been installed and implemented, are functioning as designed, and are properly maintained.

Ordinary High Water Mark: The line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris.

Peripheral: For the purposes of this permit, peripheral should be defined as the outermost boundary of the area that will be disturbed.

Permanently: For the purposes of this permit, permanently is defined as any activity that has been ceased without any intentions of future disturbance.

Pollution Prevention Controls (or Measures): Stormwater controls designed to reduce or eliminate the addition of pollutants to construction site discharges through analysis of pollutant sources, implementation of proper handling/disposal practices, employee education, and other actions.

Qualified Person (inspections): A person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

Stormwater Control (also referred to as sediment/erosion controls): refers to any temporary or permanent BMP or other method used to prevent or reduce the discharge of pollutants to waters of the state.

Structural BMP: Physical sediment/erosion controls working individually or as a group (treatment train) appropriate to the source, location, and area climate for the pollutant to be controlled. Examples of structural BMPs include silt fences, sedimentation ponds, erosion control blankets, and seeding.

Temporary Stabilization: A condition where exposed soils or disturbed areas are provided temporary vegetation and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb this area.

Treatment Train: A multi-BMP approach to managing the stormwater volume and velocity and often includes erosion prevention and sediment control practices often applied when the use of a single BMP is inadequate in preventing the erosion and transport of sediment. A good option to utilize as a corrective action.

Volunteer Vegetation: A volunteer plant is a plant that grows on its own, rather than being deliberately planted for stabilization purposes. Volunteers often grow from seeds that float in on the wind, are dropped by birds, or are inadvertently mixed into soils. Commonly, volunteer vegetation is referred to as 'weeds'. This does not meet the requirements for final stabilization.

Waters of the State: Section 644.016.1(27) RSMo. defines waters of the state as, "All waters within the jurisdiction of this state, including all rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two or more persons jointly or as tenants in common."

PART I – BASIC PERMIT INFORMATION

Facility Type:	Industrial Stormwater; Land Disturbance
Facility SIC Code(s):	1629
Facility Description:	Construction or land disturbance activity (e.g., clearing, grubbing, excavating, grading, filling, and other activities that result in the destruction of the root zone and/or land disturbance activity that is reasonably certain to cause pollution to waters of the state).

This permit establishes a Stormwater Pollution Prevention Plan (SWPPP) requirement for pollutants of concern from this type of facility or for all facilities and sites covered under this permit. 10 CSR 20-6.200(7) specifies "general permits shall contain BMP requirements and/or monitoring and reporting requirements to keep the stormwater from becoming contaminated".

Land disturbance activities include clearing, grubbing, excavating, grading, filling and other activities that result in the destruction of the root zone and/or other activities that are reasonably certain to cause pollution to waters of the state. A Missouri State Operating Permit for land disturbance permit is required for construction disturbance activities of one or more acres or for construction activities that disturb less than one acre when they are part of a larger common plan of development or sale that will disturb a cumulative total of one or more acres over the life of the project.

The primary requirement of a land disturbance permit is the development of a SWPPP which incorporates site-specific BMPs to minimize soil exposure, soil erosion, and the discharge of pollutants. The SWPPP ensures the design, implementation, management, and maintenance of BMPs in order to prevent sediment and other pollutants from leaving the site.

When it precipitates, stormwater washes over the loose soil on a construction site and various other materials and products being stored outside. As stormwater flows over the site, it can pick up pollutants like sediment, debris, and chemicals from the loose soil and transport them to nearby storm sewer systems or directly into rivers, lakes, or coastal waters.

The Missouri Department of Natural Resources is responsible for ensuring that construction site operators have the proper stormwater controls in place so that construction can proceed in a way that protects your community's clean water and the surrounding environment. One way the department helps protect water quality is by issuing land disturbance permits.

Local conditions are not considered when developing conditions for a general permit. A facility may apply for a site-specific permit if they desire a review of site-specific conditions.

PART II – RECEIVING STREAM INFORMATION

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:

Per Missouri Effluent Regulations (10 CSR 20-7.015), the waters of the state are divided into seven (7) categories. This permit applies to facilities discharging to the following water body categories:

- ✓ Missouri or Mississippi River [10 CSR 20-7.015(2)]
- ✓ Lakes or Reservoirs [10 CSR 20-7.015(3)]
- ✓ Losing Streams [10 CSR 20-7.015(4)]
- ✓ Metropolitan No-Discharge Streams [10 CSR 20-7.015(5)]
- ✓ Special Streams [10 CSR 20-7.015(6)]
- ✓ Subsurface Waters [10 CSR 20-7.015(7)]
- ✓ All Other Waters [10 CSR 20-7.015(8)]

Missouri Water Quality Standards (10 CSR 20-7.031) defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream's designated water uses shall be maintained in accordance with 10 CSR 20-7.031(24). A general permit does not take into consideration site-specific conditions.

MIXING CONSIDERATIONS:

This permit applies to receiving streams of varying low flow conditions. Therefore, the effluent limitations must be based on the smallest low flow streams considered, which includes waters without designated uses. As such, no mixing is allowed [10 CSR 20-7.031(5)(A)4.B.(I)(a)]. No Zone of Initial Dilution is allowed. [10 CSR 20-7.031(5)(A)4.B.(I)(b)].

RECEIVING STREAM MONITORING REQUIREMENTS:

There are no receiving water monitoring requirements recommended at this time.

PART III – RATIONALE AND DERIVATION OF EFFLUENT LIMITATIONS & PERMIT CONDITIONS

305(B) REPORT, 303(d) LIST, & TOTAL MAXIMUM DAILY LOAD (TMDL):

Section 305(b) of the Federal CWA requires each state identify waters not meeting Water Quality Standards and for which adequate water pollution controls have not been required. Water Quality Standards protect such beneficial uses of water as whole body contact, maintaining fish and other aquatic life, and providing drinking water for people, livestock, and wildlife. The 303(d) list helps state and federal agencies keep track of waters which are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed which shall include the TMDL calculation. For facilities with an existing general permit before a TMDL is written on their receiving stream, the Department will evaluate the permit and may require any facility authorized by this general permit to apply for and obtain a site-specific operating permit.

ANTI-BACKSLIDING:

A provision in the Federal Regulations [CWA Section 303(d)(4); CWA Section 402(c); 40 CFR Part 122.44(I)] requires a reissued permit to be as stringent as the previous permit with some exceptions.

- ✓ Not Applicable: All effluent limitations in this permit are at least as protective as those previously established.

ANTIDEGRADATION:

Antidegradation policies ensure protection of water quality for a particular water body on a pollutant by pollutant basis to ensure Water Quality Standards are maintained to support beneficial uses such as fish and wildlife propagation and recreation on and in the water. This also includes special protection of waters designated as an Outstanding National Resource Water or Outstanding State Resource Water [10 CSR 20-7.031(3)(C)]. Antidegradation policies are adopted to minimize adverse effects on water.

The Department has determined the best avenue forward for implementing the Antidegradation requirements into general stormwater permits is by requiring the appropriate development and maintenance of a SWPPP. The SWPPP must identify all reasonable and effective BMPs, taking into account environmental impacts and costs. This analysis must document why no discharge or no exposure options are not feasible at the facility. This selection and documentation of appropriate control measures will then serve as the analysis of alternatives and fulfill the requirements of the Antidegradation Rule and Implementation Procedure 10 CSR 20-7.031(3) and 10 CSR 20-7.015(9)(A)5.

Any facility seeking coverage under this permit which undergoes expansion or discharges a new pollutant of concern must update their SWPPP and select reasonable and cost effective new BMPs. New facilities seeking coverage under this permit are required to develop a SWPPP including this analysis and documentation of appropriate BMPs. Renewal of coverage for a facility requires a review of the SWPPP to ensure the selected BMPs continue to be appropriate.

- ✓ Applicable; the facility must review and maintain stormwater BMPs as appropriate.

BENCHMARKS:

When a permitted feature or outfall consists of only stormwater, a benchmark may be implemented at the discretion of the permit writer. Benchmarks require the facility to monitor and, if necessary, replace and update stormwater control measures. Benchmark concentrations are not effluent limitations. A benchmark exceedance, therefore, is not a permit violation; however, failure to take corrective action is a violation of the permit. Benchmark monitoring data is used to determine the overall effectiveness of control measures and to assist the permittee in knowing when additional corrective actions may be necessary to comply with the limitations of the permit.

- ✓ Not applicable; this permit does not contain numeric benchmarks.

BEST MANAGEMENT PRACTICES (BMPs):

Minimum site-wide BMPs are established in this permit to ensure all permittees are managing their sites equally to protect waters of the state from certain activities which could cause negative effects in receiving water bodies. While not all sites require a SWPPP because the SIC codes are specifically exempted in 40 CFR 122.26(b)(14), these BMPs are not specifically included for stormwater purposes. These practices are minimum requirements for all industrial sites to protect waters of the state. If the minimum BMPs are not followed, the facility may violate general criteria [10 CSR 20-7.031(4)]. Statutes are applicable to all permitted facilities in the state; therefore, pollutants cannot be released unless in accordance with RSMo 644.011 and 644.016 (17).

CHANGES IN DISCHARGES OF TOXIC POLLUTANT:

This special condition reiterates the federal rules found in 40 CFR 122.44(f) and 122.42(a)(1). In these rules, the facility is required to report changes in amounts of toxic substances discharged. Toxic substances are defined in 40 CFR 122.2 as "...any pollutant listed as toxic under section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing section 405(d) of the CWA." Section 307 of the CWA then refers to those parameters found in 40 CFR 401.15.

The permittee should also consider any other toxic pollutant in the discharge as reportable under this condition.

EFFLUENT LIMITATION GUIDELINE:

Effluent Limitation Guidelines, or ELGs, are found at 40 CFR 400-499. These are limitations established by the EPA based on the SIC code and the type of work a facility is conducting. Most ELGs are for process wastewater and some address stormwater. All are technology based limitations which must be met by the applicable facility at all times.

- ✓ The industries covered under this permit have an associated Effluent Limit Guideline (ELG) which is applicable to the stormwater discharges in this permit and is applied under 40 CFR 125.3(a).

ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:

The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize CWA reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. The final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online.

- ✓ Applicable; this permit requires quarterly reports.

GENERAL CRITERIA CONSIDERATIONS:

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into permits for pollutants determined to cause, have reasonable potential to cause, or to contribute to, an excursion above any water quality standard, including narrative water quality criteria. In order to comply with this regulation, the permit writer has completed a reasonable potential determination on whether discharges have reasonable potential to cause or contribute to an excursion of the general criteria listed in 10 CSR 20-7.031(4). In instances where reasonable potential exists, the permit includes limitations within the permit to address the reasonable potential. In discharges where reasonable potential does not exist, the permit may include monitoring to later determine the discharge's potential to impact the narrative criteria. Additionally, RSMo 644.076.1, as well as Standard Permit Conditions Part VIII of this permit state it shall be unlawful for any person to cause or allow any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule, or regulation promulgated by the commission.

LAND APPLICATION:

Land application, or surficial dispersion of wastewater and/or sludge, is performed by facilities to maintain a basin as no-discharge. Requirements for these types of operations are found in 10 CSR 20-6.015; authority to regulate these activities is from RSMo 644.026.

- ✓ Not applicable; this permit does not authorize operation of a surficial land application system to disperse wastewater or sludge.

LAND DISTURBANCE:

Land disturbance, sometimes called construction activities, are actions which cause disturbance of the root layer or soil; these include clearing, grading, and excavating of the land. 40 CFR 122.26(b)(14) and 10 CSR 20-6.200(3) requires permit coverage for these activities. Coverage is not required for facilities when only providing maintenance of original line and grade, hydraulic capacity, or to continue the original purpose of the facility.

- ✓ Applicable; this permit provides coverage for land disturbance activities. These activities have SWPPP requirements and may be combined with the standard site SWPPP. Land disturbance BMPs should be designed to control the expected peak discharges. The University of Missouri has design storm events for the 25 year 24 hour storm; these can be found at: http://ag3.agebb.missouri.edu/design_storm/comparison_reports/20191117_25yr_24hr_comparison_table.htm; to calculate peak discharges, the website <https://www.lmnoeng.com/Hydrology/rational.php> has the rational equation to calculate expected discharge volume from the peak storm events.

NUTRIENT MONITORING:

Nutrient monitoring is required for facilities characteristically or expected to discharge nutrients (nitrogenous compounds and/or phosphorus) when the design flow is equal to or greater than 0.1 MGD per 10 CSR 20-7.015(9)(D)8.

- ✓ This is a stormwater only permit; therefore, it is not subject to provisions found in 10 CSR 20-7.015 per 10 CSR 20-7.015(1)(C).

OIL/WATER SEPARATORS:

Oil water separator (OWS) tank systems are frequently found at industrial sites where process water and stormwater may contain oils and greases, oily wastewaters, or other immiscible liquids requiring separation. Food industry discharges typically require pretreatment prior to discharge to municipally owned treatment works. Per 10 CSR 26-2.010(2)(B), all oil water separator tanks must be operated according to manufacturer's specifications and authorized in NPDES permits per 10 CSR 26-2.010(2) or may be regulated as a petroleum tank.

- ✓ Not applicable; this permit does not authorize the operation of OWS. The facility must obtain a separate permit to cover operation of and discharge from these devices.

PERMIT SHIELD:

The permit shield provision of the CWA (Section 402(k)) and Missouri Clean Water Law (644.051.16 RSMo) provides that when a permit holder is in compliance with its NPDES permit or MSOP, they are effectively in compliance with certain sections of the CWA and equivalent sections of the Missouri Clean Water Law. In general, the permit shield is a legal defense against certain enforcement actions but is only available when the facility is in compliance with its permit and satisfies other specific conditions, including having completely disclosed all discharges and all facility processes and activities to the Department at time of application. It is the facility's responsibility to ensure that all potential pollutants, waste streams, discharges, and activities, as well as wastewater land application, storage, and treatment areas, are all fully disclosed to the Department at the time of application or during the draft permit review process. Subsequent requests for authorization to discharge additional pollutants or expanded or newly disclosed flows, or for authorization for previously unpermitted and undisclosed activities or discharges, will likely require permit modification or may require the facility be covered under a site specific permit.

PRETREATMENT PROGRAM:

This permit does not regulate pretreatment requirements for facilities discharging to an accepting permitted wastewater treatment facility. If applicable, the receiving entity (the publicly owned treatment works - POTW) must ensure compliance with any effluent limitation guidelines for pretreatment listed in 40 CFR Subchapter N per 10 CSR 20-6.100. Pretreatment regulations per RSMo 644.016 are limitations on the introduction of pollutants or water contaminants into publicly owned treatment works or facilities.

- ✓ Not Applicable; the facilities covered under this permit are not required to meet pretreatment requirements under an ELG.

PUBLIC NOTICE OF COVERAGE FOR AN INDIVIDUAL FACILITY:

Public Notice of reissuance of coverage is not required unless the facility is a specific type of facility as defined in 10 CSR 20-6.200(1). The need for an individual public notification process shall be determined and identified in the permit [10 CSR 20-6.020(1)(C)5].

- ✓ Not applicable; public notice is not required for coverage under this permit to individual facilities. The MGP is public noticed in lieu of individual permit PN requirements.

REASONABLE POTENTIAL ANALYSIS (RPA):

Federal regulation 40 CFR Part 122.44(d)(1)(i) requires effluent limitations for all pollutants which are or may be discharged at a level which will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard. In accordance with 40 CFR Part 122.44(d)(iii) if the permit writer determines any given pollutant has the reasonable potential to cause or contribute to an in-stream excursion above the water quality standard, the permit must contain effluent limits for the pollutant.

- ✓ The permit writer reviewed industry materials, available past inspections, and other documents and research to evaluate general and narrative water quality reasonable potential for this permit. Permit writers also use the Department's permit writer's manual, the EPA's permit writer's manual (<https://www.epa.gov/npdes/npdes-permit-writers-manual>), program policies, and best professional judgment. For each parameter in each permit, the permit writer carefully considers all applicable information regarding technology based effluent limitations, effluent limitation guidelines, and water quality standards. Best professional judgment is based on the experience of the permit writer, cohorts in the Department and resources at the EPA, research, and maintaining continuity of permits if necessary. For stormwater permits, the permit writer is required per 10 CSR 6.200(6)(B)2 to consider: A. application and other information supplied by the permittee; B. effluent guidelines; C. best professional judgment of the permit writer; D. water quality; and E. BMPs.

SCHEDULE OF COMPLIANCE (SOC):

Per § 644.051, RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement or if prohibited by other statute or regulation. An SOC includes an enforceable sequence of interim requirements (e.g. actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the CWA, and 40 CFR 122.2. For new effluent limitations, the permit may include interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, an SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

- ✓ Not Applicable: This permit does not contain a SOC.

SETBACKS:

Setbacks, sometimes called separation distances, are common elements of permits and are established to provide a margin of safety in order to protect the receiving water and other features from accidents, spills, unusual events, etc. Specific separation distances are included in 10 CSR 20-8 for minimum design standards of wastewater structures. While wastewater is considered separately from stormwater under this permit, the guides and Chapter 8 distances may remain relevant to requirements under this permit if deemed appropriate by the permittee.

- ✓ Discharge to the watersheds of a Metropolitan No-Discharge Stream (10 CSR 20-7.031 Table F) is authorized by this permit if the discharges are in compliance with 10 CSR 20-7.015(5) and 10 CSR 20-7.031(7). Discharges to these watersheds are authorized for uncontaminated stormwater discharges only.
- ✓ This permit authorizes stormwater discharges which are located in a way to allow water to be released into sinkholes, caves, fissures, or other openings in the ground which could drain into aquifers (except losing streams) per 10 CSR 20-7.015(7). It is the best professional judgment of the permit writer to allow discharges to losing streams as the effluent is stormwater only.
- ✓ This permit authorizes stormwater discharge in the watersheds of Outstanding state Resource Waters (OSRW); Outstanding National Resources Waters (ONRW), which includes the Ozark National Riverways and the National Wild and Scenic Rivers System; and impaired waters as designated in the 305(b) Report provided no degradation of water quality occurs in the OSRW and ONRW due to discharges from the permitted facility per 10 CSR 20-7.015(6)(B) and 10 CSR 20-7.031(3)(C). Additionally, if the facility is found to be causing degradation or contributing to an impairment by discharging a pollutant of concern during an inspection or through complaint investigations, they will be required to become a no discharge facility or obtain a site specific permit with more stringent monitoring and SWPPP requirements. Missouri's impaired waters can be found at <https://dnr.mo.gov/water/what-were-doing/water-planning/quality-standards-impaired-waters-total-maximum-daily-loads/impaired-waters>. Sites within 1000 feet of a OSRW, ONRW, or water impaired for sediment must operate as a no-discharge facility. These additional protections are borrowed from the USEPA 2021 draft Construction General Permit.

SLUDGE – DOMESTIC BIOSOLIDS:

Biosolids are solid materials resulting from domestic wastewater treatment meeting federal and state criteria for beneficial use (i.e. fertilizer). Sewage sludge is solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works; including, but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works.

- ✓ This permit does not authorize discharge or land application of biosolids. Sludge/biosolids is not generated by this industry.

SLUDGE – INDUSTRIAL:

Industrial sludge is solid, semi-solid, or liquid residue generated during the treatment of industrial process wastewater in a treatment works; including, but not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment process; scum and solids filtered from water supplies and backwashed; and a material derived from industrial sludge.

- ✓ Not applicable; sludge is not generated by this industry.

SPILL REPORTING:

Any emergency involving a hazardous substance must be reported to the Department's 24 hour Environmental Emergency Response hotline at (573) 634-2436 at the earliest practicable moment after discovery. The Department may require the submittal of a written report detailing measures taken to clean up a spill. These reporting requirements apply when the spill results in chemicals or materials leaving the permitted property or reaching waters of the state. This requirement is in addition to the noncompliance reporting requirement found in Standard Conditions Part I. <https://dnr.mo.gov/waste-recycling/investigations-cleanups/environmental-emergency-response>.

Underground and above ground storage devices for petroleum products, vegetable oils, and animal fats may be subject to control under federal Spill Prevention, Control, and Countermeasure Regulation and are expected to be managed under those provisions, if applicable. Substances regulated by federal law under the Resource Conservation and Recovery Act (RCRA) or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) which are transported, stored, or used for maintenance, cleaning or repair shall be managed according to the provisions of RCRA and CERCLA.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k), BMPs must be used to control or abate the discharge of pollutants when: 1) Authorized under section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities; 2) Authorized under section 402(p) of the CWA for the control of stormwater discharges; 3) Numeric effluent limitations are infeasible; or 4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA. In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites*, (Document number EPA 833-R-06-004) published by the EPA in 2007 https://www.epa.gov/sites/production/files/2015-10/documents/sw_swppp_guide.pdf, BMPs are measures or practices used to reduce the amount of pollution entering waters of the state from a permitted facility. BMPs may take the form of a process, activity, or physical structure. Additionally, in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to 1) identify sources of pollution or contamination, and 2) select and carry out actions which prevent or control the pollution of storm water discharges. Additional information can be found in *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices* (EPA 832-R-92-006; September 1992).

A SWPPP must be prepared if the SIC code for the facility is found in 40 CFR 122.26(b)(14) and/or 10 CSR 20-6.200(2). A SWPPP may be required of other facilities where stormwater has been identified as necessitating better management.

The purpose of a SWPPP is to comply with all applicable stormwater regulations by creating an adaptive management plan to control and mitigate stream pollution from stormwater runoff. Developing a SWPPP provides opportunities to employ appropriate BMPs to minimize the risk of pollutants being discharged during storm events. The following paragraph outlines the general steps the permittee should take to determine which BMPs will work to achieve the benchmark values or limits in the permit. This section is not intended to be all encompassing or restrict the use of any physical BMP or operational and maintenance procedure assisting in pollution control. Additional steps or revisions to the SWPPP may be required to meet the requirements of the permit.

Areas which should be included in the SWPPP are identified in 40 CFR 122.26(b)(14). Once the potential sources of stormwater pollution have been identified, a plan should be formulated to best control the amount of pollutant being released and discharged by each activity or source. This should include, but is not limited to, minimizing exposure to stormwater, good housekeeping measures, proper facility and equipment maintenance, spill prevention and response, vehicle traffic control, and proper materials handling. Once a plan has been developed, the facility will employ the control measures determined to be adequate to prevent pollution from entering waters of the state. The facility will conduct inspections of the BMPs to ensure they are working properly and re-evaluate any BMP not achieving compliance with permitting requirements. For example if the BMP being employed is deficient in controlling stormwater pollution, corrective action should be taken to repair, improve, or replace the failing BMP. If failures do occur, continue this trial and error process until appropriate BMPs have been established.

The EPA has developed factsheets on the pollutants of concern for specific industries along with the BMPs to control and minimize stormwater (<https://www.epa.gov/npdes/stormwater-discharges-industrial-activities>). Along with EPA's factsheets, the International Stormwater BMP database (<https://bmpdatabase.org/>) may provide guidance on BMPs appropriate for specific industries.

For new, altered, or expanded stormwater discharges, the SWPPP shall identify reasonable and effective BMPs while accounting for environmental impacts of varying control methods. The antidegradation analysis must document why no discharge or no exposure options are not feasible. The selection and documentation of appropriate control measures shall serve as an alternative analysis of technology and fulfill the requirements of antidegradation [10 CSR 20-7.031(3)].

Alternative analysis evaluation of the BMPs is a structured evaluation of BMPs which are reasonable and cost effective. The alternative analysis evaluation should include practices designed to be: 1) non-degrading; 2) less degrading; or 3) degrading water quality. The glossary of the *Antidegradation Implementation Procedure* defines these three terms. The chosen BMP will be the most reasonable and effective management strategy while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. The alternative analysis evaluation must demonstrate why "no discharge" or "no exposure" is not a feasible alternative at the facility. This structured analysis of BMPs serves as the antidegradation review, fulfilling the requirements of 10 CSR 20-7.031(3) Water Quality Standards and *Antidegradation Implementation Procedure*, Section II.B.

- ✓ Applicable: A SWPPP shall be developed and implemented for each site and shall incorporate required practices identified by the Department with jurisdiction, incorporate control practices specific to site conditions, and provide for maintenance and adherence to the plan.

UNDERGROUND INJECTION CONTROL (UIC):

The UIC program for all classes of wells in the State of Missouri is administered by the Missouri Department of Natural Resources and approved by EPA pursuant to section 1422 and 1425 of the Safe Drinking Water Act (SDWA) and 40 CFR 147 Subpart AA. Injection wells are classified based on the liquids which are being injected. Class I wells are hazardous waste wells which are banned by RSMo 577.155; Class II wells are established for oil and natural gas production; Class III wells are used to inject fluids to extract minerals; Class IV wells are also banned by Missouri in RSMo 577.155; Class V wells are shallow injection wells; some examples are heat pump wells and groundwater remediation wells. Domestic wastewater being disposed of sub-surface is also considered a Class V well.

In accordance with 40 CFR 144.82, construction, operation, maintenance, conversion, plugging, or closure of injection wells shall not cause movement of fluids containing any contaminant into Underground Sources of Drinking Water (USDW) if the presence of any contaminant may cause a violation of drinking water standards or groundwater standards under 10 CSR 20-7.031 or other health-based standards or may otherwise adversely affect human health. If the Department finds the injection activity may endanger USDWs, the Department may require closure of the injection wells or other actions listed in 40 CFR 144.12(c), (d), or (e). In accordance with 40 CFR 144.26, the permittee shall submit a Class V Well Inventory Form for each active or new underground injection well drilled, or when the status of a well changes, to the Missouri Department of Natural Resources, Geological Survey Program, P.O. Box 250, Rolla, Missouri 65402. Single family residential septic systems and non-residential septic systems used solely for sanitary waste and having the capacity to serve fewer than 20 persons a day are excluded from the UIC requirements (40 CFR 144.81(9)).

- ✓ Not applicable; this permit does not authorize subsurface wastewater systems or other underground injection. These activities must be assessed under an application for a site specific permit. Certain discharges of stormwater into sinkholes may qualify as UIC. It is important the permittee evaluate all stormwater basins, even those holding water; as sinkholes have varying seepage rates. This permit does not allow stormwater discharges into sinkholes. The facility must ensure sinkholes are avoided in the construction process. The State's online mapping resource <https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=87ebef4af15d438ca658ce0b2bbc862e> has a sinkhole layer.

VARIANCE:

Per the Missouri Clean Water Law Section 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law Section 644.006 to 644.141 or any standard, rule, or regulation promulgated pursuant to Missouri Clean Water Law Section 644.006 to 644.141.

- ✓ Not Applicable: This permit is not drafted under premises of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITATIONS:

Per 10 CSR 20-2.010(78), the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant which may be discharged into the stream without endangering its water quality. Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's Technical Support Document For Water Quality-based Toxics Control (TSD) (EPA/505/2-90-001).

- ✓ Not applicable; water quality limitations were not applied in this permit.

WATER QUALITY STANDARDS:

Per 10 CSR 20-7.031(4), General Criteria shall be applicable to all waters of the state at all times, including mixing zones. Additionally, 40 CFR 122.44(d)(1) directs the Department to include in each NPDES permit conditions to achieve water quality established under Section 303 of the CWA, including state narrative criteria for water quality.

WHOLE EFFLUENT TOXICITY (WET) TEST:

Per 10 CSR 20-7.031(1)(FF), a toxicity test conducted under specified laboratory conditions on specific indicator organism; and per 40 CFR 122.2, the aggregate toxic effect of an effluent measured directly by a toxicity test. A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with, or through synergistic responses when mixed with receiving water.

- ✓ Not applicable: At this time, permittees are not required to conduct a WET test. This permit is for stormwater only.

PART IV – EFFLUENT LIMITATIONS DETERMINATION

EPA Construction General Permit (CGP)

The CGP was used to research and support best professional judgment decisions made in establishing technology-based conditions for this general permit which are consistent with national standards. The permit writer determined the standards established by the CGP are achievable and consistent with federal regulations. Additionally, the conditions reflecting the best practicable technology currently available are utilized to implement the ELG.

In this general permit, technology-based effluent conditions are established through the SWPPP and BMP requirements. Effective BMPs should be designed on a site-specific basis. The implementation of inspections provides a tool for each facility to evaluate the effectiveness of BMPs to ensure protection of water quality. Any flow through an outfall is considered a discharge. Future permit action due to permit modification may contain new operating permit terms and conditions which supersede the terms and conditions, including effluent limitations, of this operating permit.

PART V–REPORTING REQUIREMENTS

SAMPLING:

The permittee is not required to sample stormwater under this permit. The Department may require sampling and reporting as a result of illegal discharges, compliance issues related to water quality concerns or BMP effectiveness, or evidence of off-site impacts from activities at the facility. If such an action is needed, the Department will specify in writing the sampling requirements, including such information as location and extent. If the permittee refuses to perform sampling when required, the Department may terminate the general permit and require the facility to obtain a site-specific permit with sampling requirements.

REPORTING:

There are quarterly reporting requirements for MO-R100xxx land disturbance permits. Project specific information is required to be report to the Department through the eDMR system.

PART VI – RAINFALL VALUES FOR MISSOURI & SURFACE WATER BUFFER ZONES

Knowledge of the 2-year, 24-hour storm event is used in this permit for two main reasons:

- 1) The design, installation, and maintenance of effective erosion and sediment controls to minimize the discharge of pollutants.
- 2) If the seven-day inspection frequency is utilized, an inspection must occur within 48 hours after any storm event equal to or greater than a 2-year, 24 hour storm has ceased.

For site-specific 2-year, 24-hour storm event information utilize the National Oceanic and Atmospheric Administration's National Weather Service Atlas 14 (NOAA Atlas 14) which is located at https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html. For more information visit; https://www.weather.gov/media/owp/oh/hdsc/docs/Atlas14_Volume8.pdf.

Surface Water Buffer Zones: In order to design controls that match the sediment removal efficiency of a 50-foot buffer, you first need to know what this efficiency is for your site. The sediment removal efficiencies of natural buffers vary according to a number of site-specific factors, including precipitation, soil type, land cover, slope length, width, steepness, and the types of erosion and sediment controls used to reduce the discharge of sediment prior to the buffer. For additional information; https://www.epa.gov/sites/default/files/2017-02/documents/2017_cgp_final_appendix_g_-_buffer_reqs_508.pdf

PART VII – ADMINISTRATIVE REQUIREMENTS

On the basis of preliminary staff review and applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the permit. The proposed determinations are tentative pending public comment.

PUBLIC MEETING:

The department hosted three public meetings for this permit. The meetings were held on January 27, February 17, and March 9, 2021.

PUBLIC NOTICE:

The Department shall give public notice when a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest or because of water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and facility must be notified of the denial in writing.

The Department must give public notice of a pending permit or of a new or reissued Missouri State Operating Permit. The public comment period is a length of time not less than thirty (30) days following the date of the public notice, during which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed permit, please refer to the Public Notice page located at the front of this draft permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- ✓ The Public Notice period for this permit is started March 25, 2022 and ended April 25, 2022. Two comment letters were received.

DATE OF FACT SHEET: 03/2/2022

COMPLETED BY:

SARAH WRIGHT

MS4 & LAND DISTURBANCE PERMITTING COORDINATOR

MISSOURI DEPARTMENT OF NATURAL RESOURCES

WATER PROTECTION PROGRAM

OPERATING PERMITS SECTION - STORMWATER AND CERTIFICATION UNIT

(573) 526-1139

Sarah.wright@dnr.mo.gov, dnr.generalpermits@dnr.mo.gov

SECTION 01580 – PROJECT SIGNS

PART 1 - GENERAL

1.01 SUMMARY

- A. Contractor shall provide all material, labor and equipment necessary for the fabrication, printing, and installation of Project signs.
- B. This section covers project sign requirements for all Owner projects which includes the following:
 - 1. Project identification sign description
 - 2. Project sign installation
 - 3. Maintenance and removal of Project sign
 - 4. Printing of signs
 - 5. Installation of signs

1.02 SPECIFICATION MODIFICATIONS

- A. It is understood that throughout this section these Specifications may be modified by appropriate items in Contract Documents, or as otherwise indicated on the Drawings.

1.03 RELATED SECTIONS

- A. Section 01581 – Public Communications

1.04 INFORMATION PROVIDED BY CITY

- A. City shall provide the graphic design templates of the Project sign in an electronic format to be used in the printing process.

1.05 SUBMITTALS

- A. Submit as specified in Section 01300 – Submittals
- B. Shop Drawings (not used)
- C. Product Data (not used)
- D. Samples (not used)
- E. Other
 - 1. Project Sign Locations: Submit for review and approval a map of the Project area of marked up Drawings showing the location and orientation of each project sign.
 - 2. Submit for review and approval notifications to homeowners and business adjacent to the location of the Project signs.
 - 3. Re-use of Placards: If the Contractor has salvaged placards from previous projects, they may be re-used if approved by the City. Submit color photographs that accurately show the condition of each placard to be re-used for review and approval.
 - 4. Notice of Removal: Submit written notification to City that all Project signs have been removed.

PART 2 - PRODUCTS

2.01 PRINTERS

- A. A list of printing companies that have previous experience may be provided by City upon requested by Contractor.

2.02 FRAME

- A. Metal frame and hardware shall be in conformance with Water Services standard detail D-20142 – Installation Detail for Project Signs (see Figure 3).

2.03 PLACARDS

- A. Upper Placard Size: 6 feet wide by 4 feet tall.
- B. Lower Placard Size: 6 feet wide by 1 foot tall.
- C. Material: Coroplast® corrugated plastic sheeting or approved equal.
- D. Sheeting Thickness: 10 mm (approximately one-half (3/8) inch thickness).
- E. Sheeting Color: White.
- F. Print Method: Direct to Coroplast® with outdoor UV laminate coating.

2.04 PLACARD CONTENT

- A. Construction Phase Upper Placard: For each project sign the Contractor shall provide an upper placard which will be displayed through construction. An example of the Construction Phase Upper Placard is shown in Figure 1.
- B. Post-Construction Phase Upper Placard: For each project sign the Contractor shall provide an upper placard which will be displayed post construction. An example of the Construction Phase Upper Placard is shown in Figure 2.
- C. Lower Placard: For each project sign, the Contractor shall provide a lower placard. Examples of the Lower Placard are shown in Figures 1 and 2.
- D. The City will provide graphic images for all placards.

2.05 NUMBER OF SIGNS TO BE PROVIDED

- A. The number of project signs to be provided is defined in Contract Documents. Each Project sign includes the following:
 - 1. One (1) Construction Phase Upper Placard to be displayed during construction.
 - 2. One (1) Post-Construction Phase Upper Placard to be displayed after completion of the Work.
 - 3. One (1) Lower Placard to be displayed during construction and post-construction.
 - 4. Printing of placards
- B. Frames as shown in City standard detail D-20142 – Installation Detail for Project Signs (see Figure 3).

PART 3 - EXECUTION

3.01 INSTALATION AND PLACEMENT OF SIGNS

- A. Installation: Project signs shall be fabricated and installed in accordance with City standard detail D-20142 – Installation Detail for Project Signs (see Figure 3).
- B. Location: Project signs shall be located within the Site as defined by Contract's General Conditions. Project signs shall be erected in a conspicuous place but shall not interfere with the vision of pedestrian or vehicular traffic such as to create a hazard. Locations of signs shall be coordinated with the City prior to installation and submitted accordance with paragraph SUBMITTALS.
- C. Notifications: The Contractor shall notify any homeowners or businesses adjacent to the location of the signs at least three (3) days prior to erecting signs.
- D. Project sign(s) shall be erected not less than two (2) days before the start of construction activities. No construction activities are allowed until the Project signs are erected.

- E. Project signs shall remain in place for the duration of the Project and shall be maintained true, plumb, and in neat condition.

3.02 REPLACEMENT OF UPPER PLACARDS

- A. Upon completion of the Work and at the direction by the City, the Contactor shall remove the Construction Phase Upper Placard (Figure 1) on all Project signs and replace them with the Post-Construction Upper Placard (Figure 2).
- B. The Lower Placards are to remain in place.

3.03 REMOVAL OF PROJECT SIGNS

- A. All Project signs shall be maintained for thirty (30) calendar days after completion of the Work, or as otherwise directed by the City.
- B. Contractor shall remove all Project signs and restore the area disturbed by construction activities.
- C. Project signs shall be removed from the Project areas and will become property of the Contractor.
- D. The Contractor may dispose of Project signs or salvage and reuse them on future City projects. The City will assess the condition of the signs and determine the appropriateness of reuse.
- E. Within three (3) days of removal of signs, Contractor shall provide the City written notice that all Project signs have been removed from the Site.

END OF SECTION



Figure 1 – Example Construction Phase Upper Placard and Lower Placard



Figure 2 – Example Post-Construction Phase Upper Placard and Lower Placard

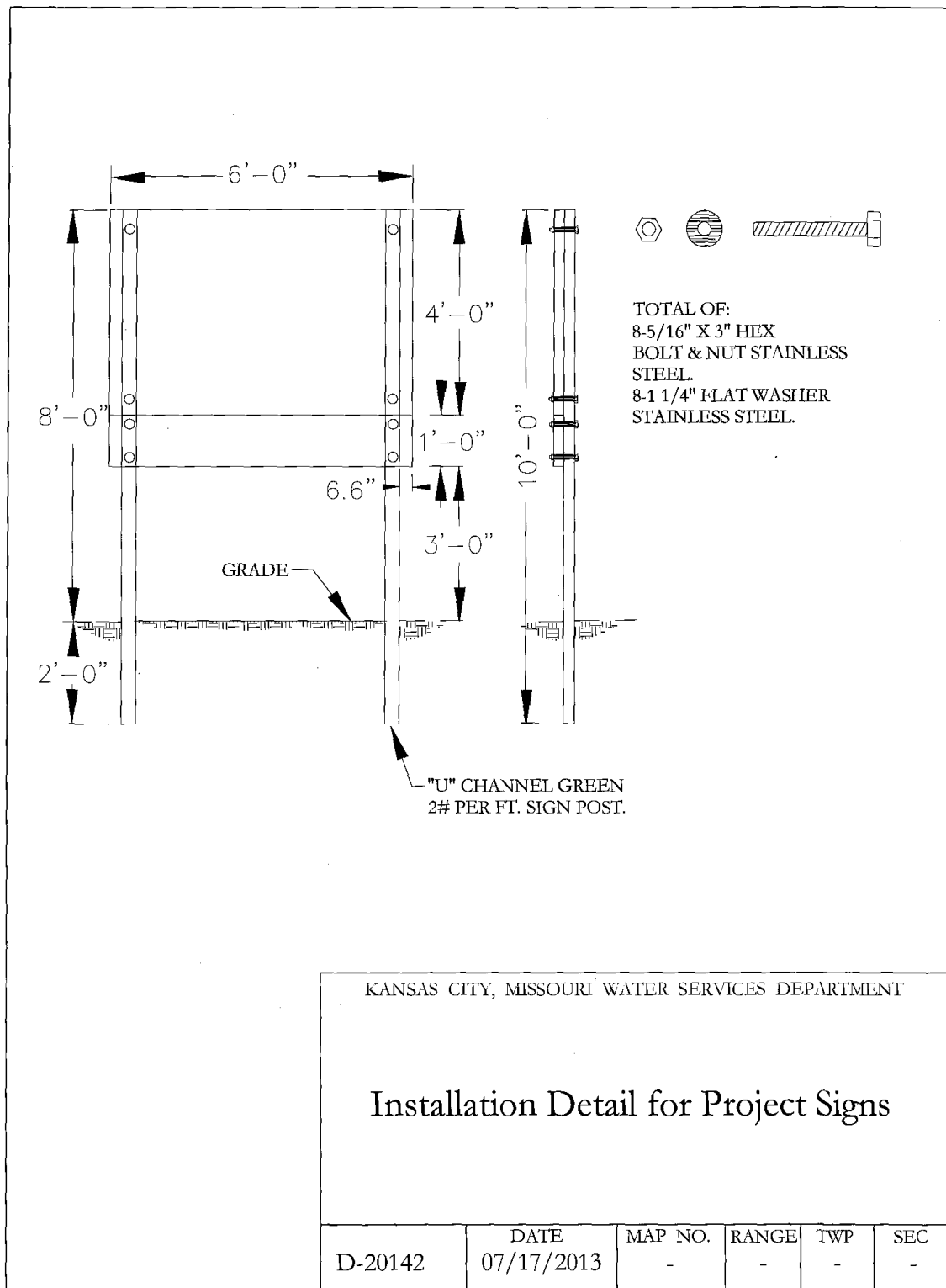


Figure 3 – Installation Detail for Project Signs

SECTION 01581 – PUBLIC COMMUNICATIONS

PART 1 - GENERAL

1.01 SUMMARY

- A. This section covers communication procedures between the Contractor and the general public affected by construction activities.
- B. All written communications between the Contractor and the public shall be subject to review and approval by the City.

1.02 RELATED SECTIONS

- 1. General Conditions of Contract Between Owner and Design-Builder

1.03 DEFINITIONS

- A. Affected Properties: Homeowners, businesses, tenants or other entities whose everyday activities could be affected by the Work.

1.04 INFORMATION PROVIDED BY CITY

- A. City will provide Contractor an electronic mailing list of affected property owners as needed for the Project.
- B. City may provide Contractor an electronic copy of approved communications (such as door hangers) to be distributed to affected properties.

1.05 SUBMITTALS

- A. Submit as specified in Section 01300 – Submittals.
- B. Notifications: Submit for review and approval all notifications developed by Contractor that are to be distributed affected properties.

1.06 PUBLIC MEETINGS

- A. Description: Contractor shall attend and participate in one public meeting. The Contractor's Project Manager shall attend and present to the public project details. These details shall include, but are not limited to, the following:
 - 1. Project schedule
 - 2. Project phasing
 - 3. Disruptions to the neighborhood
 - 4. Temporary restoration efforts
 - 5. Final restoration efforts
- B. Field contact information.
- C. City will facilitate the meeting and provide a location, date and time.
- D. See General Conditions of Contract Between Owner and Design-Builder for additional meeting requirements.

1.07 DOOR HANGERS AND OTHER PRINTED COMMUNICATIONS

- A. Description: Door hangers and other printed communications (fact sheets, post cards, signs, etc.) throughout construction shall be distributed to inform homes and businesses of disruptions.
- B. Template: City will provide templates for door hangers and other printed communications in an electronic format. See Figures 1 through 5 for an example door hanger.

- C. Template Modification: Contractor may need to annotate the printed door hangers with project specific information. This effort may include checking a box to describe the work and adding an applicable date and time.
- D. Review Submittal: Not required.
- E. Printing and Reproduction: The Contractor shall print door hangers and other communications.
- F. Distribution List: The list of affected property owners will be provided by the City.
- G. Mailing and Distribution: Contractor shall distribute the door hangers or other printed communications to the affected property owners. Door hangers are to be hand-delivered. Other printed communications will be delivered in a manner acceptable to the City.
- H. Costs: Costs to develop, reproduce, deliver or mail notifications shall be included in Contractor's bid price.

1.08 NOTIFICATION OF UTILITIES

- A. Notify utilities in accordance with General Conditions of Contract.

1.09 NOTICES TO PROPERTY OWNERS AND AUTHORITIES

- A. As provided in General Conditions of Contract between Owner and Design-Builder, the Contractor shall notify adjacent property owners and utilities when execution of the Work may affect them.
- B. Work Notice
 - 1. General notice to affected property owners in advance of the work. Notice is required for any work within and easement. Notice may be given for work within the City's right-of-way.
 - 2. Type of notification shall be a door hanger.
- C. Denial of Access
 - 1. Notice for when it is necessary to temporarily deny access to property, driveway, sidewalk, or other facility.
 - 2. Type of notification shall be a door hanger.
- D. Smoke Testing
 - 1. Notice for when the Project involves smoke testing.
 - 2. Type of notification shall be a door hanger.
- E. Utility Service Interruption
 - 1. Notice for when any utility service connection must be interrupted.
 - 2. Type of notification shall be a door hanger.
- F. Street Closures and Changes to Traffic Patterns
 - 1. Notices to utilities and other concerned agencies prior to cutting or closing streets or other traffic areas or excavating near underground utilities or pole lines.
 - 2. Type of notification will be written communication prepared and distributed by the Contractor.
- G. Schedule: Notices shall be received by the affected properties no less than two (2) and no more than seven (7) calendar days prior to the work, Denial of Access, Smoke Testing, Utility Service Interruption, Street Closures and Changes to Traffic Patterns, or other work that may require notification.

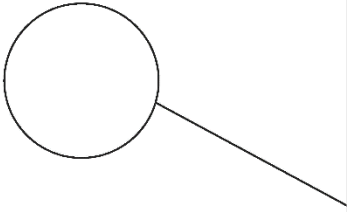
1.10 OTHER COMMUNICATIONS

- A. See Contract Documents for additional communication requirements not specifically included herein or otherwise required by the Contract Documents.

PART 2 - PRODUCTS
Not used.

PART 3 - EXECUTION
Not used.

END OF SECTION



**PROPERTY ACCESS
TEMPORARILY RESTRICTED**

A KC Water contractor is conducting important infrastructure work at or near your home or business that will require temporary closure of your driveway, sidewalk, or both.

Date(s) of closure: _____

From _____ **to approximately** _____

QUESTIONS:

Contractor supervisor: _____

Phone or text: _____

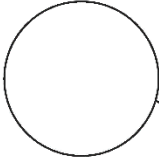
We greatly appreciate your patience and cooperation.
Thank you for your support as we continue to improve critical infrastructure in your neighborhood and throughout Kansas City.



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KCW-XX-999-X (Rev. 06/18)

Figure 1 – Denial of Access Door Hanger



PIPELINE SMOKE TESTING

A KC Water contractor will be testing pipes in your neighborhood that will include a pipeline smoke test.

Date(s) of smoke testing: _____

From _____ to approximately _____

The contractor will blow a non-toxic, non-staining, odorless smoke into sewer lines in order to identify breaks or defects. The smoke is white to gray in color. It poses no fire hazard, and is not harmful to pets or humans.

In the unlikely event smoke enters your structure, you can speed evaporation by opening windows or doors. Also, please notify on-site technicians or the supervisor.

QUESTIONS:

Contractor supervisor: _____

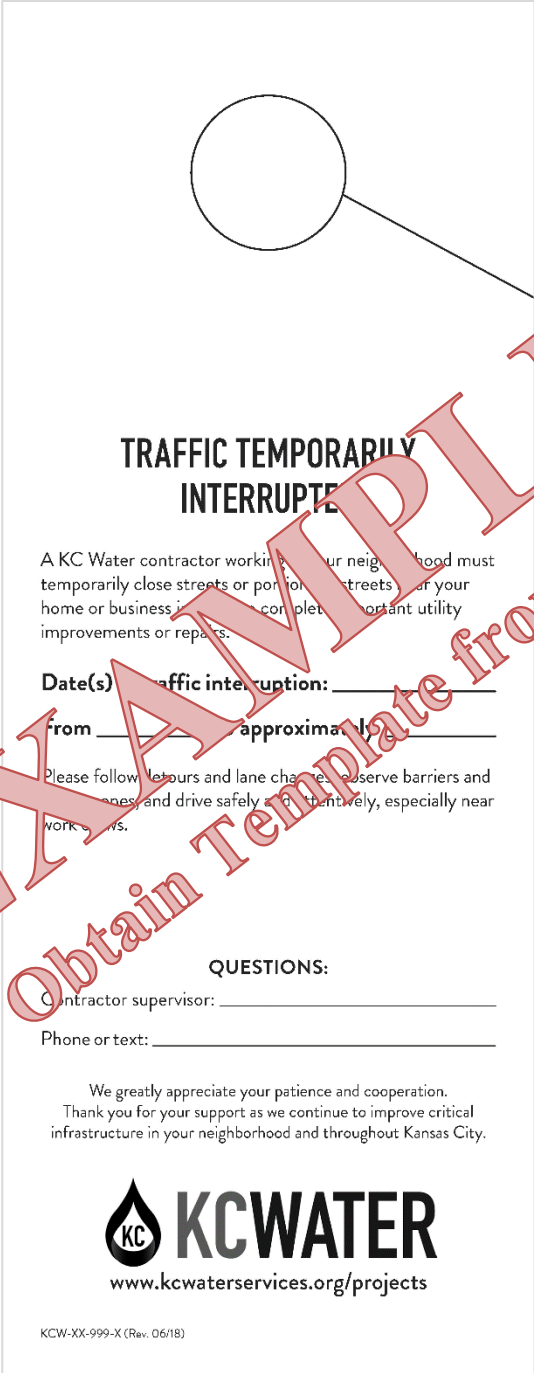
Phone or text: _____

We greatly appreciate your patience and cooperation.
Thank you for your support as we continue to improve critical infrastructure in your neighborhood and throughout Kansas City.


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Figure 2 – Smoke Testing Door Hanger



A circular punch hole is located at the top center of the door hanger, with a line extending from its bottom edge towards the center of the page.

TRAFFIC TEMPORARILY INTERRUPTED

A KC Water contractor working in your neighborhood must temporarily close streets or portions of streets near your home or business in order to complete important utility improvements or repairs.

Date(s) of traffic interruption: _____

from _____ **approximately** _____

Please follow detours and lane changes, observe barriers and cones, and drive safely and attentively, especially near work zones.

QUESTIONS:

Contractor supervisor: _____

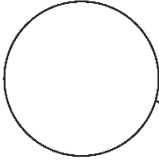
Phone or text: _____

We greatly appreciate your patience and cooperation.
Thank you for your support as we continue to improve critical infrastructure in your neighborhood and throughout Kansas City.


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Figure 3 -Traffic Interruption Door Hanger



WASTEWATER SERVICE TEMPORARILY INTERRUPTED

A KC Water contractor working in your neighborhood must temporarily shut down wastewater service to your home or business in order to complete important utility improvements or repairs.

Date of shut down: _____
from _____ approximately _____

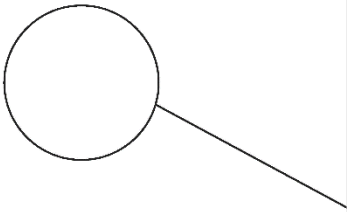
QUESTIONS:
Contractor supervisor: _____
Phone or text: _____

We greatly appreciate your patience and cooperation.
Thank you for your support as we continue to improve critical infrastructure in your neighborhood and throughout Kansas City.

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Figure 4 – Wastewater Service Interruption Door Hanger



**WATER SERVICE
TEMPORARILY INTERRUPTED**

A KC Water contractor working in your neighborhood must temporarily shut down water service to your home or business in order to complete important utility improvements or repairs.

Date of shut down: _____
from _____ approximately _____

The water main will be flushed and reset after the repair is completed. After water service is resumed, you may experience some cloudy or discolored water. If this occurs, open all taps and let them run for 10 or 15 minutes. Screen, aerators, or other filters should be removed, cleaned and left off while running the water.

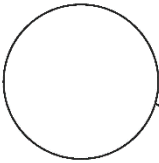
QUESTIONS:
Contractor supervisor: _____
Phone or text: _____

We greatly appreciate your patience and cooperation.
Thank you for your support as we continue to improve critical infrastructure in your neighborhood and throughout Kansas City.

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KCW-XX-999-X (Rev. 06/18)

Figure 5 – Water Service Interruption Door Hanger



**UTILITY WORK
IN YOUR AREA**

A KC Water contractor working in your neighborhood soon will be conducting important construction work at or near your home or business.

Date(s) of work: _____

From _____ **to approximately** _____

Construction equipment may be used and may create noise and dusty conditions. Any disruption to lawns, landscaping, trees or sidewalks will be restored after this necessary work is completed.

QUESTIONS:

Contractor supervisor: _____

Phone or text: _____

We greatly appreciate your patience and cooperation.
Thank you for your support as we continue to improve critical infrastructure in your neighborhood and throughout Kansas City.


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Figure 6 – Work Notice Door Hanger

SECTION 01600 – PRODUCT DELIVERY STORAGE AND HANDLING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes: Product requirements; product selection; product options and substitutions; quality assurance; shipping, delivery, handling, and storage; and instructions for spare parts, maintenance products, and special tools.

1.02 REFERENCES

- A. American National Standards Institute (ANSI).
- B. NSF International (NSF):
 - 1. 61 - Drinking Water System Components - Health Effects.
 - 2. 372 - Drinking Water System Components – Lead Content.

1.03 RELATED SECTIONS

- A. Form F-1 – Project Design Criteria
- B. Section 01019 – Closeout Procedures.
- C. Section 01300 – Submittals.
- D. Section 01520 – Definitions and Acronyms
- E. Section 01630 – Substitution Request Form.
- F. Section 01757 – Commissioning.
- G. Division 9 Sections

1.04 DEFINITIONS

- A. Refer to Section 01420 – Definitions and Acronyms

1.05 SUBMITTALS

- A. As specified in Section 01300 - Submittals.
- B. Calculations/certifications in accordance with NSF 61 and 372 for materials in contact with drinking water.

1.06 GENERAL REQUIREMENTS

- A. Comply with Specifications and referenced standards as minimum requirements.
- B. Provide products by same manufacturer when products are of similar nature, unless otherwise specified.
- C. Provide like parts of duplicate units that are interchangeable.
- D. Provide equipment that has not been in service prior to delivery, except as required by tests.
- E. When necessary, modify manufacturer's standard product to conform to specified requirements or requirements indicated on the Drawings.

1.07 SUBSTITUTIONS

- A. Formal substitution request procedure:
 - 1. Submit a written formal substitution request to Engineer for each proposed substitution within 30 days of effective date of Contract.
 - 2. Engineer will return initial opinion and request for additional information within 30 days.

3. Engineer will notify Contractor in writing of decision to accept or reject the substitution request within 30 days of receiving required information.
- B. Formal substitution request contents:
1. Provide Substitution Request Form as specified in Section 01630 - Substitution Request Form.
 2. Manufacturer's literature including:
 - a. Manufacturer's name and address.
 - b. Product name.
 - c. Product description.
 - d. Reference standards.
 - e. Certified performance and test data.
 - f. Operation and maintenance data.
 3. Samples, if applicable.
 4. Shop drawings, if applicable.
 5. Reference projects where the product has been successfully used:
 - a. Name and address of project.
 - b. Year of installation.
 - c. Year placed in operation.
 - d. Name of product installed.
 - e. Point of contact: Name and phone number.
 6. Itemized comparison of the proposed substitution with product specified including a list of significant variations:
 - a. Design features.
 - b. Design dimensions.
 - c. Installation requirements.
 - d. Operations and maintenance requirements.
 7. Define impacts:
 - a. Impacts to construction schedule.
 - b. Impacts to other contracts.
 - c. Impacts to other work or products.
 - d. Impact to Contract Sum:
 - (1) Do not include costs under separate contracts.
 - (2) Do not include Engineer's costs for redesign or revision of Contract Documents.
 - (3) Required license fees or royalties.
 - e. Availability of maintenance services and sources of replacement materials.
 8. Contractor represents the following:
 - a. Contractor shall pay associated costs for the Engineer to evaluate the substitution.
 - b. Contractor bears the burden of proof of the equivalency of the proposed substitution.
 - c. Proposed substitution does not change the design intent and will have equal performance to the specified product.
 - d. Proposed substitution is equal or superior to the specified product.
 - e. Contractor will provide the warranties or bonds that would be provided on the specified product on the proposed substitution, unless Owner requires a Special Warranty.
 - f. Contractor will coordinate installation of accepted substitution into the Work and will be responsible for the costs to make changes as required to the Work.

- g. Contractor waives rights to claim additional costs caused by proposed substitution which may subsequently become apparent.
- C. Substitutions will not be considered for acceptance under the following conditions:
 - 1. No formal substitution request is made.
 - 2. The substitution is simply implied or indicated on shop drawings or product data submittals.
 - 3. The formal substitution request is submitted by a subcontractor or supplier.
- D. Substitution requests submitted after the deadline will not be considered unless the following evidence is submitted to the Engineer:
 - 1. Proof that the specified product is unavailable for reasons beyond the control of the Contractor.
 - a. Reasons may include manufacturing discontinued, bankruptcy, labor strikes, or acts of God.
 - b. Contractor placed or attempted to place orders for the specified products within 10 days after the effective date of the Agreement.
 - c. The formal substitution request is submitted to Engineer within 10 days of the Contractor discovering the specified product cannot be obtained.
- E. Engineer's decision on a substitution requests will be final and binding.
 - 1. Approved substitutions will be incorporated into the Contract Documents with a Change Order.
 - 2. Requests for time extensions and additional costs based on submission of, approval of, or rejection of substitutions will not be allowed.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Material requirements:
 - 1. Materials: Provide corrosion resistance suitable for project conditions as specified in Form F-1 – Project Design Criteria.
 - 2. Dissimilar metals: Separate contacting surfaces with dielectric material.
- B. Edge grinding:
 - 1. Sharp projections of cut or sheared edges of ferrous metals which are not to be welded shall be ground to a radius required to ensure satisfactory paint adherence.

2.02 PRODUCTS IN CONTACT WITH DRINKING WATER

- A. Materials in contact with drinking waters:
 - 1. Shall be in accordance with NSF 61 and NSF 372.
 - 2. Certification by an independent ANSI accredited third party, including, but not limited to, NSF International, as being lead free.

2.03 PRODUCT SELECTION

- A. When products are specified by standard or specification designations of technical societies, organizations, or associations only, provide products that meet or exceed reference standard and Specifications.
- B. When products are specified with names of manufacturers but no model numbers or catalog designations, provide:

1. Products by one of named manufacturers that meet or exceed Specifications.
 2. Engineer deemed "or equal" evidenced by an approved shop drawing or other written communication.
- C. When products are specified with names of manufacturers and model numbers or catalog designations, provide:
1. Products with model numbers or catalog designations by one of named manufacturers.
 2. Engineer deemed "or equal" evidenced by an approved shop drawing or other written communication.
- D. When products are specified with names of manufacturers, but with brand or trade names, model numbers, or catalog designations by one manufacturer only, provide:
1. Products specified by brand or trade name, model number, or catalog designation.
 2. Products by one of named manufacturers proven, in accordance with requirements for an "or equal", to meet or exceed quality, appearance and performance of specified brand or trade name, model number, or catalog designation.
 3. Engineer deemed "or equal" evidenced by an approved shop drawing or other written communication.
- E. When Products are specified with only one manufacturer followed by "or Equal," provide:
1. Products meeting or exceeding Specifications by specified manufacturer.
 2. Engineer deemed "or equal" evidenced by an approved shop drawing or other written communication.

2.04 SHIPMENT

- A. Mandatory requirements prior to shipment of equipment:
1. Engineer approved shop drawings.
 2. Engineer approved Manufacturer's Certificate of Source Testing as specified in Section 01757 - Commissioning, when required by specifications.
 3. Draft operations and maintenance manuals, when required by specifications.
- B. Prepare products for shipment by:
1. Tagging or marking products to agree with delivery schedule or shop drawings.
 2. Including complete packing lists and bills of material with each shipment.
 3. Packaging products to facilitate handling and protection against damage during transit, handling, and storage.
 4. Securely attach special instructions for proper field handling, storage, and installation to each piece of equipment before packaging and shipment.
- C. Transport products by methods that avoid product damage.
- D. Deliver products in undamaged condition in manufacturer's unopened containers or packaging.

2.05 SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS

- A. Provide spare parts and maintenance products as required by Specifications.
- B. Provide one set of special tools required to install or service the equipment.
- C. Box, tag, and clearly mark items.
- D. Contractor is responsible for spare parts, maintenance products, and special tools until acceptance by Owner.
- E. Store spare parts, maintenance products, and special tools in enclosed, weatherproof, and lighted facility during the construction period.
1. Protect parts subject to deterioration, such as ferrous metal items and electrical components with appropriate lubricants, desiccants, or hermetic sealing.

- F. Provide spare parts and special tools inventory list, see Appendix A:
 - 1. Equipment tag number.
 - 2. Equipment manufacturer.
 - 3. Subassembly component, if appropriate.
 - 4. Quantity.
 - 5. Storage location.
- G. Store large items individually:
 - 1. Weight: Greater than 50 pounds.
 - 2. Size: Greater than 24 inches wide by 18 inches high by 36 inches long.
 - 3. Clearly labeled:
 - a. Equipment tag number.
 - b. Equipment manufacturer.
 - c. Subassembly component, if appropriate.
- H. Store in spare parts box smaller items:
 - 1. Weight: Less than 50 pounds.
 - 2. Size: Less than 24 inches wide by 18 inches high by 36 inches long.
 - 3. Clearly labeled:
 - a. Equipment tag number.
 - b. Equipment manufacturer.
 - c. Subassembly component, if appropriate.
- I. Spare parts and special tools box:
 - 1. Wooden box:
 - a. Size: 24 inches wide by 18 inches high by 36 inches long.
 - 2. Hinged wooden cover:
 - a. Strap type hinges.
 - b. Locking hasp.
 - c. Spare parts inventory list taped to underside of cover.
 - 3. Coating: As specified in Division 9 Specifications
 - 4. Clearly labeled:
 - a. The words "Spare Parts and/or Special Tools".
 - b. Equipment tag number.
 - c. Equipment manufacturer.

PART 3 – EXECUTION

3.01 DELIVERY AND HANDLING

- A. Handle equipment in accordance with manufacturer's instructions.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- C. Upon delivery, promptly inspect shipments:
 - 1. Verify compliance with Contract Documents, correct quantities, and undamaged condition of products.
 - 2. Acceptance of shipment does not constitute final acceptance of equipment.

3.02 STORAGE AND PROTECTION

- A. Immediately store and protect products and materials until installed in Work.
- B. Store products with seals and legible labels intact.

- C. Maintain products within temperature and humidity ranges required or recommended by manufacturer.
- D. Protect painted surfaces against impact, abrasion, discoloration, and other damage.
 - 1. Repaint damaged painted surfaces.
- E. Exterior storage of fabricated products:
 - 1. Place on aboveground supports that allow for drainage.
 - 2. Cover products subject to deterioration with impervious sheet covering.
 - 3. Provide ventilation to prevent condensation under covering.
- F. Store moisture sensitive products in watertight enclosures.
- G. Furnish covered, weather-protected storage structures providing a clean, dry, noncorrosive environment for mechanical equipment, valves, architectural items, electrical and instrumentation equipment and special equipment to be incorporated into this project.
 - 1. Storage of equipment shall be in strict accordance with the "instructions for storage" of each equipment supplier and manufacturer including connection of heaters, placing of storage lubricants in equipment, etc.
 - 2. The Contractor shall furnish a copy of the manufacturer's instructions for storage to the Engineer prior to storage of all equipment and materials.
 - 3. Pumps, motors, electrical equipment, and all equipment with antifriction or sleeve bearings shall be stored in weathertight structures maintained at a temperature above 60°F. Electrical equipment, controls, and insulation shall be protected against moisture and water damage. All space heaters furnished in equipment shall be connected and operated continuously.
- H. Unless otherwise instructed by or required by the equipment manufacturer:
 - 1. Equipment having moving parts, such as gears, bearings, and seals, shall be stored fully lubricated with oil, grease, etc.
 - 2. Equipment having moving parts shall be rotated a minimum of twice a month to ensure proper lubrication and to avoid metal to metal "welding".
- I. Store loose granular materials on solid surfaces in well-drained area.
 - 1. Prevent materials mixing with foreign matter.
 - 2. Provide access for inspection.
- J. Payment will not be made for equipment and materials improperly stored or stored without providing Engineer with the manufacturer's instructions for storage.
- K. Provide an Equipment Log including, as a minimum, the equipment identification, date stored, date of inspection/maintenance, date removed from storage, copy of manufacturer's recommended storage guidelines, description of inspection/maintenance activities performed, and signature of party performing inspection/maintenance.

3.03 PROTECTION AFTER INSTALLATION

- A. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations.
 - 1. Remove covering when no longer needed.
 - 2. Replace corroded, damaged, or deteriorated equipment and parts before acceptance of the project.
- B. Update Equipment Log on a monthly basis with description of maintenance activities performed in accordance with the manufacturer's recommendation and industry standards and signature of party performing maintenance.

- C. Upon installation of the equipment, Contractor shall, at the discretion of Engineer, start the equipment at one-half load for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.
- D. Unless otherwise instructed by or required by the equipment manufacturer, lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment by Contractor at the time of acceptance.

3.04 QUALITY ASSURANCE

- A. Employ entities that meet or exceed specified qualifications to execute the Work.
- B. Verify project conditions are satisfactory before executing subsequent portions of the Work.

3.05 COMMISSIONING

- A. As specified in Section 01757 - Commissioning.

3.06 CLOSEOUT ACTIVITIES

- A. Owner may request advanced delivery of spare parts, maintenance products, and special tools.
 - 1. Deduct the delivered items from the inventory list and provide transmittal documentation.
- B. Immediately prior to the date of Substantial Completion, arrange to deliver spare parts, maintenance products, and special tools to Owner at a location on site chosen by the Owner.
 - 1. Provide itemized list of spare parts and special tools that matches the identification tag attached to each item.
 - 2. Owner and Engineer will review the inventory and the itemized list to confirm it is complete and in good condition prior to signing for acceptance.

3.07 ATTACHMENTS

- A. Appendix A - Spare Parts, Maintenance Products, and Special Tools Inventory List.

END OF SECTION

SECTION 01615 – EQUIPMENT IDENTIFICATION AND TAGGING

PART 1 - GENERAL

- A. The following is a guide to the various types of tags used for KC Water (Wastewater Division) asset identification.

1.01 SUMMARY

- B. This section describes tag structures KC Water uses to label an asset for different purposes. These tags include:

1. CMMS tags (Asset IDs)

- a. These tags are used to identify assets in CITY's CMMS (Computerized Maintenance Management System).
- b. CMMS is primarily used for maintenance scheduling and financial tracking of assets.
- c. Not every asset will need an Asset ID, reference CITY's Tag Generator Spreadsheet for more details about which assets need this type of tag.
 - (1) CMMS tags for all new assets will be created using the CITY's Tag Generator Spreadsheet.

2. PLC Shortcuts

- a. Shortcuts are used in the OIT (Operator Interface Terminal)/HMI (Human Machine Interface) to establish a path from the HMI to the PLC.
- b. These tags are only used to identify/label PLCs.
- c. See CITY SCADA Standards for more details.

3. P&ID Tags

- a. These tags are used to identify equipment and instruments on P&IDs (Process and Instrumentation Drawings).
- b. These tags are composed of a 3-5 digit equipment or instrument code followed by a 5 digit loop number.
- c. See CITY P&ID tagging standards for more details.

4. PlantPax Tags

- a. PlantPax Tags are used in the PLC program as object names for all standard PlantPax objects.
- b. The tagging convention for these tags is based on ANSI/ISA Table 4.1 and also utilizes the loop numbers from the P&ID's
- c. See SCADA Standards for more details.

5. NonPlantPax Tags

- a. NonPlantPax tags are used for objects that are not in the standard PlantPax library of objects. This might include objects that a vendor has created or possibly objects that a local integrator might need to create for specialty equipment that doesn't already have an object type in the standard PlantPax library.

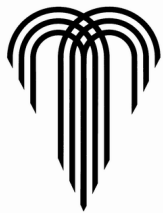
6. Other Tags/Names (See SCADA Standards for details)

- a. HMI Application/Display Names.
- b. OIT Application Names.
- c. Thin/Thick Client Names.
- d. ControlLogix PLC Program Filenames.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION



SUBSTITUTION REQUEST

Project Number _____

Project Title _____

To: _____

Authorization Number: _____

Re: _____

From: _____

Date: _____

Contract For: _____

Specification Title: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone No. _____

Trade Name: _____ Model No. _____

Installer: _____ Address: _____ Phone No. _____

History: ☐ New Product ☐ 2-5 years old ☐ 5-10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

☐ Point-by-point comparative data attached – REQUIRED

Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance, service, and availability of replacement parts, as applicable, are available.
- Proposed substitution will not affect or delay Progress Schedule, except as stated below.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances, except as stated below.
- Payment will be made for changes to building design, including architectural or engineering design, detailing, licenses, royalties, and construction costs caused by the requested substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be completed in all respects.

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Design Professional: _____

Address: _____ Owner: _____

Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain _____

Savings to Owner for accepting substitution: _____

Proposed substitution changes Contract Time: ☐ No ☐ Yes; add/deduct _____ days.

Supporting Data Attached:

☐ Product Data ☐ Drawings ☐ Tests ☐ Reports ☐ Samples ☐ _____

Attachments: _____

Submitted by: _____

Signature: _____

Firm: _____

Address: _____

Telephone: _____ Fax: _____ E-Mail: _____

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ DP ☐ _____

DESIGN PROFESSIONAL'S REVIEW AND ACTION

- ☐ Substitution approved – Make submittals in accordance with Specification Section 01300.
- ☐ Substitution approved as noted – Make submittals in accordance with Specification Section 01300.
- ☐ Substitution rejected – Use specified materials.
- ☐ Substitution Request received too late – Use specified materials.

Signed by: _____ Date: _____

Distribution: ☐ Owner
☐ Design Professional
☐ Contractor
☐ Consultant
☐ Construction Manager
☐ Other

SECTION 01664 - TRAINING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section contains requirements for training the Owner's personnel by the Manufacturer's Representative in the proper operation and maintenance of the equipment and systems installed under this contract and other training required to operate the Works.
- B. Training outcomes: Owner's operations, maintenance, and engineering staff have the information needed to safely operate, maintain, and repair the equipment/systems provided in the Contract Documents.

1.02 RELATED SECTIONS

- A. Section 01300 – Submittals.
- B. Section 01757 – Commissioning.

1.03 QUALITY ASSURANCE

- A. Where indicated in the Equipment Schedule and as required by the detailed specifications, the Manufacturer's Representative shall provide on-the-job training of the Owner's personnel. The training sessions shall be conducted by qualified, experienced, factory trained representatives of the various equipment manufacturers familiar with operation and maintenance manual information. Commissioning Manager may perform other training sessions as approved by the Owner's Representative.
- B. Trainers shall be knowledgeable in the equipment/system for which they are training. Trainer's qualifications shall be submitted in a form provided by the Owner and specifically demonstrating operational knowledge of the specific systems and components and treatment facility classroom and field training experience.

1.04 SUBMITTALS

- A. The following information shall be submitted to the Engineer and Owner in accordance with the provisions of the Submittal Procedures section (Section 01300).
- B. Lesson plans for each training session to be conducted by the manufacturer's representatives. Lesson plans shall be submitted 45 days prior to the scheduled training. In addition, training manuals, handouts, visual aids, and other reference materials shall be included.
- C. Subject of each training session, instructor (s) and qualifications of individuals conducting the training, and tentative date and time of each training session. Owner has the right to request instructor substitution that are not appropriately qualified.
- D. Training schedule including respective manufacturer, estimated dates for installation completion and estimated training dates will be incorporated into the project schedule in the commissioning section consistent with direction provided by the Owner's affected facility or division.
- E. Submit other audio-visual aids utilized during each training course.
- F. Provide two electronic copies and 3 hard copies organized in notebooks of the training course material 7 days prior to training.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Where specified, the Contractor's or Design-Builder's Commissioning Manager shall conduct training sessions for the Owner's personnel to instruct staff on the proper operation, care, and maintenance of the equipment and systems installed under this contract.
- B. Training shall take place at the site of the work and under the conditions specified in the following paragraphs. Approved operation and maintenance manuals shall be available at least 30 days prior to the date schedule for the individual training session. Furnish a copy of each complete training package, to include operation and maintenance data for distribution to each trainee.
- C. Commissioning Manager shall meet with Engineer and Owner's designated training Manager to develop a list of personnel to be trained and to establish expected training outcomes and objectives 120 days prior to commissioning of equipment/system and schedule the training.
- D. Commissioning Manager shall conduct commissioning progress meetings throughout construction to plan, scope, coordinate, schedule future activities and resolve issues at least monthly. This meeting may be part of the weekly progress meetings.

2.02 LOCATION

- A. Training sessions shall take place at the site of the work or at the Water Services Department offices as determined by the Owner.

2.03 LESSON PLANS

- A. Lesson plans shall contain an outline of the material to be presented along with a description of the visual aids to be utilized during the sessions. Each plan shall contain time allocation for each subject and time spent on each form of training.
- B. Lesson plans shall contain the following minimum information:
 - 1. Title and objectives
 - 2. Recommended attendees (i.e. managers, engineers, operators, maintenance)
 - 3. Course description, outline of course content, and estimated class duration.
 - 4. Format (i.e. lecture, self-study, demonstration, hands-on)
 - 5. Instruction materials and equipment requirements.
 - 6. Resumes of instructors providing training.
 - 7. Provide performance-based learning objectives.
 - 8. State learning objectives in terms of what the trainees will be able to do at the end of the lesson.
 - 9. Define student conditions of performance and criteria utilizing learning objectives for evaluating instructional success.
 - 10. Provide necessary information for submission to MDNR for approval of training hours in compliance with certified operator regulations for certificate renewal.
 - 11. Correspondence that a submission to MDNR for training hours has been completed and approved.
 - 12. Provide maintenance instruction lessons plans to include mechanical, HVAC, instrumentation, and electrical aspects.
 - 13. Equipment operation:
 - a. Describe equipment process function and system theory.
 - b. Describe equipment fundamental operating principles and dynamics.
 - c. Identify equipment mechanical, electrical, and electronic components and features.
 - d. Identify support equipment associated with the operation of subject equipment.

- e. Detail the relationship of each piece of equipment or component to the subsystems, systems, and process.
 - f. Cite hazards associated with the operations, exposure to chemicals associated with the component, or the waste stream handled by the component.
 - g. Specify appropriate safety precautions, equipment, and procedures to eliminate, reduce, or overcome hazards.
14. Detailed component description:
- a. Define preventative maintenance (PM) inspection procedures required on equipment in operation and identify troubleshooting and potential issues as a result of the troubleshooting,
 - b. Identify applicable predictive maintenance (PdM) to the component or system. (infrared analyses, oil evaluation, vibration analyses, etc.)
 - c. Identify preventive maintenance tasks and frequencies and provide in a table.
 - d. Identify each component function and describe in detail.
 - e. Where applicable, group relative components into subsystems.
 - f. Identify and describe in detail equipment safety features, permissives and controls interlocks.
15. Define and provide training on recommended systematic troubleshooting procedures as they relate to specific craft problems and provide component specific troubleshooting checklists as they relate to specific craft problems.
16. One complete set of originals of the lesson plans, training manuals, handouts, visual aids and reference materials shall be the property of the Owner and shall be suitable bound for proper organization and easy reproduction. The Contractor shall furnish up to forty (40) copies of necessary training manuals, handouts, visual aids, and reference materials at least one week prior to each training session. Specific quantities will be identified during progress or other meetings.

2.04 FORMAT AND CONTENT

- A. Each training session shall be comprised of time spent both in the classroom and at the specific location of the subject equipment or system.
- B. Instructors shall apply adult education best practices, emphasizing learner participation and activity.
- C. Training delivery may include problem solving, question/answer, hands-on instruction, practice, evaluation/feedback tools, and lecture.
- D. Visual aids must support training objectives.
- E. Delivery time should be less than 30 percent of class time.
- F. Delivery time is a minimum of 1 hours and a maximum of 2 hours.
- G. Longer training sessions requires Owner approval.
- H. Refreshment and breaks within the Owner's customary schedule or as predetermined in advance of the training delivery.
- I. Estimated maximum class size will vary for class and field training sessions. This will be determined in advanced. Commissioning Manager and Owner will develop a headcount one (1) week prior to the class so the instructor can provide the correct number of aids and know the correct number of repeated sessions.
- J. Training Modules:
 - 1. Provide a training module for each equipment category.
 - 2. Divide each training module's instructional content into discrete lesson plans with a division between operations and maintenance training if directed by the Owner's Representative.

K. Training Aids:

1. Instructors are to utilize P&ID's and are encouraged to use audio-visual devices, models, charts, etc. to increase the transfer of knowledge.
2. Instructors shall provide such equipment (televisions, video recorder/player, computer, projectors, screens, easels, etc.), models, charts, etc. for each class.
3. Instructor is responsible for confirming with Engineer and Owner in advance of each class that the classroom will be appropriate for the types of audiovisual equipment to be utilized.

L. Familiarization:

1. Review catalog, parts lists, drawings, etc. which have been previously provided for the plan files and operation and maintenance manuals.
2. Check out the installation of the specific equipment items.
3. Demonstrate the unit and indicate how all parts of the specifications are met.
4. Answer questions.

M. Safety:

1. Using material previously provided, review safety references.
2. Discuss proper precautions around equipment.

N. Operation:

1. Using material previously provided, review reference literature.
2. Explain all models of operation (including emergency).
3. Check out Owner's personnel on proper use of the equipment.

O. Preventive Maintenance:

1. Using material previously provided, review preventative maintenance (PM) lists including:
 - a. Reference material.
 - b. Daily, weekly, monthly, quarterly, semiannual, and annual jobs.
2. Demonstrate procedures to perform PM jobs.
3. Show Owner's personnel what to look for as indicators of equipment problems.
4. Facilitate discussion with Owner's personnel as to which PMs to continue after the warranty period.

P. Corrective Maintenance:

1. List potential problems including troubleshooting recovery from adverse operating conditions.
2. Identify, describe, instruct and provide via the transmittal process any special tools required for maintenance.
3. Describe Recommended measuring instruments and procedures and provide instruction on interpreting alignment measurements as appropriate.
4. Describe recommended procedures to check/test equipment following a corrective maintenance (CM) repair.
5. Open equipment and demonstrate procedures, where practical.

Q. Parts:

1. Show how to use previously provided parts list and properly identify parts to be ordered.
2. Define and check spare parts on hand and identify minimum inventory levels.

R. Local Representatives:

1. Where to order parts: Name, address, telephone.
2. Service problems:
 - a. Who to call.
 - b. How to get emergency help.

S. Original Equipment Manufacturer (OEM) Operation and Maintenance (O&M) Manuals:

1. Review any other material submitted.
2. Update material as required.

2.05 VIDEO RECORDING

- A. The Contractor shall retain the services of a commercial videotaping service to record each training session. If trainer is required to read a script during videotaping, the trainer will have one video recorded session without personnel and the remaining sessions with personnel will be untaped. After taping, the material may be edited and supplemented with professionally produced graphics to provide a permanent record. The Contractor shall advise all manufacturers providing training sessions that the material may be videotaped and shall make available to the Owner's videotaping contractor such utility services and accommodations as may be required to facilitate the production of the video tape record. Video recording shall be integrated into electronic O&M by the Design-Builder or Contractor.
- B. Include classroom and field instruction with question and answering periods.
- C. Owner approval required for producer of video materials.
- D. Digital recording shall become the property of the Owner.
- E. Audio quality should not degrade during the recording of the field sessions due to background noise, space, distance, or other factors. Trainer will verify that audio quality after the first training session.
- F. Trainer shall record the first training session and verify it presents accurately.
- G. Video files shall be a file format and delivery medium as directed and approved by Owner.
- H. Electronic copies of the other training material shall be tagged per Owner Standards to be provided by the Owner by the Contractor or Design-Builder
- I. Provide 2 complete sets of video materials fully indexed and catalogued with printed labels stating session content and dates recorded or an indexed video file to each segment of the training.
- J. Contractor shall provide a written release from all claims to the recorded training material produced.

2.06 ATTENDANCE

- A. Trainer shall keep an attendance log of all attendees.
- B. Trainer shall have the trainees each sign an attendance form at the beginning and end of the training session.
- C. These records shall be provided to the appropriate Division Manager in which the training is being provided.

2.07 TRAINING SCHEDULE

- A. Draft Training Schedule for the entire project shall be submitted after the first item requiring training arriving on the site. When approved, the training schedule shall be integrated into the project schedule.
- B. List specified equipment and systems that require training services and show:
 1. Respective manufacturer
 2. Estimated dates for installation completion
 3. Estimated training dates
- C. Training is a prerequisite for putting equipment into operation. Staged or partial training may be approved by the Owner's Representative.
- D. Allow for separate training sessions for maintenance staff and operations staff. Owner will notify the trainer if it is desired to have separate sessions for maintenance and operations staff or have combined sessions.

- E. Allow for multiple session for Operations training:
 - 1. Provide a minimum of three training sessions to accommodate different shifts. One will be for each shift: day, evening, and night on at least two days, or as determined appropriate to meet the Owner's requirements.
 - 2. Adjust schedule to ensure training of appropriate personnel as deemed necessary by Owner, and to allow full participation by manufacturers' representatives. Adjust schedule for interruptions in operability of equipment,
 - 3. Coordinate with section 01320 "Construction Progress Documentation," and Section 01757, "Commissioning."
- F. Contractor shall provide a draft training schedule 30 days after the notice to proceed.
- G. Schedule Owner's staff training within the constraints of their workloads. Those who will participate in this training have existing full-time work assignments, and training is an additional assigned work task, therefore, scheduling is imperative. Owner staff work schedules are variable for operations staff, as treatment facilities are typically operated on an around- the-clock basis.
- H. Training sessions will be finalized two weeks prior to the training.
- I. Training sessions that are rescheduled after a finalized date will be rescheduled at least two weeks out.
- J. Commissioning Manager is responsible for preparing agendas and meeting minutes.

PART 3 – EXECUTION

3.01 TRAINING

- A. Training shall be conducted in conjunction with the operational testing and commissioning periods. Classes shall be scheduled such that classroom sessions are interspersed with the instruction in logical sequence. The Contractor shall arrange to have the training conducted on consecutive days if approved by the Owner's Representative. Concurrent classes shall not be allowed.
- B. Instructors shall apply adult education best practices, emphasizing learner participation and activity.
- C. Unless otherwise agreed by the Owner, classes shall be repeated twice for a morning session, afternoon session, and a night session in order to have all three operations shifts trained. Adjust training schedule to ensure training of appropriate personnel deemed necessary by Owner, and to allow full participation by manufactures' representatives. Adjust schedule for interruptions in operability of equipment. Coordinate training efforts with Section 01320 Construction Progress Documentation and Section 01757 Commissioning.
- D. Approved operation and maintenance manuals for the special equipment shall be provided to the Owner prior to the start of the training. Videotaping shall take place concurrently with the training sessions.
- E. Pre-startup Training shall be coordinated with Owner's operating personnel and Manufacturers' representatives, and with submission of Operation and Maintenance manuals. Pre-startup Training shall be completed at least 14 calendar days prior to beginning of system startup.
- F. Post-startup Training, if required in specifications, shall be furnished and coordinated with Owner's operating personnel by the respective manufacturers' representatives.
- G. Trainees will keep training materials and documentation after the session.
- H. Operations and maintenance manuals as specified in technical sections:
 - 1. Provide a minimum of 2 copies of final Engineer-approved operations and maintenance manuals for use during the classroom instruction.

2. Owner reserves the right to delay training for a particular equipment item if the operations and maintenance manuals for that equipment are incomplete, inaccurate, or otherwise not in a format or stage of development for use by the Owner's staff.
 3. No contract extensions or extra costs will be allowed for training delays due to operations and maintenance manual submittal delays.
- I. Provide Supplemental documentation handouts to support instruction.
 - J. The following services shall be provided for each item of equipment or system. Additional services shall be provided when specifically required in individual specification sections.
 1. As a minimum, classroom training for operations personnel will include:
 - a. Use of electronic media and drawings.
 - b. Discussion of the equipment's specific location in the plant and operational overview.
 - c. Purpose and plant function of the equipment.
 - d. A working knowledge of the operating theory of the equipment.
 - e. Start-up, shutdown, normal operation, emergency operating procedures, including discussion on system integration and electrical interlocks, if any.
 - f. Identify and discuss safety items and procedures.
 - g. Routine preventive maintenance, including specific details on lubrication and maintenance of corrosion protection of the equipment and ancillary components.
 - h. Operator detection, without test instruments, of specific trouble symptoms.
 - i. Required equipment exercise procedures and intervals.
 - j. Routine disassembly and assembly of equipment if applicable (as judged by the Owner on a case-by-case basis) for purposes such as operator inspection of equipment.
 2. As a minimum, hands-on equipment training for operations personnel will include:
 - a. Identify location of equipment and review the purpose.
 - b. Identifying piping and flow options.
 - c. Identifying valves and their purpose.
 - d. Identifying instrumentation:
 - (1) Location of primary element.
 - (2) Location of instrument readout.
 - (3) Discuss purpose, basic operation, and information interpretation.
 - e. Discuss, demonstrate, and perform standard operating procedures and round checks.
 - f. Discuss and perform the preventive maintenance activities.
 - g. Discuss and perform startup and shutdown procedures including alternative strategies.
 - h. Perform the required equipment exercise procedures.
 - i. Perform routine disassembly and assembly of equipment if applicable.
 - j. Identify and review safety items and perform safety procedures, if feasible.
 3. Classroom equipment training for the maintenance and repair personnel will include:
 - a. Theory of operation.
 - b. Description and function of equipment.
 - c. Startup and shutdown procedures.
 - d. Normal and major repair procedures.
 - e. Equipment inspection and troubleshooting procedures including the use of applicable instruments and the "pass" and "no pass" instrument readings.
 - f. Routine and long-term calibration procedures.

- g. Safety procedures.
 - h. Preventive maintenance such as lubrication, normal maintenance such as belts, seals, and bearing replacement; and up to major repairs such as replacement of major equipment part (s) with the use of special tools, bridge cranes, welding jigs, etc.
- 4. Hands-on Equipment training for maintenance and repair personnel shall include:
 - a. Locate and identify equipment components.
 - b. Review the equipment function and theory of operation.
 - c. Review normal repair procedures including corrective maintenance.
 - d. Perform startup and shutdown procedures.
 - e. Review and perform safety procedures.
 - f. Perform Owner approved practice maintenance and repair job(s), including mechanical and electrical adjustments, calibration, and troubleshooting equipment problems.
- 5. Distribute Training Evaluation Form following each training session.
 - a. Training Evaluation Form is included in Section 01757 –Commissioning.
 - b. Return completed Training Evaluation Forms to Owner’s designated training coordinator immediately after session is completed.
 - c. Revise training sessions judged “Unsatisfactory” by a majority of attendees.
 - d. Conduct training sessions again until a satisfactory rating is achieved at no additional cost to Owner.
- 6. Post Training Session
 - a. Training Course Material: Due 14 days after class completion.
 - b. Video Recording tagged and other materials tagged.
 - c. Class Attendance Sheet and trainee acknowledgment that they were trained and able to run the equipment.
 - d. Training Agenda, Lesson Plan, presentation, handouts
 - e. Other audio-visual aids utilized during each training course.
 - f. Provide material for all sessions of the class in a single transmittal.
 - g. Format: 2 electronic copies and 3 hard copies organized in notebooks.
- K. Closeout Documentation
 - 1. Provide Training Documentation including submission to MDNR for operator training credit. Trainer will be required to submit any additional information required by MDNR.
 - 2. Provide training certification and records of training acceptance by MDNR.

End of Section

SECTION 01757 - COMMISSIONING

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes the requirements for each Commissioning phase of, the Project equipment/system and/or facility.

1.02 DEFINITIONS

- A. Commissioning - The process of planning, testing, and process start-up of the installation for compliance with contract requirements and demonstrating, through documented verification, that the project has successfully met the Contractual requirements. It includes training the Owner's staff to operate the facility.
- B. Commissioning Phases - The work activities of facility commissioning are grouped into the phases defined in the table below.

<u>Commissioning</u>		
<u>Planning Phase</u>	<u>Testing and Training Phase</u>	<u>Process Start-Up Phase</u>
Owner Training Plan and Schedule	Source Testing	Process Start-up
Commissioning Schedule	Owner Training	Process Operational Period
Subsystem Testing Plan	Installation Testing	Instrumentation and Controls Fine-Tuning
	Functional Testing	
	Closeout Documentation	

- C. Component - A basic building block of equipment, subsystems, and systems that requires installation or functional testing but does not have electrical connection or internal electronics. (Examples: filter effluent piping and manual isolation valves).
- D. Device - A basic building block of equipment, subsystems, and systems that requires installation or functional testing and does have electrical connections or internal electronics. (Examples: filter level transmitter or water pump pressure transmitter).
- E. Equipment - An assembly of component(s) and devices(s) that requires installation or functional testing. (Examples: Pump, motor, VFD, Ozone Generator, UV Disinfection System, etc.).
- F. Facility - A grouping of process areas, systems, subsystems, equipment, components, and devices (Examples: treatment plant, pump station, etc.).
- G. Functional Testing - Testing performed on a completed subsystem to demonstrate that equipment/system meets manufacturers' calibration and adjustment requirements and other requirements as specified. Functional testing includes operating equipment/system manually in local, manually in remote (or remote manual), and automatically in remote (in remote auto).
- H. Installation Testing - Testing to demonstrate that subsystem component (piping, power, networks, devices, etc.) is ready and meets the project requirements in advance of functional testing. Installation testing also includes

manufacturers' certification of installation and other requirements as specified to prepare equipment/system for Functional Testing. Also referred to as Field Acceptance Testing.

- I. Instrumentation and Controls Fine-Tuning - Improving the performance of the Instrumentation Process Control system by operating for an extended time period.
- J. Manufacturer's Certificate of Source Testing - When applicable, the form is used during Source Testing for the manufacturer to confirm that the applicable source tests have been performed and results conform to the Contract Documents. The form is provided at the end of this Section.
- K. Manufacturer's Certificate of Installation and Functionality Compliance - The form is used during Installation Testing and Functional Testing. It is submitted at the end of Functional Testing to confirm that the equipment/system is installed in conformance with the Contract Documents and that it meets the Functional Testing requirements defined in the Contract Documents. The form is provided at the end of this Section.
- L. Process Area - A grouping of systems, subsystems, equipment, components, and devices that divide a facility into functional areas. (Examples: Filter Process Area or Chemical Area).
- M. Process Operational Period - A period of time after completion of the process start-up set aside for final Operational Testing to verify facility performance meets the Contract Document requirements. This period may specifically limit other construction activities.
- N. Process Start-up Phase - Operating the facility to verify performance meets the Contract Document requirements.
- O. Process Start-Up - Activities conducted after the testing and training phase that are necessary to place systems or process areas into operational service.
- P. Product - A system, subsystem or component.
- Q. Subsystem - A building block of systems made up from a grouping of components, devices, and equipment that perform a definable function. (Examples: Filter No. 1 Backwash Subsystem, Sedimentation Basin No. 1 Hoseless Sludge Removal Subsystem).
- R. System - A grouping of subsystems, equipment, components, and devices that perform a definable function. (Examples: Filter No. 1, Sedimentation Basin).

1.03 COMMISSIONING MANAGER

- A. Designate and provide a COMMISSIONING MANAGER for this project.
- B. Submit summary of the COMMISSIONING MANAGER's qualifications within 30 days of NTP:
 - 1. Include description of previous experience as a COMMISSIONING MANAGER on similar projects for the designated COMMISSIONING MANAGER with a list of references including phone numbers for review and Owner approval.
- C. COMMISSIONING MANAGER responsibilities include the following:
 - 1. Lead efforts relating to Commissioning.
 - 2. Be thoroughly familiar with commissioning requirements in the Contract Documents.
 - 3. Be regularly engaged and experienced in all aspects of commissioning.
 - 4. Provide technical instruction for commissioning.
 - 5. Provide primary interface with Engineer and Owner for efforts relating to Commissioning of Project facilities.
 - 6. Coordinate training efforts.
- D. COMMISSIONING MANAGER on-site:
 - 1. Testing and Training Phase: Full-time.
 - 2. Process Start-up Phase: Full-time.
- E. Designate and provide COMMISSIONING MANAGER assistants, as needed.

1.04 SERVICES OF MANUFACTURER'S REPRESENTATIVES

- A. Qualification of manufacturer's representative as specified in the Contract Documents technical sections include the following:
 - 1. Authorized representative of the manufacturer, factory trained and experienced in the technical applications, installation, operation, and maintenance of respective equipment/system with full authority by the equipment/system manufacturer to issue the certifications required of the manufacturer.
 - 2. Competent, experienced technical representative of equipment/system manufacturer for assembly, installation, testing guidance, and training.
 - 3. Additional qualifications may be specified in the individual sections.
 - 4. Submit qualifications of the manufacturer's representative no later than 30 days in advance of required observations.
 - 5. Representative subject to approval by Owner and Engineer.
 - 6. No substitute representatives will be allowed until written approval by Owner and Engineer has been obtained.
- B. Completion of manufacturer on-site services: Engineer approval required.
- C. Manufacturer is responsible for determining the time required to perform the specified services.
 - 1. Minimum times specified in the Contract Documents are estimates.
 - 2. No additional costs associated with performing the required services will be approved.
 - 3. Manufacturer required to schedule services in accordance with the Contractor's project schedule up to and including making multiple trips to project site when there are separate milestones associated with installation of each occurrence of manufacturer's equipment.
- D. Manufacturer's on-site services as specified in the Contract Documents include the following:
 - 1. Assistance during Commissioning Phase and Process Start-Up Phase.
 - 2. Provide daily copies of manufacturer's representatives field notes and data to Engineer.
 - 3. Services as specified in Section 01433 - Manufacturer's Field Services.
 - 4. Other requirements as specified in the Contract Documents.

1.05 PLANNING PHASE

- A. Overview of Planning Phase:
 - 1. Define approach and timing for Commissioning.
- B. Owner training plan and schedule:
 - 1. Complete as specified in Section 01664.
- C. Commissioning Schedule:
 - 1. Commissioning overview:
 - a. Comply with Commissioning Roles and Responsibilities Matrix specified at the end of this Section.
 - 2. Submittal due date:
 - a. Submit Commissioning Schedule not less than 60 calendar days prior to planned initial commissioning of each subsystem or system.
 - 3. Schedule requirements:
 - a. Schedule durations and float for commissioning activities to ensure Work does not fall behind schedule due to complications or delays during commissioning.
 - b. Time-scaled network diagram detailing the work to take place in the period between 90 calendar days prior to planned initial commissioning of equipment and systems, and prior to the date of Substantial Completion, together with supporting narrative.
 - c. Provide detailed schedule of commissioning activities including durations and sequencing requirements.

- (1) Identify the following activities:
 - (a) Testing and Training Phase:
 - (i) Source Testing.
 - (ii) Owner Training.
 - (iii) Installation Testing.
 - (iv) Functional Testing.
 - (v) Clean Water Facility Testing.
 - (vi) Closeout Documentation.
 - (b) Process Start-Up Phase:
 - (i) Process Start-Up.
 - (ii) Process Operational Period.
 - (iii) Instrumentation and Controls Fine-Tuning.
- d. Schedule manufacturer's services to avoid conflict with other on-site testing or other manufacturers' on-site services.
- e. Verify that conditions necessary to allow successful testing have been met before scheduling services.

D. Subsystem testing plans:

- 1. Provide separate testing plans for each individual subsystem and system that include the following:
 - a. Approach to testing including procedures, schedule, and recirculation requirements.
 - b. Test objective: Demonstrate subsystem meets the design requirements as specified in the technical sections.
 - c. Test descriptions, forms, temporary systems (pumps, piping, etc.), shutdown requirements for existing systems, test forms, test logs, witness forms, and checklists to be used to control and document the required tests.
 - d. Test forms: Include, but not limited to, the following information:
 - (1) Tag and name of equipment/system to be tested.
 - (2) Test date.
 - (3) Names of persons conducting the test.
 - (4) Names of persons witnessing the test, where applicable.
 - (5) Test data.
 - (6) Applicable project requirements.
 - (7) Check offs for each completed test or test step.
 - (8) Place for signature of person conducting tests and for the witnessing person, as applicable.
 - e. Define start-up sequencing of unit processes:
 - (1) Include testing of alarms, interlocks, permissives, control circuits, capacities, speeds, flows, pressures, vibrations, sound levels, and other parameters.
 - (2) Provide detailed test procedures setting forth step-by-step descriptions of the procedures for systematic testing of equipment/system.
 - (3) Demonstrate proper rotation, alignment, speed, flow, pressure, vibration, sound level, adjustments, and calibration.
 - (a) Perform initial checks in the presence of and with the assistance of the manufacturer's representative.
 - (4) Demonstrate proper operation of each control loop function including mechanical, electrical, alarms, local and remote controls, instrumentation, and other equipment/system functions.

- (a) Generate signals with test equipment/system to simulate operating conditions in each control mode.
- 2. Engineer approval of test plan is required prior to performing test.
 - a. Revise and update test plans based on review comments, actual progress, or to accommodate changes in the sequence of activities.
 - b. Submit test reports for each phase of testing for each equipment/system.
 - c. Engineer approval of preceding test reports is required prior to start of next test.
 - d. Tests will be rescheduled if test plan is not approved by the required deadline.
 - (1) Contractor is responsible for any resulting delay.
- 3. Contractor is responsible to reproduce and distribute final test procedures.
 - a. Provide 3 copies for Engineer.
- 4. Tests may commence only after Engineer has received approved test plan copies.
- 5. Submittals:
 - a. Submit test plans not less than 90 calendar days prior to planned installation testing of subsystem or system.
 - b. Completed Manufacturer's Certificate of Installation and Functionality Compliance.
 - c. Test procedures and forms: Provide signed-off copy of test forms and test reports upon completion of the test.
 - d. Test reports:
 - (1) Submit preliminary copies within 1 day after testing completion.
 - (2) Submit final copies and report within 14 days after testing completion.

1.06 TESTING AND TRAINING PHASE

A. Overview of Testing and Training Phase:

- 1. General:
 - a. Include specified Source Testing, Owner Training, Installation Testing, Functional Testing, Clean Water Facility Testing, and Closeout Documentation required by this Section and the technical sections.
- 2. Contractor responsibilities:
 - a. Furnish labor, power, chemicals, tools, equipment, instruments, and services required for and incidental to completing commissioning activities in accordance with the approved Commissioning Plans.
 - b. Prior to testing, verify equipment protective devices and safety devices have been installed, calibrated, and tested.
 - c. Acceptable tests: Demonstrate the equipment/system performance meets the requirements stated in the Contract Documents.
 - (1) When the equipment/system fails to meet the specified requirements, perform additional, more detailed, testing to determine the cause, correct, repair, or replace the causative components and repeat the testing that revealed the deficiency.

B. Source testing:

- 1. Also referred to as factory testing or factory acceptance testing (FAT).
- 2. Test components, devices, and equipment/system for proper performance at point of manufacture or assembly as specified in the technical sections.
- 3. Notify the Engineer in writing when the equipment/system is ready for source inspection and testing.
- 4. Source Test Plan:

- a. As specified in this Section and other technical sections.
 - b. Source testing requirements as specified in technical sections.
 - (1) Non-witnessed: Provide Manufacturer's Certificate of Source Testing.
 - (2) Witnessed: 1 Owner's representative and 1 Engineer's representative present during testing, unless otherwise specified, and provide Manufacturer's Certificate of Source Testing.
 - c. Prepared by Contractor as a result of discussions and planning emerging from regularly conducted commissioning meetings for source tests as specified in the Contract Documents.
 - d. Provide the following items for each Source Test:
 - (1) Purpose and goals of the test.
 - (2) Identification of each item of equipment/system, including system designation, location, tag number, control loop identifier, etc.
 - (3) Description of the pass/fail criteria that will be used.
 - (4) Listing of pertinent reference documents (Contract Documents and industry standards or sections applicable to the testing).
 - (5) Complete description, including drawings or photographs, of test stands and/or test apparatus.
 - (6) Credentials of test personnel.
 - (7) Descriptions of test equipment to be used, product information, and all appropriate calibration records for the test equipment.
 - (8) Test set-up procedures.
 - (9) Detailed step-by-step test procedures.
 - (a) The level of detail shall be sufficient for any witness with a rudimentary technical aptitude to be able to follow the steps and develop confidence that the tests were being performed as planned.
 - (b) All steps are significant, and all steps shall be included in the procedures.
 - (10) Sample data logs and data recording forms.
 - (11) Sample computations or analyses with the results in the same format as the final report to demonstrate how data collected will be used to generate final results.
 - (a) Complete disclosure of the calculation methodologies.
 - (b) Include a sample for each type of computation required for the test and analysis of the results.
 - (12) Detailed outline of the Source Test report.
 - (13) Sample test reports.
 - e. Submit Source Test Plan and forms as specified in the technical sections.
 - (1) Submit a copy of the Source Test Plan at least 21 days before any scheduled test date.
 - (2) Engineer approval of Source Test Plan required prior to beginning source testing.
 - (3) Schedule the testing after approval of the test procedures submittal.
 - f. Indicate the desired dates for source inspection and testing.
 - (1) Notify the Engineer of the scheduled tests a minimum of 15 days before the date of the test.
5. Test results:
- a. Prepare and submit test results with collected data attached.
6. Owner is responsible for costs associated with Owner's representatives and Engineer's representative witnessing initial Source Tests.

- a. If Source Test is not ready when the witnesses arrive or if the Source Test fails, the witnesses will return home with Contractor responsible for costs associated with the trip including costs described below. Contractor is responsible for rescheduling the Source Test and witnesses' costs associated with the second trip including costs described below.
 - (1) On-site time: 1 day at the site plus travel time each direction, unless specified otherwise.
 - (2) Transportation costs:
 - (a) Travel 1 day on commercial airline to site including air flight costs.
 - (b) Travel 1 day on commercial airline from site including air flight costs.
 - (c) Mid-size rental car or taxi services from hotel to and from the test site plus fuel, tolls, and airport parking at the departing airport.
 - (d) International travel: Per-diem rates as established by the US Department of State for the specific location and dates of travel. Travel expenses may include the direct cost of securing passports, visas, language interpreters, document translators, communications, and internet access.
 - (3) Hotel costs at a facility with an American Automobile Association 3 diamond rating or better for single occupancy room per person per day.
 - (4) Meal allowance of \$61 per person per day.
 - (5) On-site time: 1 day at the site, unless specified otherwise.
 - (6) Only actual costs will be documented and billed.
- b. Fees incurred such as airline reservation change fees, loss of fare due to purchase of nonrefundable tickets, hotel cancellation/rebooking fees, and similar expenses incurred as a result of OSS-requested changes to the inspection schedule after the initial notification shall be borne by the Contractor.
- c. Contractor is responsible for witnesses' costs associated with retests including costs described above.

7. Contractor is responsible for providing fuel, chemicals, and other consumables needed for Source Testing.

C. Owner training:

- 1. Provide training as specified in Section 01664.

D. Installation Testing:

- 1. Perform subsystem testing according to approved Subsystem Testing Plans.
- 2. Initiate the Manufacturer's Certificate of Proper Installation for all equipment.
 - a. Manufacturer's Certificate of Proper Installation form is included in this Section.
 - b. Manufacturer's Certificate of Proper Installation certifies the equipment meets the following requirements:
 - (1) Has been properly installed, adjusted, aligned, and lubricated.
 - (2) Is free of any stresses imposed by connecting piping or anchor bolts.
 - (3) Is able to be operated as necessary for Functional Testing.
 - c. Form shall be submitted after completion of Functional Testing, as specified in this Section.
- 3. Coordinate Installation Testing with restrictions and requirements as specified in Section 01140 - Work Restrictions.
- 4. Perform coating holiday testing as specified in Section 09960 - High- Performance Coatings.
- 5. Perform pressure and leakage testing as specified in individual component Sections.
- 6. Perform mechanical equipment Installation Testing: As in individual equipment sections.
 - a. Remove rust preventatives and oils applied to protect equipment during construction.
 - b. Flush lubrication systems and dispose of flushing oils.

- (1) Recharge lubrication system with lubricant recommended by manufacturer.
- c. Flush fuel system and provide fuel for testing and start-up.
- d. Install and adjust packing, mechanical seals, O-rings, and other seals. Replace defective seals.
- e. Remove temporary supports, bracing, or other foreign objects installed to prevent damage during shipment, storage, and erection.
- f. Check rotating machinery for correct direction of rotation and for freedom of moving parts before connecting driver.
- g. Perform cold alignment and hot alignment to manufacturer's tolerances.
- h. Adjust V-belt tension and variable pitch sheaves.
- i. Inspect hand and motorized valves for proper adjustment.
 - (1) Tighten packing glands to ensure no leakage but permit valve stems to rotate without galling.
 - (2) Verify valve seats are positioned for proper flow direction.
- j. Tighten leaking flanges or replace flange gasket.
 - (1) Inspect screwed joints for leakage.
- k. Install gratings, safety chains, handrails, shaft guards, and sidewalks prior to operational testing.
- 7. Electrical devices and subsystems Installation Testing: As specified in Section 16950 - Electrical System Testing and Settings, and the technical sections.
- 8. Instrumentation devices and subsystems Installation Testing
- 9. Heating, ventilating, and air conditioning systems Installation Testing:
 - a. Perform testing of heating, ventilating, and air conditioning equipment, balancing of distribution systems, and adjusting of ductwork accessories.
 - b. Test hydronic systems, if required by technical sections.

E. Functional Testing:

- 1. Perform subsystem testing according to approved Subsystem Testing Plan.
- 2. Notify the Engineer 5 days prior to when the Work is ready for Functional Testing.
 - a. Perform testing in the presence of the Engineer.
- 3. Determine Functional Testing durations with Owner's input.
 - a. Durations will vary depending on the availability of water for testing.
 - b. Target minimum Functional Test duration: 8 hours.
 - (1) Identify equipment/system that cannot be tested for a minimum of 8 hours as specified in technical sections.
- 4. Perform Functional Testing as specified in technical sections.
 - a. Perform Functional Testing in addition to the other tests specified in the technical sections.
 - b. Perform Functional Testing to demonstrate that the component equipment functions as an entire system in accordance with the design requirements.
 - c. Perform Functional Testing to demonstrate that the unit process has operated in a manner necessary to demonstrate equipment/system functions manually in local, manually in remote (or remote manual), and automatically in remote (in remote auto).
 - d. Perform testing with Contractor-provided water.
 - e. Repair or replace parts that operate improperly and retest.
 - f. Submit testing results as specified in the technical sections to the Owner and Engineer for approval of Functional Testing results.
- 5. Provide completed Manufacturer's Certificate of Installation and Functionality Compliance forms for all equipment.

- a. Manufacturer's Certificate of Installation and Functionality Compliance form is included in this Section.
- b. Manufacturer's Certificate of Installation and Functionality Compliance certifies the equipment/system meets the following requirements:
 - (1) Is suitable for satisfactory full-time operation under full-load conditions.
 - (2) Operates within the allowable limits for vibration and noise.
 - (3) Electrical and instrumentation requirements:
 - (a) Electrical equipment, instrumentation, and control panels are properly installed, calibrated, and functioning.
 - (b) Electrical Installation Testing is complete, and test results have been approved by the Engineer.
 - (i) Noted deficiencies have been corrected.
 - (ii) Relays, circuit breakers, and other protective devices are set.
 - (c) Control logic for start-up, shutdown, sequencing, interlocks, control, and emergency shutdown has been tested and is properly functioning.
 - (d) Motor control is calibrated and tested.

F. Closeout documentation:

1. Submittals:

- a. Provide records generated during Commissioning Phase of Project.
 - (1) Required documents include but are not limited to:
 - (a) Training documentation.
 - (b) Manufacturer's Certificate of Source Testing.
 - (c) Manufacturer's Certificate of Installation and Functionality Compliance.
 - (d) Daily logs of equipment/system testing identifying tests conducted and outcome.
 - (e) Test forms and documentation.
 - (f) Functional Testing results.
 - (g) Logs of time spent by manufacturer's representatives performing services on the job site.
 - (h) Equipment lubrication records.
 - (i) Electrical phase, voltage, and amperage measurements.
 - (j) Insulation resistance measurements.
 - (k) Bearing temperature measurements.
 - (2) Data sheets of control loop testing including testing and calibration of instrumentation devices and setpoints. Format: 2 electronic copies and 3 hard copies organized in notebooks.
 - (3) Due date: Within 14 calendar days of Substantial Completion.

1.07 PROCESS START-UP PHASE

A. Overview of Process Start-Up Phase:

- 1. Operating the facility to verify performance meets the Contract Document requirements.

B. Process Start-Up:

- 1. Perform process start-up in the presence of the Engineer.
- 2. Pre-start-up activities:
 - a. Commissioning Documentation and Data Review.
 - b. Start-Up Go/No-Go Decision Criteria.
 - c. Building and Fire Inspection Compliance Check.

- d. Process Start-Up Sequence Review.
 - (1) Submit a Process Start-Up plan for review by Engineer not less than 90 calendar days prior to planned commencement of process start-up activities.
 - (2) Include the following:
 - (a) Pre-start-up activities.
 - (b) Process Start-Up.
 - (c) Process Operational Period.
- e. Description of Temporary Testing Arrangement, if applicable.
- f. Final Process Start-Up Forms and Documentations.
- g. Final Operational Testing Plan.
- 3. Control loop tuning.
 - a. Perform control loop tuning during system testing with water to the extent possible.
- 4. Process area start-ups.
 - a. Process start-up individual process areas comprised of multiple interdependent systems where possible and beneficial to reduce complexity and risk of complete facility testing.
 - b. Process area test flows may be limited by upstream and downstream process constraints (i.e., tank and basin volumes) and/or localized recirculation capabilities.
- 5. Facility-wide process start-up.
 - a. Upon approved completion of pre-start-up activities, perform entire facility process start-up.
 - (1) Complete control loop tuning during this phase of process start-up.
 - (2) Continue process start-up operations until facility meets or exceeds the Contract requirements.
 - b. Process control systems testing:
 - (1) Test complete system instrumentation, controls and PLC, HMI, and LOI programming for the facility.
 - c. HVAC systems start-up and testing:
 - (1) Test complete HVAC system for the facility.
 - d. Ancillary systems start-up and testing:
 - (1) Test complete security system, phone system, fire alarm system, etc. for the facility.
 - e. Remaining equipment/system tests:
 - (1) Conduct remaining specified equipment/system performance tests that could not be performed during the Testing and Training Phase due to inter-system and/or treatment process dependencies.

C. Process Operational Period:

- 1. Prior to beginning the Process Operational Period:
 - a. Conformance with treatment standards is required prior to Operational Testing, if applicable.
 - (1) Biological processes require time to build up the necessary population of organisms to meet treatment standards, as specified in Section 01140 - Work Restrictions.
 - b. Correct any outstanding punch list items prior to the Operational Testing.
- 2. Duration: 30 calendar days.
- 3. Engineer will be present for process operational period unless such presence is expressly waived in writing.
- 4. Prove facility conformance with Contract Document requirements.
- 5. Contractor to provide:
 - a. Specified start-up materials and operating supplies.

- b. Necessary craft of labor assistance, in the event of an emergency equipment failure requiring immediate attention (emergency is defined as a failure of function which precludes the further operation of a critical segment of or the whole of the Work) with a response time of not more than 4 hours from the time of notification.
 - c. Manufacturer's authorized representative to supervise placing equipment/systems in operation and provide guidance during Operational Testing per applicable section.
 - d. Necessary manufacturer's representatives and operating supplies for retesting systems that fail to pass the initial Operational Testing due to deficiencies in products of workmanship at no additional cost to the Owner.
 - e. List of 24-hour "on-call" representative supervisory persons who will monitor the Operational Testing and serve as liaison for the Engineer and Owner.
6. Owner will provide:
- a. Operations personnel for duration of test.
7. Prior to date of Substantial Completion of Installation, the Contractor's COMMISSIONING MANAGER shall oversee Process Operational Period.
- a. Owner staff will operate the completed Project construction.
 - b. Entire system shall continuously meet performance requirements and shall operate without fault, failure, or defect for a continuous period.
 - c. Individual equipment/system failures that are corrected within 24 hours and do not prevent the entire project from continuously satisfying the established operational requirements shall not require the consecutive day test to be restarted unless the failure recurs.
 - d. Restart the consecutive test period for any of the following conditions:
 - (1) Any failure of the complete Project construction to meet operational requirements.
 - (2) When malfunctions or deficiencies cause shutdown or partial operation of the facility, or results in failure of the complete Project construction to meet operational requirements.
 - (3) Any individual equipment/system failure that meets any of the following conditions:
 - (a) Requires more than 24 hours to correct.
 - (b) Recurs within the 24-hour correction period requiring further correction.
 - (4) Immediately correct defects in material, workmanship, or equipment/system which became evident during Operational Testing.

1.08 INSTRUMENTATION AND CONTROLS FINE-TUNING

A. After the Process Operational Period, test PCIS system for additional 60 days.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

End of Section

MANUFACTURER'S CERTIFICATE OF SOURCE TESTING

OWNER _____ EQPT/SYSTEM _____
PROJECT NAME _____ EQPT TAG NO. _____
PROJECT NO. _____ EQPT SERIAL NO. _____
SPECIFICATION NO. _____
SPECIFICATION TITLE _____

Comments: _____

I hereby certify Source Testing has been performed on the above-referenced equipment/system as defined in the Contract Documents, and results conform to the Contract Document requirements. Testing data is attached.

Date of Execution: _____, 20____

Manufacturer: _____

Manufacturer's Authorized Representative Name (*print*): _____

(Authorized Signature)

If applicable, Witness Name (*print*): _____

(Witness Signature)

**MANUFACTURER'S CERTIFICATE OF INSTALLATION AND
FUNCTIONALITY COMPLIANCE**

OWNER _____ EQPT/SYSTEM _____
PROJECT NAME _____ EQPT TAG NO. _____
PROJECT NO. _____ EQPT SERIAL NO. _____
SPECIFICATION NO. _____
SPECIFICATION TITLE _____

I hereby certify that the above-referenced equipment/system has been: (Check Applicable)

- ☐ Installed in accordance with manufacturer's recommendations.
- ☐ Inspected, checked, and adjusted.
- ☐ Serviced with proper initial lubricants.
- ☐ Electrical/instrumentation and mechanical connections meet quality and safety standards.
- ☐ All applicable safety equipment has been properly installed.
- ☐ Functionally tested.
- ☐ System has been performance tested and meets or exceeds specified performance requirements.

NOTES:

Attach test results with collected data and test report.

Attach written certification report prepared by and signed by the electrical and/or instrumentation subcontractor.

Comments: _____

I, the undersigned manufacturer's representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate this equipment/system, and (iii) authorized to make recommendations required to ensure that the equipment/system furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: _____, 20 ____

Manufacturer: _____

Manufacturer's Authorized Representative Name (*print*): _____

By Manufacturer's Authorized Representative: _____

(Authorized Signature)

COMMISSIONING

TRAINING EVALUATION FORM

EQUIPMENT/SYSTEM ITEM: _____

VENDOR/MANUFACTURER: _____

DATE: _____ NAME OF REPRESENTATIVE: _____

1. Was representative prepared?	Acceptable	Unacceptable	or	N/A
2. Was an overview description presented?	Acceptable	Unacceptable	or	N/A
3. Were specific details presented for system components?	Acceptable	Unacceptable	or	N/A
4. Were alarm and shutdown conditions clearly presented?	Acceptable	Unacceptable	or	N/A
5. Were step-by-step procedures for starting, stopping, and troubleshooting presented?	Acceptable	Unacceptable	or	N/A
6. Were routine/preventative maintenance items clearly identified?	Acceptable	Unacceptable	or	N/A
7. Was the lubrication schedule (if any) discussed?	Acceptable	Unacceptable	or	N/A
8. Was the representative able to answer all questions?	Acceptable	Unacceptable	or	N/A
9. Did the representative agree to research and answer unanswered questions?	Acceptable	Unacceptable	or	N/A
10. Comments: _____				

11. Overall Rating:	Satisfactory	Unsatisfactory

Note:

Sessions judged "Unsatisfactory" by a majority of attendees shall be revised and conducted again until a satisfactory rating is achieved.

COMMISSIONING ROLES AND RESPONSIBILITIES MATRIX

NO.	TASK	OWNER	CONTRACTOR	ENGINEER
Testing and Training Phase				
Source Testing				
1	Source Testing	Witness	Lead	Witness, Review
Installation Testing				
2	Electrical Conductor Testing	No Action	Lead	Witness
3	Electrical Field Acceptance Tests	No Action	Lead	Witness
4	Instrument Field Calibration	No Action	Lead	Witness
5	Network Installation Testing	Witness	Lead	Witness
6	Loop Testing	Witness	Lead	Witness
7	Pressure Testing	No Action	Lead	Witness
8	Leak Testing	No Action	Lead	Witness
9	Holiday Testing	No Action	Lead	Witness
10	HVAC Testing	No Action	Lead	Witness
11	Motor Electrical Testing	No Action	Lead	Witness
Functional Testing				
12	Network Operational Testing	Witness	Lead	Review
13	Preliminary Run Testing Local/Manual Control	Witness	Lead	Review
14	PCIS Functional Demonstration Testing - Local/Auto Control Testing - Remote/Manual Contact Testing - Alarm Testing - Control Loop Testing	No Action	Lead	Review
15	Subsystem Start-Up and Testing	Witness	Lead	Review
16	Equipment/System Start-Up and Testing	Witness	Lead	Review
17	HVAC Start-Up and Testing	Witness	Lead	Review
18	Corrosion Control Start-Up and Testing	Witness	Lead	Review
19	Wide Area Network Communications Testing	Support	Lead	Witness
20	Manufacturer's Certificate of Installation and Functionality Compliance	No Action	Lead	Witness, Review
Clean Water Facility Testing				
21	Test Water Management Plan Finalization	Support	Lead	Review
22	Clean Water Facility Testing	Witness	Lead	Witness, Review
Process Start-Up Phase				
Process Start-Up				
23	Commissioning Documentation and Data Review	Review	Support	Lead
24	Start-Up Go/No-Go Decision Criteria	Lead	Support	Review
25	Building and Fire Inspection Compliance Check	No Action	Lead	Witness

NO.	TASK	OWNER	CONTRACTOR	ENGINEER
Testing and Training Phase				
26	HVAC Functionality Check	No Action	Lead	Witness
27	Start-Up Sequence Review	Support	Lead	Review
28	Temporary Testing Arrangement Finalization	Support	Lead	Support
29	Start-Up Forms Finalization	Support	Lead	Support
30	Operation Testing Plan Finalization	Review	Support	Lead
31	Test Water Management Plan Finalization	Support	Lead	Review
32	System Testing	Support	Lead	Witness
33	Control Loop Tuning	Support	Lead	Witness
34	Process Area Start-Ups	Support	Lead	Witness
35	Facility-Wide Start-Up	Support	Lead	Witness
36	Process Control Systems Testing	Support	Lead	Witness
38	HVAC Final Testing, Adjust, and Balancing	Witness	Lead	Witness, Review
Process Operational Period				
39	Operational Testing	Support	Lead	Witness, Review
40	Final Testing Reports	Support	Lead	Review
41	Water Quality Testing and Documentation	Support	Lead	Review
Instrumentation and Controls Reliability Phase				
Instrumentation and Controls Reliability Period				
42	As specified in Section 15950 - Testing, Calibration, and Commissioning			
Legend: Lead: Primarily responsible for organization, coordination, and execution of task work product or result. Support: Assist the lead with organization, coordination, and execution of task work product or result. Witness: Observe and document completion of task work product or result. Review: As necessary to accept task work product result. No Action: Limited or no involvement.				

CONTRACT FOR DESIGN-BUILD SERVICES

This **CONTRACT FOR DESIGN-BUILD SERVICES** ("Agreement") is entered into this _____ day of _____, 20__ ("Agreement Date") by and between the City of Kansas City, Missouri ("Owner") and _____ ("Design-Builder"). In consideration of the mutual covenants and obligations contained herein, Owner and Design-Builder hereby agree as follows:

WITNESSETH:

WHEREAS, on or about _____, Owner issued a Request for Qualifications ("RFQ") soliciting interested parties to submit a Statement of Qualifications ("SOQ") to serve as the design-builder for the Project; and

WHEREAS, on or about _____, Design-Builder submitted its SOQ to Owner; and

WHEREAS, on or about _____, Owner notified Design-Builder that it was one of the shortlisted proposers invited to respond to a Request for Proposals ("RFP"); and

WHEREAS, on or about _____ ("Proposal Submittal Date"), Design-Builder submitted its proposal ("Proposal") in response to the RFP; and

WHEREAS, on or about _____, Owner notified Design-Builder that it was the successful proposer; and

WHEREAS, on or about _____, Owner awarded Design-Builder this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and obligations contained herein, Owner and Design-Builder hereby agree as follows:

Article 1 **The Project**

1.1 The Project is generally referred as _____ (Project No. _____), and is specifically defined in the Contract Documents.

Article 2 **The Work**

2.1 Design-Builder shall complete all Work as specified or indicated in the Contract Documents.

Article 3 **Contract Times**

3.1 Commencement Date. Design-Builder shall commence the Work upon receipt of the Notice to Proceed ("Commencement Date"). The Commencement Date shall be no later than fifteen (15) days after the Agreement Date, unless the Parties mutually agree otherwise in writing.

3.2 Contract Times

3.2.1 Scheduled Acceptance Date. Acceptance shall be achieved as expeditiously as reasonably practicable, but in no event later than _____ ("Scheduled Acceptance Date").

3.2.2 Scheduled Final Completion Date. Final Completion of the Work shall be achieved as expeditiously as reasonably practicable, but in no event later than sixty (60) days after the Acceptance Date (the last day of such 60-day period being referred to as the "Scheduled Final Completion Date").

3.3 Schedule Adjustments. All of the scheduled completion dates set forth in Section 3.2 above (collectively referred to as "Contract Time(s)") shall be subject to adjustment in accordance with the General Conditions of Contract.

3.4 Time of the Essence. Owner and Design-Builder mutually agree that the Scheduled Acceptance Date and Scheduled Final Completion Date, individually and collectively, are of the essence of this Agreement.

3.5 Delay Liquidated Damages. Design-Builder understands that if any of the Contract Times is not attained, Owner will suffer damages which are difficult to determine and accurately specify. To compensate Owner for such damages, Design-Builder hereby agrees to pay Owner Delay Liquidated Damages as follows:

3.5.1 Acceptance. If the Acceptance Date has not been achieved by the Scheduled Acceptance Date, then Design-Builder shall pay to Owner Delay Liquidated Damages of _____ Dollars (\$_____) per day for each day between the Scheduled Acceptance Date and the Acceptance Date.

3.5.2. Final Completion. If the Final Completion Date has not been achieved by the Scheduled Final Completion Date, Designer-Builder shall pay to Owner Delay Liquidated Damages of _____ Dollars (\$_____) per day for each day between the Scheduled Final Completion Date and the Final Completion Date.

3.6 Delay Liquidated Damages Not Penalty. The Parties acknowledge, recognize and agree on the following:

(a) that because of the unique nature of the Project, it is difficult or impossible to determine with precision the amount of damages that would or might be incurred by Owner as a result of Design-Builder's failure to complete the Work on or before the applicable Contract Time(s);

(b) that any sums which would be payable under this Agreement as Delay Liquidated Damages are in the nature of liquidated damages, and not a penalty, and are fair and reasonable, and such payment represents a reasonable estimate of fair compensation for the losses that may reasonably be anticipated from such failure;

(c) that any sums which would be payable under this Agreement as Delay Liquidated Damages shall be in lieu of all liability for any and all extra costs, losses, expenses, claims, penalties and any other damages, whether special or consequential, and of whatsoever nature

incurred by Owner which are occasioned by any delay in achieving the applicable Contract Time(s); and

(d) that, in recognition of the acknowledgments above, Design-Builder is expressly estopped from arguing, and waives any rights it may have to argue, that Delay Liquidated Damages are a penalty and that they are not enforceable.

For the avoidance of doubt, and notwithstanding anything to the contrary in Paragraph (c) above, Delay Liquidated Damages are not intended to excuse Design-Builder from liability for any other breach of its obligations under the Contract Documents.

Article 4

Contract Price

4.1 **Contract Price.** The Contract Price is the sum of _____ (\$_____), as set forth in Design-Builder's Cost Proposal (attached hereto as Exhibit 4.1). The Contract Price is subject to adjustments made in accordance with Article 9 of the General Conditions of Contract. Except as specifically provided in this Agreement or the General Conditions of Contract, the Contract Price is deemed to include all sales, consumer, use and other taxes mandated by applicable Legal Requirements in effect as of the Agreement Date, as well as royalties and license fees in connection with the Work.

4.2 **Allowance Payment Items and Allowance Payment Values**

4.2.1 **General.** The Contract Price includes all Allowance Payment Items set forth in Exhibit 4.2. The corresponding Allowance Payment Values for the Allowance Payment Items are set forth in Design-Builder's Cost Proposal.

4.2.2 **Performance of Work on Allowance Payment Items.** No work shall be performed on any Allowance Payment Item without Design-Builder first obtaining in writing advanced authorization to proceed from Owner.

4.2.3 **Reconciliation of Allowance Payment Values.** If the actual costs for an Allowance Payment Item differ from the stated Allowance Payment Value, the Contract Price shall ultimately be adjusted accordingly by Change Order. If, at the time the Final Application for Payment, the actual costs for any Allowance Payment Value are less than the corresponding Allowance Payment Value, such difference shall be reflected in a Change Order that reduces the Contract Price by such difference.

Article 5

Payment Procedures

5.1 **Progress Payments.**

5.1.1 **Submission.** Design-Builder shall submit to Owner on the _____ (____) day of each month, beginning with the first month after the Commencement Date, Applications for Payment in accordance with Article 6 of the General Conditions of Contract.

5.1.2 **Payment.** Owner shall make payment within thirty (30) days after Owner's receipt of each properly submitted and accurate Application for Payment in accordance with Article 6 of the General Conditions of Contract, but in each case less the total of payments previously made,

and less amounts properly withheld under Section 6.3 of the General Conditions of Contract or otherwise.

5.2 Retainage on Progress Payments.

5.2.1 Retainage. Owner will withhold retainage in the amount of five percent (5%) on progress payments due Design-Builder. After fifty percent (50%) of the total Contract Price has been completed and requisitioned through Applications for Payment, and two and one-half (2.5%) of the Contract Price has been retained, Owner shall cease withholding any retainage from future progress payments owing to Design-Builder hereunder, *provided, however*, that Design-Builder's performance is deemed satisfactory by Owner, in its sole discretion. If Design-Builder is forecasting Acceptance to be forty-five (45) calendar days beyond the Scheduled Acceptance Date, the progress will be considered unsatisfactory and Owner shall resume withholding five percent (5%) of each invoiced amount from future payments until Owner and Design-Builder have agreed upon a plan for mitigating such delay.

5.2.2 Reduction of Retainage. Within thirty (30) days after the Acceptance Date, Owner shall release to Design-Builder all retainage, less an amount equal to: (a) two hundred percent (200%) of the reasonable value of all remaining Punch List items as of the Acceptance Date; and (b) all other amounts Owner is entitled to withhold pursuant to Section 6.3 of the General Conditions of Contract.

5.2.3 Letter of Credit. Design-Builder shall have the right to substitute an irrevocable letter of credit in lieu of cash for all or any portion of the retainage, provided that the letter of credit shall: (a) be a direct pay letter of credit payable immediately upon presentation by Owner, issued by a financial institution, and on a form, approved by Owner in its sole discretion; (b) permit partial draws and be in the amount of one hundred percent (100%) of the required retainage amount, or such lesser amount as Owner agrees in writing from time-to-time to reflect reductions in required retainage; and (c) name Owner as sole payee and beneficiary. Owner shall be entitled to draw upon the letter of credit to provide the requisite cash to satisfy any of Design-Builder's obligations under the Contract Documents. Owner shall further be entitled to draw upon the letter of credit, and hold the proceeds as retainage, if the letter of credit is not renewed or extended at least thirty (30) days prior to its expiration.

5.3 Final Payment. Owner shall pay the outstanding retention at Final Payment, in accordance with Section 6.6 of the General Conditions of Contract.

5.4 Interest. All amounts not paid when due as provided in Article 6 of the General Conditions of Contract shall bear interest in accordance with Mo. Rev. Stat. §34.057, at the rate of one and one-half percent (1.5%) per month.

5.5 Owner's Rights to Offset. Owner shall have the right to withhold Delay Liquidated Damages from any monies unpaid, otherwise due, or to become due, to Design-Builder, to demand and receive payment from Design-Builder of such Delay Liquidated Damages, and to initiate applicable dispute resolution procedures under Article 10 of the General Conditions of Contract to recover such Delay Liquidated Damages. The withholding of such damages from any monies unpaid, otherwise due, or to become due shall be in addition to retainage under the Contract Documents. Owner has the discretion to allow Delay Liquidated Damages to accrue without withholding and by doing so does not waive any rights to withhold them at a later time.

Article 6
Design-Builder's Representations

6.1 Representations. Design-Builder makes the following representations as of the Agreement Date:

(a) Design-Builder examined, carefully studied, and thoroughly understood the RFP Documents, including the Addenda.

(b) Design-Builder has visited the Site and has become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

(c) Design-Builder is familiar with and is satisfied as to all Legal Requirements that may affect cost, progress, or performance of the Work.

(d) Design-Builder has examined, carefully studied, and thoroughly understands: (1) the reports and drawings (if any) of explorations and tests of subsurface conditions at or contiguous to the Site; (2) all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified or made available by Owner; (3) environmental reports; and (4) conditions and restrictions of site access and egress.

(e) Design-Builder is aware of the nature of other work that will be undertaken by Owner's Separate Contractors, and of the relationship of such other work to the Work as indicated in the Project Requirements.

(f) Design-Builder has correlated the Project Requirements with the information known to Design-Builder, information obtained from the geotechnical and environmental reports, observations made during visits to the Site, reports and drawings identified in the RFP Documents, and all additional examinations, investigations, explorations, tests, studies and data made known to Design-Builder.

(g) Design-Builder has given Owner written notice of all conflicts, errors, ambiguities, or discrepancies that Design-Builder has discovered in the RFP Documents as of the Agreement Date and the written resolution thereof by Owner is acceptable to Design-Builder.

(h) The RFP Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

(i) Design-Builder shall be bound by and shall perform its obligations in full compliance with the Contract Documents.

Article 7
Insurance and Bonds

7.1 Insurance.

7.1.1 Insurance Requirements. Design-Builder shall procure and maintain the insurance required by Exhibit 7.1.

7.1.2 Evidence of Insurance. No later than seven (7) days after the Agreement Date,

Design-Builder shall deliver to Owner the certificates, endorsements, and other evidence of insurance required to be provided by Design-Builder in accordance with Section 5.1.3(a) of the General Conditions.

7.2 Performance and Payment Bonds.

7.2.1 Provision of the Bonds. No later than seven (7) days after the Agreement Date, Design-Builder shall deliver to Owner:

(a) a Performance Bond in the penal amount equal to one hundred percent (100%) of the Contract Price, which bond shall cover the faithful performance of all Design-Builder's obligations under the Contract Documents (the "Performance Bond"); and

(b) a Payment Bond in the penal amount equal to one hundred percent (100%) of the Contract Price (the "Payment Bond").

7.2.2 Surety Rating. The surety for the Performance and Payment Bonds shall: (a) have a rating of A- or better in the latest revision of the A.M. Best Owner's Insurance Report; (b) be authorized by law to do business in Missouri; and (c) be listed in the most recent U.S. Department of Treasury Circular 570.

7.2.3 Form of Bonds. The Performance Bond shall be in the form set forth in Exhibit 7.2.3(a) and the Payment Bond shall be in the form set forth in Exhibit 7.2.3(b).

7.2.4 Duration of Performance Bond. The Performance Bond shall remain valid for a period of two (2) years after Final Completion.

Article 8 **Contract Documents**

8.1 Contract Documents. The Contract Documents consist of the documents listed below:

1. This Agreement and all of the Exhibits;
2. General Conditions of Contract;
3. Attachment A (Project Requirements);
4. Addenda numbers ___ through ___ inclusive, to the extent such Addenda modify the other Contract Documents; and
5. Elements of Design-Builder's Technical Proposal (*to be identified and agreed upon*).
6. The following, which shall be designated, completed, delivered, prepared, or issued after the Agreement Date and are not attached hereto:
 - (a) The Released for Construction Documents.

(b) Any and all written amendments, Change Orders, Work Change Directives, and Minor Changes amending, modifying, or supplementing the Contract Documents.

8.2 Amending the Contract Documents. The Contract Documents may only be amended, modified, or supplemented through a written amendment executed by the Parties or a Change Order, Work Change Directive, or Minor Change issued in accordance with Article 9 of the General Conditions of Contract.

8.3 Order of Precedence of the Contract Documents. The Contract Documents comprise the entire agreement between Owner and Design-Builder governing the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the laws of the State of Missouri. The following order of precedence shall apply in the case of direct, irresolvable conflicts between or among Contract Documents:

1. Written amendments and Change Orders
2. Work Change Directives
3. Minor Changes
4. This Agreement, and all of the Exhibits except for Exhibit 8.3 (Elements of Design-Builder's Technical Proposal).
5. The General Conditions of Contract
6. Released for Construction Documents
7. Attachment A (Project Requirements)
8. Exhibit 8.3 (Elements of Design-Builder's Technical Proposal)

8.4 Exceptions to the Order of Precedence. Notwithstanding the order of precedence set forth in Section 8.3 above, the betterments and higher and/or more stringent standards or specifications and design and construction criteria, concepts, and drawings contained in Exhibit 8.3 (Elements of Design-Builder's Technical Proposal) shall supersede the applicable requirements of the Project Requirements and shall apply to the performance of the Work.

Article 9

Miscellaneous

9.1 Defined Terms. Terms used in this Agreement will have the meanings indicated in the General Conditions of Contract.

9.2 Notice. Whenever the Contract Documents require that notice be provided to the other Party, notice will be deemed to have been validly given: (a) if delivered in person to the individual intended to receive such notice; or (b) four (4) days after being sent by registered or certified mail, postage pre-paid, with return receipt requested, to the address indicated in the Agreement, or (c) one (1) business day after being sent by overnight delivery via a nationally recognized courier

service (e.g., FedEx or UPS), postage, transmittal or shipping charges prepaid, to the addresses set forth below:

If to Design-Builder:

If to Owner:

9.3 Consequential Damages.

9.3.1 Waiver. To the fullest extent permitted by law, and notwithstanding any other provision of the Contract Documents other than those set forth in Section 9.3.2, in no event, whether arising out of contract, breach of warranty (express or implied), tort (including negligence), strict liability, indemnity, contribution, or any other cause of or form of action whatsoever, shall either Party be liable to the other for any consequential, incidental, indirect, special, exemplary, or punitive damages (including damages for loss of use, loss of profits or anticipated profits, loss of revenue or anticipated revenue, loss of goodwill, claims from Owner's customers, borrowing or financing, productivity or shop space, increased cost of capital, punitive damages, and loss of business opportunity) arising out of or in connection with the performance or non-performance of its obligations under the Contract Documents.

9.3.2 Exceptions to Waiver. The waiver of consequential damages set forth in Section 9.3.1 above shall not be deemed to affect or waive:

- (a) Design-Builder's obligation to pay Delay Liquidated Damages in accordance with Section 3.5 above;
- (b) Design-Builder's liability for fraud, fraudulent misrepresentation, intentional misconduct, Gross Negligence, or criminal acts of Design-Builder or any DB-Related Entity;
- (c) Design-Builder's liability for its indemnity obligations under Article 7 of the General Conditions of Contract; and
- (d) Design-Builder's liability for any loss, cost, or expense to the extent such loss, cost or expense is paid by the proceeds of insurance (excluding payment of deductibles) up to the specific amounts Design-Builder is required to carry under Exhibit 7.1 to this Agreement.

9.3.3 Binding on Other Persons and Entities. The provisions of this Section 9.3: (a) shall be binding on and extend to the benefit of all successors, assignees, employees, officers, directors and Affiliates of each Party; and (b) except to the extent prohibited by applicable Legal Requirements or specific terms to the contrary in this Section 9.3, shall apply even in the event of the fault, negligence (in whole or in part), tort, strict liability, breach of contract or otherwise, of the person or entity in whose favor such provisions operate.

9.4 Alternative Technical Concepts. The accepted Alternative Technical Concepts ("ATCs"), as set forth in Design-Builder's Technical Proposal, are intended to modify and/or replace, as applicable, the Project Requirements. Design-Builder acknowledges that Owner's acceptance of

such ATCs is not intended to shift any risk or responsibility to Owner in the event that any ATC fails to be available (e.g., Equipment or Material that is unavailable from a Supplier), fails to perform as proposed by Design-Build, or is otherwise not able to be used. In such event, Design-Build shall, at its sole cost and expense, and without any adjustment to the Contract Price or Contract Times, perform the Work as originally required by the Project Requirements (i.e., prior to the modification and/or replacement of the Project Requirements to account for the ATC), or as required to produce a result that is reasonably acceptable to Owner.

9.5 Self-Performance Requirements. Design-Build shall perform with its own organization, or an Affiliate of Design-Build, not less than _____ percent (___%) of the total Contract Price. The dollar value included in the above percentage shall include the value of labor, Equipment and Materials directly performed or procured by Design-Build or its Affiliate and shall not include the value of work performed or provided by Design Consultants or Subcontractors.

9.6 MBE/WBE Requirements. Owner has adopted a Minority/Women Business Enterprise ("MBE/WBE") Program (Sections 3-421 through 3-469, Code of Ordinances). Design-Build shall comply with all MBE/WBE requirements set forth in such Program in performing its obligations under the Contract Documents.

9.7 Workforce Program and Prevailing Wage Requirements

9.7.1 Workforce Program Requirements. Owner has adopted a Construction Employment ("Workforce") Program (Sections 3-501 through 3-525, Code of Ordinances). Design-Build shall comply with all Workforce requirements set forth in such Program in performing its obligations under the Contract Documents.

9.7.2 Prevailing Wages. Design-Build shall comply and require each of its Subcontractors to comply with:

- (a) Sections 290.210 to 290.340, RSMO the State of Missouri Prevailing Wage Law (the "Law");
- (b) 8 CSR 30-3.010 to 8 CSR 30-3.060, the Prevailing Wage Law Rules (the "Rules");
- (c) The Annual Wage Order (the "Wage Order") issued by the State of Missouri's Department of Labor and Industrial Relations; and
- (d) Any applicable Annual Incremental Wage Increase (the "Wage Increase") to the Annual Wage Order.

The Law, Rules, Annual Wage Order and any Wage Increase are incorporated into and made part hereof the Contract Documents and shall be collectively referred to in this Section 9.7.2 as the "Prevailing Wage Requirements." Design-Build shall pay and require each of its Subcontractors to pay to all workers performing the Work not less than the prevailing hourly rate of wages for the class or type of work performed by the worker in accordance with the Prevailing Wage Requirements. Design-Build shall take whatever steps are necessary to insure that the prevailing hourly wage rates are paid and that all workers for Design-Build and each of its Subcontractors are paid for the class or type of work performed by the worker in accordance with the Prevailing Wage Requirements. If Design-Build shall fail to start to perform Design-Build's obligations under the Contract Documents within sixty (60) days from the Agreement Date,

Design-Builder and each of its Subcontractors shall be obligated to pay all workers in accordance with any new Wage Order, as subsequently amended by any applicable Wage Increase, issued by the Department of Labor and Industrial Relations within the aforementioned sixty (60) day period. The new Wage Order and any applicable Wage Increase shall govern notwithstanding the fact that the Wage Order being replaced might be physically attached or incorporated in the Contract Documents.

9.8 Attachments and Exhibits. The following attachments ("Attachments") and exhibits ("Exhibits") are specifically made part of, and incorporated by reference into, this Agreement:

Attachment A	Project Requirements
Exhibit 4.1	Design-Builder's Cost Proposal
Exhibit 7.1	Insurance Requirements
Exhibit 7.2.3(a)	Form of Performance Bond
Exhibit 7.2.3(b)	Form of Payment Bond
Exhibit 8.3	Elements of Design-Builder's Technical Proposal
Exhibit 9.8(a)	Mobilization and Engineering Schedule
Exhibit 9.8(b)	Proposed Baseline Schedule
Exhibit 9.8(c)	Schedule of Values for Mobilization and Engineering
Exhibit 9.8(d)	List of Key Personnel

IN WITNESS WHEREOF, Owner and Design-Builder have signed this Agreement in duplicate. One counterpart each has been delivered to Owner and Design-Builder.

OWNER:

DESIGN-BUILDER:

City of Kansas City, Missouri

(Name of Design-Builder)

(Signature)

(Signature)

(Printed Name)

(Printed Name)

(Title)

(Title)

Date: _____

Date: _____

Exhibit 7.1
Insurance Requirements

A. Design-Builder's Insurance Coverages

Design-Builder shall obtain and maintain the following insurance coverages during the performance of the Work. Policy coverage limits may be achieved through a combination of insurance policies (e.g., primary and/or excess). Owner and all additional insureds identified in Section 5.9(i)1) of the General Conditions of Contract shall be included as additional insureds on a primary, non-contributory basis for the coverages set forth in Paragraphs 2, 3, 4, and 7 below.

Any self-insured retention by Contractor must be submitted in writing for approval by City.

All insurance coverage must be written by companies that have an A.M. Best rating of "A-V" or better and are licensed or approved by the State of Missouri to do business in Missouri.

1. **Workers' Compensation and Employer's Liability Insurance** with statutory workers' compensation (Coverage A) limits and employer's liability (Coverage B) limits of at least \$1 million bodily injury by accident, each accident, and \$1 million bodily injury by disease, each employee. Coverage will be extended, if needed, to cover any claims under the United States Longshore and Harbor Workers' Compensation Act (33 U.S.C. §§ 901-950) and the Jones Act (46 U.S.C. §30104).

2. **Commercial General Liability Insurance** including coverage for premises and operations, independent contractors, personal injury, product and completed operations, explosion, collapse and underground, and broad form contractual liability of limits of at least \$2 million per occurrence and \$4 million annual aggregate applicable on a per project basis. Completed operations coverage shall continue to be carried for a period of at least five (5) years after Acceptance.

3. **Automobile Liability Insurance** with a limit of at least \$2 million combined single limit for bodily injury and property damage covering all owned (if any), non-owned, hired, or borrowed vehicles on site or off.

4. **Umbrella/Excess Liability Insurance** in excess of the underlying limits noted above for employer's liability, commercial general liability, and automobile liability in the amount of \$2 million per occurrence and in the aggregate.

5. **Builder's Risk Insurance** on an "all risks" completed value basis, including permanent and temporary works, site preparation, and foundations. Covered causes of loss shall include, but not be limited to, fire, explosion, collapse, earth movement (including subsidence, sinkhole and collapse), flood, windstorm, theft, collapse, terrorism and vandalism. The Builder's Risk insurance must be project-specific and will cover Owner, Design-Builder and all DB-Related Entities prior to Acceptance, with a limit equal to the full value of the Contract Price. Further, the policy shall include extensions of coverage with minimum sub-limits as follows: (a) at least \$500 thousand for off-site storage and transit; (b) at least \$1 million for debris removal and demolition; and (c) at least \$500 thousand for increased costs of construction, expediting expenses, soft costs (including Owner's continuing project administration expenses), professional fees and loss adjustment expenses. The policy also will include replacement cost coverage for buildings, structures, materials, supplies, equipment, machinery, and fixtures that are or will be part of the Project. Coverage will include, but not be limited to, the following (provided that commercially reasonable sub-limits will be accepted where typical): right to partial occupancy; London

Engineering Group (LEG) 3 type or equivalent coverage for design error, faulty workmanship, and/or faulty materials, testing, and change in ordinance or law. Builder's Risk Insurance must be in place before the commencement of construction activities. Design-Builder shall submit to Owner on or before the Agreement Date: (a) a letter of certification from Design-Builder or Design-Builder's insurance broker confirming that Builder's Risk Insurance compliant with the requirements contained herein will be placed prior to the commencement of construction; and (b) a specimen Builder's Risk Insurance policy with all appropriate attachments, sub-limits, etc.

6. **Contractor's Equipment** to include "all-risk" insurance covering all risk of physical damage to equipment to be used at the Site by Design-Builder and any DB-Related Party, whether leased, rented, borrowed, or used at the Site, unless covered under the Builder's Risk Insurance policy described above. Such coverage shall have minimum limits equal to the replacement cost of such equipment unless Owner approves lower minimum limits.

7. **Contractor's Pollution Liability Insurance** on a project-specific basis to indemnify for bodily injury, property damage, cleanup/remediation costs or other amounts which Design-Builder or any DB-Related Party is legally obligated to pay arising out of the Work, any transit and/or disposal at non-owned disposal sites. Such insurance will have minimum limits of \$5 million any one claim and in the aggregate and will remain in full force and effect for the period of the Work and a five (5)-year extended reporting period after Acceptance.

8. **Professional Liability Insurance** covering acts, errors, or omissions arising in connection with the Work, for not less than \$2 million any one claim and in the aggregate. This insurance shall on a "claims-made" basis and have an extended reporting or discovery "tail" period, or be renewed for a period, of not less than 10 years after the Acceptance Date. It shall also have a retroactive date effective before the commencement of any design, and shall not include any exclusionary language relating to joint ventures or partnerships or both.

B. Insurance to be Maintained by Design Consultants and Subcontractors

Design-Builder will cause all of its Design Consultants and Subcontractors to obtain and maintain the same insurance coverages as the Design Builder; or be responsible for maintaining such coverages on behalf of each party.

Owner' Owner's Advisor, and all additional insureds identified in General Conditions of Contract shall be included as additional insureds on a primary, non-contributory basis for General Liability Insurance, Automobile Liability Insurance, and Umbrella/Excess Liability Insurance. Professional Liability Insurance with the same policy requirements of the Design-Builder.

Whereas, the Design-Builder has subcontracted design work, Design Consultant(s) shall include Professional Liability Insurance with the same policy requirements of the Design-Builder.

Whereas, the Design-Builder has subcontracted construction, Subcontractor(s) shall include pollution insurance with the same policy limits and requirements of the Design-Builder and Builder's Risk insurance with a limit equal to the full value of the Subcontractor Agreement between the Design-Builder and Subcontractor(s).

Should Design-Builder implement a contractor-controlled insurance program (CCIP) providing compliant insurance for all participants with regard to on-site activities, all Construction Subcontractors enrolled in the CCIP shall still be responsible for procuring and maintaining automobile liability insurance and the other insurance coverages noted above with regard to off-site work. Owner and all additional insureds identified in General Conditions of Contract shall be included as additional insureds on a primary, non-contributory basis for the applicable insurance coverages set forth identified herein.

GENERAL CONDITIONS OF CONTRACT

Article 1 General

1.1 Mutual Obligations

1.1.1 Owner and Design-Builder commit at all times to cooperate fully with each other, and proceed on the basis of trust and good faith, to permit each Party to realize the benefits afforded under the Contract Documents.

1.2 Basic Definitions

1.2.1 For the purposes of the Contract Documents, the following words and terms shall have the meanings specified below (other words and abbreviations that have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings), *provided, however*, that capitalized terms defined in other Contract Documents, including but not limited to the Agreement, shall have the meanings specified in such document. For convenience, this Section 1.2 includes an index of capitalized terms used in the Agreement and these General Conditions of Contract.

Acceptance means satisfaction by Design-Builder of all Acceptance Date Conditions.

Acceptance Date means the date on which Acceptance of the Project occurs.

Acceptance Date Conditions means the preconditions for the achievement of Acceptance, as set forth in Section 8.2.1 below.

Acceptance Standards means the standards set forth in the Project Requirements that the Project must meet during the performance of the Acceptance Tests.

Acceptance Tests means those tests set forth in the Project Requirements required to achieve Acceptance.

Acceptance Test Plans means the testing protocols, procedures and processes for the performance of the Acceptance Tests prepared and documented by Design-Builder and approved by Owner in accordance with Section 2.14.3 below.

Acceptance Test Report means the report and all supporting data provided by Design-Builder to Owner in accordance with Section 2.14.6 below and the Project Requirements demonstrating that the Acceptance Tests have been conducted, the Acceptance Standards have been demonstrated and all other Acceptance Date Conditions have been achieved.

Addenda means written or graphic instruments issued by or on behalf of Owner prior to the Agreement Date that clarify, correct, or modify the RFP Documents.

Affiliate means, (a) any person or entity which directly or indirectly through one or more intermediaries controls, or is controlled by, or is under common control with, Design-Builder or any of its members, partners or shareholders holding an interest in Design-Builder; and (b) any person or entity for which ten percent (10%) or more of the equity interest in such person or entity is held directly or indirectly, beneficially or of record by: (i) Design-Builder; (ii) any of Design-Builder's members, partners or shareholders that own ten percent (10%) or more of Design-Builder or Design-Builder's members, partners or shareholders; or (iii) any Affiliate of Design-Builder under clause (a) of this definition. For purposes of this definition the term "control" means the possession, directly or indirectly, of the power to cause the direction of the management of a person and/or entity, whether through voting securities, by contract, family relationship or otherwise.

Agreement has the meaning set forth in the Preamble, and refers to the document titled "Agreement by and Between Owner and Design-Builder," signed by both Parties, and further includes all Exhibits expressly identified in the Agreement.

Agreement Date has the meaning set forth in the Preamble.

Allowance Payment Item means an item or portion of the Work which has not been defined sufficiently, or for which Owner has yet to make certain decisions necessary, to permit pricing by Design-Builder.

Allowance Payment Value means the estimated dollar amount included in the Schedule of Values as a placeholder value for an Allowance Payment Item, pending acceptance by Owner of pricing offered by Design-Builder and other applicable terms.

Alternative Technical Concepts (ATCs) mean those modifications to the Project Requirements proposed by Design-Builder in its Proposal and that were accepted by Owner.

Application for Payment means a request for payment in form acceptable to Owner that is submitted by Design-Builder to Owner on a monthly basis, or other periodic basis acceptable to Owner, and which includes, without limitation, all supporting documentation and information required by Owner or the Contract Documents.

Bankrupt Party has the meaning set forth in Section 11.5.1 below.

Baseline Schedule has the meaning set forth in Section 2.1.3 below. The Baseline Schedule, among other things, shall identify certain events that are critical to the orderly progress and timely completion of the Work and the dates by which such events are required to occur. The Baseline Schedule shall be in a critical path method format, and shall include all information, data, and detail required by the Project Requirements.

Books and Records means all documents (whether paper, electronic, or other media) and electronically stored information, including, but not limited to, any and all books, correspondence, receipts, vouchers, estimates, records, contracts, cost data, schedules, Subcontracts, schedules, job cost reports, and other data, including computations and projections, of Design-Builder and any of its Subcontractors related to bidding, negotiating, pricing, or performing the Work.

Builder's Risk Insurance means the policy of insurance required under the Agreement identified as the Builder's Risk policy, which policy is intended to provide property insurance for the construction Work in progress and other coverages.

Certificate of Acceptance means a certification issued by Owner to Design-Builder, stating that Design-Builder, to the best of Owner's actual knowledge and belief, has achieved Acceptance, and confirming that date upon which such event occurred as well as other information as more specifically set forth in Section 8.2 below.

Certificate of Final Completion means a certification issued by Owner to Design-Builder, stating that Design-Builder, to the best of Owner's actual knowledge and belief, has achieved Final Completion, and confirming that date upon which such event occurred as well as other information as more specifically set forth in Section 8.3 below.

Change Order has the meaning set forth in Section 9.1.3 below.

Commencement Date has the meaning set forth in Section 3.1 of the Agreement.

Commissioning means starting up, operating and maintaining the Work, or specific portions of the Work, in order to test, tune and adjust the Equipment and Materials, systems, subsystems

and processes comprising the Work to: (a) achieve stable operating conditions; (b) prepare the Project for Design-Builder's performance of the Acceptance Tests; and (c) conduct and document the results of Acceptance in accordance with the Project Requirements.

Commissioning Plan means the testing protocols, procedures and processes for conducting Commissioning activities in accordance with the Project Requirements and Section 2.14.1 below.

Compensable Delays has the meaning set forth in Section 8.6.1 below.

Confidential Information has the meaning set forth in Section 13.1.1 below.

Contract Documents means those documents specifically referenced and listed in the Section 9.1 of the Agreement as Contract Documents.

Contract Price has the meaning set forth in Section 4.1 of the Agreement.

Contract Time(s) has the meaning set forth in Section 3.2 of the Agreement.

Cost of the Work has the meaning set forth in Section 9.8.1 below. *day* or *days* mean calendar days unless otherwise specifically noted in the Contract Documents.

DB-Related Entity means Design Consultants, Subcontractors, Sub-Subcontractors, and anyone for whose acts any of them may be legally or contractually responsible.

Delay Liquidated Damages mean those liquidated damages associated with the failure of Design-Builder to achieve Acceptance on or before the Scheduled Acceptance Date and/or Final Completion on or before the Scheduled Final Acceptance Date.

Design-Builder has the meaning set forth in the Preamble.

Design-Builder's Cost Proposal means Exhibit 4.1 to the Agreement.

Design-Builder's Project Manager means that person designated by Design-Builder under Section 2.1.1 below, who will be the principal representative of Design-Builder with respect to the performance of the Work.

Design-Builder's Representative means that person designated by Design-Builder under Section 2.1.1 below, who shall be the principal representative of Design-Builder with respect to contractual matters, and shall have full authority to act on behalf of Design-Builder and make binding decisions on behalf of Design-Builder with respect to any matter arising out of or relating to the Contract Documents.

Design-Builder's Safety Representative means that person designated by Design-Builder under Section 2.8.1 below, whose principal duty shall be the prevention of accidents and the protection of all persons and property located on or adjacent to the Site. Design-Builder's Safety Representative shall take such action as appropriate to ensure the proper implementation of, and compliance with, safety policies, precautions, procedures and plans.

Design-Builder Proposed Change Order means a proposed change order submitted to Owner from Design-Builder in accordance with Section 9.5 below.

Design Consultant is a qualified, licensed design professional, eligible to provide professional engineering, architectural and/or land surveying services, who may be an employee of Design-Builder, or may be retained by Design-Builder or any DB-Related Entity, to furnish design services required under the Contract Documents.

Differing Site Conditions has the meaning set forth in Section 4.3.1 below.

Directive Letter has the meaning set forth in Section 9.6.1 below.

Electronic Data has the meaning set forth in Section 12.1.1 below.

Equipment and Materials shall mean all of the equipment, materials, machinery, apparatus, structures, supplies and other goods required by the terms of the Contract Documents to complete the Work and to be incorporated into the Project or provided to Owner. The term "Equipment and Materials" shall not be construed to include any construction equipment, supplies, materials, apparatus or tools owned by Design-Builder or any DB-Related Entity that are used to complete the Work but are not contemplated under the Contract Documents to become incorporated into the Project or to be provided to Owner.

Excusable Delay has the meaning set forth in Section 8.4.1 below.

Exhibits has the meaning set forth in Section 9.8 of the Agreement.

Final Application for Payment means the Application for Payment submitted by Design-Builder to Owner after Design-Builder has achieved Final Completion, requesting payment of the unpaid balance of the Contract Price (less any amounts properly withheld by Owner).

Final Completion has the meaning set forth in Section 8.3 below.

Final Completion Date means the date that Final Completion occurs.

Force Majeure Events are those events that are beyond the reasonable control of Design-Builder, all DB-Related Entities, and Owner, including but not limited to the events of war, terrorism, floods, labor disputes (other than those set forth in Section 8.4.2(b)), earthquakes, epidemics, pandemics, public health emergencies, unusually severe and abnormal weather conditions, and other acts of God.

General Conditions of Contract refers to this document.

Good Engineering and Construction Practice means those methods, techniques, standards, and practices which, at the time they are to be employed and in light of the circumstances known or reasonably believed to exist at such time, are generally recognized and accepted as good engineering, equipping, installation, construction, commissioning, and testing practices for the design, construction, and improvement of capital projects in the water treatment industry similar to the Project in scope and complexity using the design-build delivery method, under similar circumstances, as followed in the United States.

Governmental Approval means any authorization, consent, approval, license, lease, ruling, permit, certification, exemption, or registration by or with any Governmental Unit.

Governmental Unit means any national, state or local government, any political subdivision thereof, or any governmental, quasi-governmental, judicial, public or statutory instrumentality, administrative agency, authority, body or other person and/or entity having jurisdiction over the Site, performance of the Work, the Project or the Parties.

Gross Negligence means: (a) a marked and flagrant departure from the standard of conduct of a reasonable person acting in the circumstances at the time of the alleged misconduct; and/or (b) such wanton or reckless conduct or omissions as constitutes, in effect, a disregard for harmful, foreseeable and avoidable risks or consequences; provided that Gross Negligence does not include any act or failure to act insofar as it: (i) constituted mere ordinary negligence; or (ii) was done or omitted in accordance with the written instructions or written approval of the

Parties.

Hazardous Environmental Condition means the presence of Hazardous Materials in such quantities or circumstances that may be reasonably considered to present an imminent or substantial safety or health hazard for Owner, Design-Builder, any DB-Related Entity, and their respective employees, agents or representatives, the general public or the surrounding environment.

Hazardous Materials means any materials, waste, substances and chemicals deemed to be hazardous under applicable Legal Requirements.

Key Personnel means those individuals designated as such in Exhibit 9.8(d) to the Agreement.

Legal Requirements means all applicable federal, state and local laws, codes, ordinances (including the Code of Ordinances of Kansas City, Missouri), rules, statutes, regulations, orders and decrees, and other requirements of any Governmental Unit, including, without limitation, any interpretation of such items by the applicable Governmental Unit.

Liquidated Damages means Delay Liquidated Damages.

Mobilization and Engineering Schedule means that schedule attached as Exhibit 9.8(a) to the Agreement.

Named Team Members means those persons or entities specifically identified in Design-Builder's Technical Proposal as "Named Team Members."

Notice of Design-Builder Claim for Change Order has the meaning set forth in Section 9.5.1 below.

Notice of Termination for Convenience means a written notice from Owner to Design-Builder that terminates the right of Design-Builder to perform all or a portion of the Work, specifying the date upon which such notice shall be deemed effective and any other applicable terms.

Operations and Maintenance Data (O&M Data) mean the manual(s) and other information as required by the Project Requirements that provide overall operating approach and strategy for the Project, as well as the Services Manuals required for operating and maintaining the Equipment and Materials, facilities and systems, including the related computer programs prepared by Design-Builder containing detailed standard procedures and other specific instructions, policies, directives, routines, schedules and other matters relating to the Project, developed and maintained as required by Section 2.10 below.

Overhead and Profit Markup means all field, Project, and home office overhead, including, but not limited to: (a) field supervision and administration above the general foreman level, such as superintendents, assistant superintendents, purchasing agents, accountants, clerks, timekeepers, office managers, and all others on the field staff; (b) office supplies; (c) drinking water; (d) temporary heat, light and power; (e) field toilets; (f) costs of services; (g) small tools and expendable materials required for, or consumed in, the performance of the Work; (h) telephone system and charges; (i) facsimile machines, telephones, telegrams, and the charges associated therewith; (j) photographs; (k) photocopying; (l) postage; (m) insurance; (n) taxes; (o) general and administrative expenses incurred at the home, branch, and/or district offices; and (p) profit.

Owner is the City of Kansas City, Missouri.

Owner Indemnitee means and includes Owner, Owner's Advisor, and their officers, directors, employees, representatives, and agents.

Owner's Advisor is the entity set forth in the Agreement.

Owner's Representative means that person designated by Owner under Section 3.3.1 below, who shall have full authority to act on behalf of Owner with respect to the Project.

Party or *Parties* has the meaning set forth in the Preamble.

Payment Bond has the meaning set forth in Section 7.2.1(b) of the Agreement.

Performance Bond has the meaning set forth in Section 7.2.1(a) of the Agreement.

Preamble means the introductory paragraphs of the Agreement that identify, among other things, the Agreement Date, the Parties and the background to the Parties entering into the Agreement.

Pre-Existing Intellectual Property means Design-Builder's proprietary algorithms, software, hardware, databases and other background technology and intellectual property that Design-Builder developed or licensed from third parties prior to the Agreement Date.

Project is the project set forth in Article 1 of the Agreement.

Project Requirements mean all documents set forth in Attachment A to the Agreement.

Project Warranties has the meaning set forth in Section 2.9.1 below.

Project Warranties Term means that period from the Agreement Date through the date that is two (2) years following the Acceptance Date, as such period may be extended pursuant to Section 2.9.6, *provided, however*, that if the Contract Documents require a longer warranty period for a specific element of the Work, the Project Warranties Term for such specific element of the Work shall be that longer warranty period.

Proposal means that document submitted by Design-Builder pursuant to the RFP.

Proposal Submittal Date means the date Design-Builder submitted its Proposal to Owner.

Proposed Baseline Schedule means that schedule attached as Exhibit 9.8(b) to the Agreement.

Punch List means that list of Work that has been identified as incomplete in accordance with Section 2.11 below.

Released for Construction Documents mean those final, complete design documents that: (a) are to be used for performing the construction and in correlation with all applicable Governmental Approvals; (b) have been signed and sealed by a properly licensed Design Consultant or a properly licensed employee of Design-Builder; and (c) have been approved by Owner in accordance with Section 2.4.5 below.

RFP has the meaning set forth in the Preamble.

RFP Documents mean those documents identified as such in the RFP.

Scheduled Acceptance Date means the date that is set forth in Section 3.2.2 of the Agreement.

Scheduled Final Completion Date means the date that is set forth in Section 3.2.3 of the Agreement.

Schedule of Values for Mobilization and Engineering means that schedule of values attached as Exhibit 9.8(c) to the Agreement.

Separate Contractor means a person and/or entity, other than Design-Builder, retained by Owner to perform work or to provide services, or Equipment and Materials, in connection with the Project.

Site is the parcels of land or premises on which the Project is located, as more specifically described in the Project Requirements.

Subcontract means any and all agreements between Design-Builder and any DB-Related Entity.

Subcontractor means any person or entity (other than Design Consultants) with whom Design-Builder has entered into any Subcontract for such person or entity to perform any portion of the Work, including Suppliers.

Sub-Subcontractor is any person or entity (other than a Design Consultant) retained by a Subcontractor as an independent contractor to perform any portion of a Subcontractor's Work, including Suppliers.

Subsystem Test Plans means the testing protocols, procedures and processes for conducting functional testing activities in accordance with the Project Requirements and Section 2.13.2 below.

Supplier is any person or entity retained by Design-Builder or a DB-Related Entity to provide Equipment and Materials, or construction equipment, supplies or other goods to be used in the performance of the Work but not incorporated into the Work.

TIA has the meaning set forth in Section 8.5.3 below.

Training Plan means Design-Builder's plan for the training of Owner employees in the long-term operations and maintenance of the Project, as developed and executed by Design-Builder, in conjunction with the qualified technical trainers of Subcontractors, Sub-Subcontractors and Suppliers, and in accordance with the Project Requirements.

Work means all work, services, activities and other obligations to be performed by Design-Builder under the Contract Documents, including without limitation, design, engineering, permitting, procurement of Equipment and Materials, project management, supervision, construction, commissioning, start-up, testing and all other services and deliverables reasonably inferable from the Contract Documents required to achieve Final Completion.

Work Change Directive means a written order prepared and signed by Owner, directing a change in the Work prior to agreement on an adjustment in any Contract Time, Contract Price, or other terms in the Contract Documents pertaining to the change in the Work.

Work Product means all drawings, specifications, calculations, data, models, images, materials, products, documents, and work developed or produced by or on behalf of Design-Builder in connection with the Project, including, without limitation all materials, products, and such items developed or produced by all Design Consultants, Subcontractors and Sub-Subcontractors, whether in hard-copy, digital or electronic data, or any other medium.

Article 2

Design-Builder's Services and Responsibilities

2.1 General.

2.1.1 The parties will meet within seven (7) days after the Commencement Date to discuss issues affecting the administration of the Work and to implement the necessary procedures, including those relating to submittals and payment, to facilitate the ability of the parties to perform their obligations under the Contract Documents.

2.1.2 The Mobilization and Engineering Schedule shall be the basis for monitoring Design-Builder's performance of the Work until such time as the Baseline Schedule has been approved by Owner in accordance with Section 2.1.3 below. Likewise, the Schedule of Values for Mobilization and Engineering shall be used as the basis for payment for Design-Builder's activities for the first one hundred eighty (180) days after the Commencement Date. The Mobilization and Engineering Schedule will be updated each month to indicate planned and actual progress and forecast activities within the 180-day period covered by such schedule.

2.1.3 Within one hundred twenty (120) days from the Commencement Date, Design-Builder shall submit to Owner, for its review and approval, the following:

(a) A proposed Baseline Schedule that includes, among other things: (1) the order in which Design-Builder proposes to carry out the Work; and (2) the times when submissions and approvals or consents by Owner are required (*provided, however*, that such times shall be no less than Owner's minimum review duration identified in Section 3.1 below). The proposed Baseline Schedule shall be derived from the Proposed Baseline Schedule, and meet the format and other requirements established by the Contract Documents to demonstrate that all major Project components, activities, and events are being performed in a logical sequence for Design-Builder to achieve the Contract Times.

(b) A proposed Schedule of Values that shall be consistent with the Schedule of Values for Mobilization and Engineering, and shall consist of a detailed breakdown of the Contract Price into measurable components of the completed Work for the purpose of making payment to Design-Builder. The Schedule of Values shall be compatible with and representative of the Baseline Schedule.

(c) A proposed forecast of monthly cash flow requirements for the entire Project, incorporating the actual cash flow for the time elapsed since the Commencement Date.

(d) If Owner does not approve a proposed submission under Paragraphs (a), (b), or (c) above, Design-Builder shall submit a revised submission to Owner within seven (7) days of its receipt of Owner's comments on such submission. This process shall continue until such time as the submission is so approved by Owner, which submission shall be then deemed, as applicable, the Proposed Baseline Schedule, Schedule of Values for Mobilization and Engineering, and forecast of monthly cash flow Requirements. Design-Builder shall provide Owner with updates of these documents as set forth in the Contract Documents.

(e) Owner's review and approval of the Baseline Schedule shall not be construed as relieving Design-Builder of its complete and exclusive control over the means, methods, sequences and techniques for executing the Work.

2.1.4 Design-Builder shall designate a member of its Key Personnel as its Project manager (the "Design-Builder's Project Manager"), who shall be reasonably available to Owner and shall have the necessary expertise and experience required to supervise the Work. Design-Builder's Project Manager will be stationed at the Site and present at all appropriate times. Design-Builder will have a representative at the Site authorized to act on its behalf when Design-Builder's Project Manager is not present. Design-Builder shall also designate a qualified member of its Key Personnel as its Project representative (the "Design-Builder's Representative"), who shall communicate regularly with Owner and shall be vested with the authority to act on behalf of Design-Builder. Neither Design-Builder's Project Manager or Design-Builder's Representative may be replaced without prior written approval of Owner, with such approval not to be unreasonably withheld, and any replacement shall

be acceptable to Owner.

2.1.5 Design-Builder shall provide management, supervision and professional staff for the Work in accordance with the organizational chart set forth in Design-Builder's Technical Proposal. Design-Builder acknowledges the importance of its Key Personnel in successfully performing the Project. Absent separation of employment, none of the Key Personnel may be withdrawn from the Project without prior written approval of Owner, with such approval not to be unreasonably withheld. It is understood and agreed that Design-Builder will provide Owner with at least thirty (30) days written notice of any request to withdraw any Key Personnel or Named Team Member. Any replacement personnel shall have equivalent skill, experience and reputation. Design-Builder shall remove or replace, or have removed or replaced, any personnel performing the Work if Owner has a reasonable objection to such individual.

2.1.6 Design-Builder shall participate in monthly progress meetings with Owner. During such meetings, progress during the prior month shall be reviewed. These meetings shall be attended by, among other: (a) Design-Builder's Project Manager and other required Design-Builder personnel, as well as key Subcontractors and Design Consultants responsible for Work completed during the specified duration and Work scheduled during the upcoming reporting duration; and (b) Owner representatives and others as designated by Owner. Owner may direct that personnel from Design-Builder and DB-Related Entities attend any or all meetings if Owner believes, in its sole opinion, that such personnel are necessary to have at such meetings.

2.1.7 Design-Builder assumes responsibility to Owner for the proper performance of the Work of all DB-Related Entities and any acts and omissions in connection with such performance.

2.2 Design Professional Services.

2.2.1 Design-Builder shall, consistent with applicable state licensing laws, provide or furnish through Design Consultants or qualified, licensed design professionals employed by Design-Builder, the necessary design services, including architectural, engineering and other design professional services, for the preparation of the required drawings, specifications and other design submittals to permit Design-Builder to complete the Work consistent with the Contract Documents.

2.2.2 Design-Builder shall incorporate all obligations and understandings of the Contract Documents applicable to design services in its respective contracts with any Design Consultant and Subcontractors, including but not limited to the obligations relative to ownership and use of the Work Product set forth in Article 12 below.

2.3 Standard of Care.

2.3.1 Design-Builder shall perform the Work in accordance with: (a) the Contract Documents; (b) applicable Legal Requirements and Governmental Approvals; and (c) Good Engineering and Construction Practice. Notwithstanding the above, if any of (a), (b) or (c) in the preceding sentence conflict, Design-Builder shall be obligated to perform the Work in accordance with the more stringent standard.

2.4 Design Development Services.

2.4.1 Design-Builder shall review all technical specifications and design requirements included in the Project Requirements to determine whether such specifications or requirements include any errors, omissions or other deficiencies that would in any manner or to any degree impair the ability of Design-Builder to complete the Work in accordance with the Contract Documents. Design-Builder shall, within a reasonable period of time after discovery of the errors, omissions or other deficiencies, notify Owner in writing of any such errors, omissions or deficiencies, which notice shall

include a reasonable description of the issue and its likely impact on the performance of the Work. In connection with such notice, Design-Builder may request an appropriate Change Order, in accordance with the requirements of Articles 8 and 9 herein, that the Contract Price and/or Contract Time(s) be adjusted to compensate Design-Builder for the effects of any such errors, omissions or deficiencies, *provided, however*, that Owner reserves all rights to defend this requested Change Order if Owner believes that the error, omission or deficiency should have been discovered by Design-Builder prior to submitting its Proposal. The failure of Design-Builder to provide notice in accordance with this Section 2.4.1, including Articles 8 and 9 as applicable) shall constitute a waiver of any right to any price, schedule or performance relief associated with any error, omission or deficiency included in the Project Requirements.

2.4.2 Notwithstanding Section 2.4.1 above, or anything else in the Contract Documents, Design-Builder assumes and shall have exclusive responsibility for the accuracy and efficacy of the Released for Construction Documents. Accordingly, in no event shall Design-Builder be entitled to any price, schedule or performance relief associated with any error, omission or deficiency in the Released For Construction Documents, and shall bear full responsibility for the consequences of such errors, omissions or deficiencies, notwithstanding the fact that the Project Requirements may have included certain design criteria and requirements for the Work.

2.4.3. Owner shall review and act upon design submittals as set forth in the Project Requirements. Notwithstanding anything to the contrary in the Contract Documents, Owner's review, comment and/or approval of any design submittal, including but not limited to the Released for Construction Documents, shall not be deemed to transfer any design liability from Design-Builder to Owner or relieve Design-Builder of any of its obligations under the Contract Documents or liability for the design services that are part of the Work.

2.4.4 The Released for Construction Documents shall be consistent with the latest set of approved interim design submissions, and shall be submitted to Owner and approved by Owner in accordance with the Project Requirements. Design-Builder shall proceed with construction in accordance with the approved Released for Construction Documents. Any modifications to the Released for Construction Documents will constitute a change to the Contract Documents and Design-Builder shall seek Owner approval in advance of issuing such revisions.

2.4.5 To the extent not prohibited by the Contract Documents or Legal Requirements, Design-Builder may prepare interim design submissions and Released for Construction Documents for a portion of the Work to permit construction to proceed on that portion of the Work prior to completion of the Released for Construction Documents for the entire Work.

2.5 Legal Requirements.

2.5.1 Design-Builder shall perform the Work in accordance with all Legal Requirements and shall provide all notices applicable to the Work as required by the Legal Requirements.

2.5.2 Design-Builder may request an appropriate Change Order, in accordance with the requirements of Articles 8 and 9 herein, that the Contract Price and/or Contract Time(s) be adjusted to compensate Design-Builder for the impacts of any changes in the Legal Requirements enacted after the Agreement Date. Such impacts may include, without limitation, revisions Design-Builder is required to make to the Released for Construction Documents because of such changes in Legal Requirements. For the avoidance of doubt, any tariff adopted, promulgated, issued, or modified by the U.S. federal government after the Agreement Date shall be treated as a change in Legal Requirements under this Section 2.5.2, provided that such tariff or modification was not scheduled prior to the Agreement Date. Notwithstanding the above, the relief afforded by this Section 2.5.2 shall not apply to changes in Legal Requirements relating to: (a) Design-Builder's or any DB-Related Entity's corporate existence or the maintenance of its business; (b) changes in Legal Requirements affecting payroll taxes or other taxes associated with labor; or (c) changes in Legal Requirements affecting taxes imposed on an entity's gross revenue, income or profits.

2.6 Government Approvals and Permits.

2.6.1 Except as specifically identified in Section 3.4.1 below, Design-Builder shall obtain, maintain, and pay for all costs to obtain and maintain (including all application, permit and filing fees) for all necessary Governmental Approvals from or by any Governmental Unit that may be required for the proper prosecution and execution of the Work, including any additional Governmental Approval identified in the Project Requirements as the responsibility of Design-Builder. If any such Governmental Approval is required to be formally issued in the name of Owner, Design-Builder shall undertake all commercially reasonable efforts to obtain such Governmental Approvals with Owner's reasonable support and cooperation. Design-Builder shall develop all data and technical documents for Governmental Approval submittals, prepare and submit all applications, participate in meetings with Governmental Units and Owner as required, and expedite all Governmental Approvals to meet Project schedule requirements. Governmental Approval applications and other documentation required in connection with a Governmental Approval shall be subject to approval by Owner. Design-Builder shall deliver to Owner, promptly after Design-Builder's receipt, a copy of each such Governmental Approval, with a listing of the status of all such Governmental Approvals included in the monthly reports required by the Contract Documents.

2.6.2 Design-Builder shall provide all commercially reasonable assistance to Owner to obtain those Governmental Approvals that are the responsibility of Owner under Section 3.4.1 below. No construction activity will commence until: (a) all Governmental Approvals required for the relevant construction activity (including any activity that may disturb the Site) have been obtained; (b) Owner has been notified that such Governmental Approvals have been obtained; and (c) Owner has, after reviewing the validity and scope of the Governmental Approval, authorized Design-Builder to proceed.

2.6.3 Design-Builder shall ensure that the Work conforms to the requirements and stipulations of all Governmental Approvals. Design-Builder shall not be entitled to an adjustment in the Contract Price and/or Contract Time(s) for any events arising from or related to Design-Builder or any DB-Related Entity violating or failing to comply with any Governmental Approval, including but not limited to suspensions arising therefrom. Such violations and failures to comply shall be at the sole risk of Design-Builder.

2.7 Design-Builder's Construction Services.

2.7.1 Unless otherwise provided in the Contract Documents to be the responsibility of Owner or a Separate Contractor, Design-Builder shall provide through itself or Subcontractors the necessary supervision, labor, inspection, commissioning, start-up, testing, Equipment and Materials, construction equipment, supplies, temporary utilities and other temporary facilities and other related services to permit Design-Builder to achieve Acceptance and Final Completion of the Project consistent with the Contract Documents. Except as otherwise expressly set forth in the Agreement or these General Conditions of Contract, Design-Builder retains all market risk, whether or not foreseeable, pertaining to cost and availability of labor, Equipment and Materials, and all other items required or used in connection with the performance of the Work.

2.7.2 Design-Builder shall perform all construction activities efficiently and with the requisite expertise, skill and competence to satisfy the requirements of the Contract Documents. Design-Builder shall at all times exercise complete and exclusive control over the means, methods, sequences and techniques of construction, Commissioning and Acceptance Testing.

2.7.3 Design-Builder shall employ only Subcontractors who are duly licensed in Missouri and qualified to perform the Work consistent with the Contract Documents. Owner may reasonably object to Design-Builder's selection of any Subcontractor. Those Subcontractors who are Named Team Members shall be deemed acceptable to Owner for the scope of Work designated in Design-Builder's Technical Proposal.

2.7.4 Design-Builder shall coordinate the activities of all Subcontractors. If any Separate Contractor performs work on, adjacent, or in proximity to the Project or the Site, or has any element of work that interfaces or affects the Work, Design-Builder agrees to reasonably cooperate and coordinate its activities with those of such Separate Contractors so that the Project can be completed in an orderly and coordinated manner without unreasonable disruption. Design-Builder specifically agrees to attend and participate in any coordination meetings that are held by Owner to manage and coordinate the work of Design-Builder and Separate Contractors.

2.7.5 Design-Builder shall keep the Site reasonably free from debris, trash and construction wastes to permit Design-Builder to perform its construction services efficiently, safely and without interfering with the use of adjacent land areas. Upon Acceptance, Design-Builder shall remove all debris, trash, construction wastes, materials, equipment, machinery and tools arising from the Work.

2.7.6 Subject to Section 4.3 below, Design-Builder shall be responsible for all utility relocations necessary or convenient to its performance of the Work. For all such relocations, Design-Builder will meet all of Owner's requirements, procedures and standards.

2.7.7 Design-Builder shall be responsible for making arrangements to obtain, provide and pay for all temporary and permanent utilities associated with the Work, except for those utilities specifically identified in the Contract Documents as being provided by Owner and furnished without cost to Design-Builder.

2.7.8 During any adverse weather (including but not limited to unusually severe and abnormal weather conditions as referenced in Section 8.4.3 below), Design-Builder shall take commercially reasonable precautions so that the Work may progress properly.

2.8 Design-Builder's Responsibility for Project Safety.

2.8.1 Design-Builder recognizes the importance of performing the Work in a safe manner so as to prevent damage, injury or loss to: (a) all individuals at the Site, whether working or visiting; (b) the Work, including Equipment and Materials incorporated into the Work or stored on-Site or off-Site; and (c) all other property at the Site or adjacent thereto. Design-Builder assumes responsibility for implementing and monitoring all safety precautions and programs related to the performance of the Work. Design-Builder shall, prior to commencing construction, designate a member of its Key Personnel with the necessary qualifications and experience to supervise the implementation and monitoring of all safety precautions and programs related to the Work ("Design-Builder's Safety Representative"). Unless otherwise required by the Contract Documents, Design-Builder's Safety Representative shall be an individual stationed at the Site who may have responsibilities on the Project in addition to safety. The Safety Representative shall make routine daily inspections of the Site and shall hold weekly safety meetings with Design-Builder's personnel, Subcontractors of any tier, and others as applicable.

2.8.2 Design-Builder and Subcontractors shall comply with all Legal Requirements relating to safety, as well as any Owner-specific safety requirements set forth in the Contract Documents, provided that such Owner-specific requirements do not violate any applicable Legal Requirement. Design-Builder will immediately report in writing any safety-related injury, loss, damage or accident arising from the Work to Owner's Representative and, to the extent mandated by Legal Requirements, to all Governmental Units having jurisdiction over safety-related matters involving the Project or the Work. Owner shall have the right to suspend any or all Work if Design-Builder fails to comply with its obligations hereunder.

2.8.3 Design-Builder's responsibility for safety under this Section 2.8 is not intended in any way to relieve Subcontractors of any tier of their own contractual and legal obligations and responsibility for: (a) complying with all Legal Requirements, including those related to health and safety matters; and (b) taking all necessary measures to implement and monitor all safety precautions and

programs to guard against injuries, losses, damages or accidents resulting from their performance of the Work.

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2.9 Design-Builder's Project Warranties.

2.9.1 Design-Builder warrants to Owner that the Work shall, through the Project Warranties Term: (1) be new, of recent manufacture and of good quality; (2) conform to the requirements of the Contract Documents; and (3) be free of construction faults or defects, as established by the Project Requirements (collectively the "Project Warranties"). The Project Warranties are subject to the following:

(a) The Project Warranties include remedy for damages or defects caused by Commissioning and Acceptance Tests performed by Design-Builder.

(b) The Project Warranties exclude remedy for damages or defects caused by modifications not undertaken or executed by Design-Builder under this Agreement. In addition, the Project Warranties exclude remedy for damages or defects caused by Owner's improper or insufficient maintenance, Owner's improper operation, or normal wear and tear under normal usage.

2.9.2 Design-Builder shall perform or cause to be performed all warranty work in a manner that will minimize interference with the ongoing operations of the Project. Design-Builder shall provide a written plan for all proposed warranty work, unless expressly waived by Owner. If Owner prefers to accept nonconforming Work that is discovered prior to Final Completion, it may do so instead of requiring its removal and correction, in which case a Change Order will be issued, at Owner's option, to reflect a reasonable reduction in the Contract Price.

2.9.3 If Owner determines at any time during the Project Warranties Term that any of the Work is not in conformance with the requirements of the Project Warranties, it shall provide written notice to Design-Builder of such determination. Design-Builder shall, within seven (7) days of receipt of such written notice, take meaningful steps to commence correction of such nonconforming Work, including the correction, removal or replacement of the nonconforming Work and any damage caused to other parts of the Work affected by the nonconforming Work. Notwithstanding the above, Design-Builder shall respond to a verbal or electronic notification from Owner of an emergency warranty condition that could cause serious loss or damage within twenty-four (24) hours of such notification. Such response shall require that a competent representative or representatives of Design-Builder familiar with the Project, including its specific equipment, design and operational requirements, inspect the Work and, while on Site: (a) correct the problem; (b) if the problem cannot be corrected while on Site, mitigate while on Site the imminent harm from the emergency; and (c) fully correct the problem within a reasonable period of time. If Design-Builder fails to commence the necessary steps within, as applicable, such seven (7) day period (or in the event of any emergency warranty condition, respond within a twenty-four (24) hour period and correct and/or mitigate the problem as set forth in the preceding sentence), Owner, in addition to any other remedies provided under the Contract Documents, may provide Design-Builder with written notice that Owner will commence correction of such nonconforming Work with its own forces or with third party contractors. If Owner does perform such corrective Work, Design-Builder shall be responsible for all reasonable costs incurred by Owner in performing such correction, including but not limited to any retesting and reinspection costs.

2.9.4 Owner may, based on good cause, direct Design-Builder to perform a "root cause" analysis of any alleged defect in the Work. If Design-Builder fails to perform such analysis as directed by Owner, or if Owner concludes that the "root cause" analysis is flawed, Owner may elect to conduct an independent analysis of the alleged defect, whereupon Design-Builder shall cooperate with Owner and provide such information relevant to the alleged defect as Owner may request. If the "root cause" or independent analysis reveals a defect or defects in any part of the Work, Contractor shall be responsible for the costs and expenses of remedying the such defects, including the costs of the "root cause" or independent analysis. If the "root cause" or independent analysis demonstrates that there is no defect, then Owner shall bear the reasonable costs and expenses of such analyses. All remedial measures related to defects revealed by any "root cause" or independent analysis must be approved by Owner prior to implementation by Design-Builder.

2.9.5 Nothing contained in this Section 2.9 shall be construed to establish a period of limitation with respect to other obligations that Design-Builder has under the Contract Documents or under Legal Requirements with respect to the Work, including warranties and obligations with respect to latent defects. The Project Warranties Term relates only to the specific obligations of Design-Builder to respond to notices from Owner under the Project Warranties, and has no relationship to the time within which the obligation of Design-Builder to comply with the Contract Documents may be enforced, nor the time within which proceedings may be commenced to establish Design-Builder's liability with respect to its obligations under the Contract Documents.

2.9.6 The "call-back" obligations set forth in this Section 2.9 shall apply to all Work modified, corrected, repaired, replaced and/or reperformed pursuant to the Contract Documents. If, after the Acceptance Date, any Work is modified, corrected, repaired, replaced and/or reperformed, then the Project Warranties Term applicable to such portion of the Work that has been modified, corrected, repaired, replaced and/or reperformed shall be extended for one year from the date of completion of the modification, correction, repair, replacement or reperformance, but in no event longer than three (3) years after the Acceptance Date.

2.9.7 During the Project Warranties Term, Design-Builder and Owner shall be permitted to enforce all warranties provided by Suppliers and other third parties with respect to the Work. However, no such warranty shall relieve Design-Builder of any obligation with respect to the Project Warranties.

2.9.8 Design-Builder acknowledges and agrees that:

(a) It shall be fully responsible for the costs associated with all warranty work and shall reimburse Owner for its costs resulting from a breach of the Project Warranties, subject to the terms and conditions of the Contract Documents.

(b) The Project Warranties are in addition to, and not in limitation of, any other warranties, rights and remedies available under the Contract Documents or Legal Requirements, and shall not limit Design-Builder's liability or responsibility imposed by the Contract Documents or Legal Requirements with respect to the Work, including liability for negligent design defects, latent construction defects, strict liability, negligence or fraud.

(c) The provisions of this Section 2.9 shall survive the termination of the Agreement.

2.9.9 Without limiting any of the Project Warranties, Design-Builder shall, for the protection of Owner, obtain from all Subcontractors and Suppliers from which Design-Builder procures Equipment and Materials such warranties and guarantees as are normally provided with respect thereto and as may be specifically required by the Contract Documents, each of which shall be assigned to Owner to the full extent of the terms thereof. No such warranty or guarantee shall relieve Design-Builder of any obligation hereunder, and no failure of any warranted or guaranteed structures, improvements, or Equipment or Materials shall be the cause for any increase in the Contract Price or otherwise excuse Design-Builder from the performance of any Work or warranty obligation. For the avoidance of doubt, disclaimers and limitations in specific Equipment and Materials that conflict with this Section 2.9 shall not be construed to limit Design-Builder's obligations or Owner's rights under this Section 2.9.

2.9.10 Nothing in the Contract Documents is intended to limit any third party warranty that provides Owner with greater warranty rights than those provided under the Project Warranties.

2.9.11 EXCEPT FOR THE EXPRESS WARRANTIES SET FORTH IN THE CONTRACT DOCUMENTS, DESIGN-BUILDER MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, LATENT OR PATENT, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PURPOSE RELATING TO THE WORK PERFORMED UNDER THE CONTRACT DOCUMENTS, AND ALL SUCH OTHER

WARRANTIES ARE HEREBY EXPRESSLY EXCLUDED AND DISCLAIMED.

2.10 O&M Data.

2.10.1 Design-Builder shall develop and submit the O&M Data in accordance with the Project Requirements. The O&M Data shall: (a) contain a detailed description of the means and methods of properly operating and maintaining the Project; (b) document standard operating procedures and predictive, preventive and corrective maintenance procedures, practices and schedules; and (c) otherwise be sufficiently detailed to permit the Project to be operated and maintained by Owner's operations and maintenance staff.

2.11 Punch List Requirements.

2.11.1 Design-Builder shall submit a proposed Punch List to Owner when Design-Builder believes that the Work has achieved Acceptance in compliance with the Contract Documents. In no event shall the Punch List contain any incomplete items necessary for performance of the Acceptance Tests. Owner shall have the right to approve each Punch List in its reasonable discretion. The failure to include any items on such list does not alter the responsibility of Design-Builder to complete all Work in accordance with the Contract Documents.

2.11.2 Design-Builder shall promptly complete all items on the Punch List. Owner shall have the option to correct or otherwise resolve any and all Punch List items not promptly completed by Design-Builder by using its own forces or by hiring others. The reasonable cost of such correction or resolution of remaining punch list items by Owner or others shall be deducted from the final payment to Design-Builder.

2.11.3 Design-Builder acknowledges the long-term nature of the Commissioning and Acceptance Tests activities required under the Contract Documents and agrees that Owner has a material interest in the prompt completion of the items to be included on the Punch List, notwithstanding the achievement of Acceptance.

2.12 Training Plan.

2.12.1 Design-Builder shall prepare and submit to Owner the Training Plan for training of Owner's supervision, operations and maintenance employees in accordance with the Project Requirements. Owner approval of the Training Plan is a condition precedent to certain testing required for the achievement of Acceptance, which approval will not be unreasonably withheld. Consequently, Design-Builder shall complete training of designated Owner employees in accordance with the approved Training Plan prior to Acceptance in order to enable such Owner employees to assume operation and maintenance responsibility for the Project upon the Acceptance Date.

2.13 Commissioning, Functional Testing and Acceptance Testing

2.13.1 Design-Builder shall prepare and submit to Owner for its review and approval a detailed Commissioning Plan and schedule in accordance with the Project Requirements. Owner approval of the Commissioning Plan and schedule is a condition precedent to certain testing required for the achievement of Acceptance, which approval will not be unreasonably withheld.

2.13.2 Design-Builder shall prepare and submit to Owner for its review and approval detailed Subsystem Test Plans in accordance with the Project Requirements. In no event may Design-Builder commence with the performance of any installation or functional testing prior to Owner approval of the applicable Subsystem Test Plan, which approval will not be unreasonably withheld.

2.13.3 Design-Builder shall prepare and submit to Owner for its review and approval detailed Acceptance Test Plans in accordance with the Project Requirements. In no event may Design-Builder commence with the performance of any Acceptance Test prior to Owner approval of the

applicable Acceptance Test Plan, which approval will not be unreasonably withheld.

2.13.4 At least fourteen (14) days prior to the actual commencement of any Acceptance Test, Design-Builder shall certify in writing that it is ready to begin the Acceptance Test in accordance with the requirements of this Section 2.13, the Acceptance Test Plan and the Project Requirements.

2.13.5 Design-Builder shall not commence the Acceptance Tests until the following events have occurred:

(a) The requirements of Sections 2.13.3 and 2.13.4 above have been met and Owner has approved the Acceptance Test Plan with respect to the Acceptance Tests; and

(b) Design-Builder is prepared with adequate supervision, labor, Equipment and Materials to start-up the Work in accordance with the Contract Documents.

2.13.6 Design-Builder shall perform all Acceptance Tests in accordance with the Contract Documents, including but not limited to the approved Acceptance Test Plans. All Acceptance Tests shall be conducted in coordination with Owner. Design-Builder shall permit Owner and any designated representative of Owner to inspect the preparations for the Acceptance Tests and to be present for the conduct of the Acceptance Tests for purposes of ensuring compliance with the Acceptance Test Plan and the integrity of the Acceptance Tests results.

2.13.7 Within seven (7) days following the last day of successfully completing the Acceptance Tests, Design-Builder shall furnish Owner with the preliminary Acceptance Test Report consistent with the requirements specified in the Project Requirements. Owner shall review and provide approval or conditional approval within seven (7) days of receipt of such preliminary report. Within twenty-one (21) days following the last day of successfully completing the Acceptance Tests, Design-Builder shall furnish Owner with the Acceptance Test Report consistent with the requirements specified in the Project Requirements. The Acceptance Test Report shall describe and certify: (a) each Acceptance Test conducted; (b) the results of the Acceptance Tests; (c) the level of satisfaction of the Acceptance Standards relating thereto; and (d) the level of satisfaction of all Acceptance Date Conditions. The written test report shall include copies of the original data sheets, log sheets and all calculations used to determine performance during the Acceptance Tests, and copies of laboratory reports conducted in conjunction with the Acceptance Tests, including all laboratory sampling and test results. No failure of Design-Builder to furnish the certified Acceptance Test Report within the twenty-one (21) day period following the conclusion of the Acceptance Tests shall operate to adjust the Scheduled Acceptance Date.

2.14 Care, Custody and Control, Risk of Loss and Damage to Owner Property

2.14.1 Design-Builder shall have care, custody, and control of the Work (including but not limited to having responsibility for the security of the Site) until the Acceptance Date.

2.14.2 Design-Builder shall bear all risk of loss concerning the Work until the Acceptance Date, regardless of: (a) the extent to which the loss was insured or the availability of insurance proceeds; and/or (b) whether Owner had title to the Work or paid for any of the Work that was subject to a loss.

Article 3 **Owner's Services and Responsibilities**

3.1 Duty to Cooperate.

3.1.1 Owner shall, throughout the performance of the Work, cooperate with Design-Builder and

perform its responsibilities, obligations and services in a timely manner to facilitate Design-Builder's timely and efficient performance of the Work and so as not to delay or interfere with Design-Builder's performance of its obligations under the Contract Documents.

3.1.2 Owner shall provide Contractor with reasonable access to the Site, including land rights and areas for storage reasonably sufficient that Design-Builder may perform the Work in accordance with the Contract Times.

3.1.3 Owner shall provide timely reviews and approvals (where required) of interim design submissions and the Released for Construction Documents consistent with the turnaround times set forth in the Contract Documents and the Baseline Schedule, *provided, however* that, unless stated otherwise in the Contract Documents, Owner shall have twenty-one (21) days after receipt of such submissions to act upon such submissions, unless: (a) a shorter review period is specifically indicated in the Project Requirements; or (b) Design-Builder and Owner mutually agree upon a shorter review period for a specific submission. Design-Builder may, for more complex or time-sensitive submittals, request joint review meetings with Owner in the interest of expediting such reviews, and Owner will, to the extent it is reasonably able to do so, attempt to satisfy such requests. Owner approval, or narrative indicating approval by Owner or indication that Owner is approving, means that Owner is reviewing for conformance with the Contract Documents and indicating its belief at a specific time that submittals being reviewed are in conformance. In providing such approval, Owner is not accepting any responsibility or liability for itself or relieving responsibility for performance of the Design-Builder under the Contract Documents, for which the Design-Builder remains wholly responsible..

3.1.4 Owner shall give Design-Builder prompt and timely notice of any Work that Owner notices to be defective or not in compliance with the Contract Documents.

3.2 Furnishing of Services and Information.

3.2.1 Owner has provided the RFP Documents for Design-Builder to consider in developing the Proposal and for executing the Work.

3.2.2 Owner agrees to pay for power consumed by the Project and furnish and/or pay for influent water, solids, and fuels required for startup, commissioning and activities related to the normal operation of Plant equipment.

3.3 Owner's Representative.

3.3.1 Owner shall designate a representative responsible for providing Owner-Furnished Information and approvals in a timely manner to permit Design-Builder to fulfill its obligations under the Contract Documents ("Owner's Representative"). Owner's Representative shall also provide Design-Builder with prompt notice if it observes any failure on the part of Design-Builder to fulfill its contractual obligations, including any errors, omissions or defects in the performance of the Work. Owner's Representative shall communicate regularly with Design-Builder and shall be vested with the authority to act on behalf of Owner.

3.3.2 Owner's Representative shall have full authority to act on behalf of Owner with respect to matters requiring Owner's approval or authorization. Owner's Representative may delegate all or a portion of its authority to others by written notice to Design-Builder, which delegated authority may be revoked or modified at any time by written notice to Design-Builder.

3.3.3 Owner's Representative may be replaced with seven (7) days' prior written notice to Design-Builder, and may delegate its authority and responsibilities to assistants with written notice Design-Builder.

3.4 Government Approvals.

3.4.1 Owner shall obtain and pay for only the Governmental Approvals expressly set forth in the Project Requirements as being the sole responsibility of Owner.

3.4.2 Owner shall provide reasonable assistance to Design-Builder in obtaining those Governmental Approvals that are Design-Builder's responsibility.

3.5 Separate Contractors.

3.5.1 Owner is responsible for all work performed on the Project or at the Site by Separate Contractors with whom Owner has contracted. Owner shall contractually require its Separate Contractors to cooperate, and coordinate their activities so as not to interfere, with Design-Builder in order to enable Design-Builder to timely complete the Work consistent with the Contract Documents.

Article 4

Hazardous Environmental Conditions and Differing Site Conditions

4.1 Hazardous Environmental Conditions.

4.1.1 Where Owner has advised Design-Builder of known Hazardous Materials or Hazardous Environmental Conditions at the Site, these Hazardous Materials and Hazardous Environmental Conditions are part of the Work and Design-Builder shall take such action as is necessary, in accordance with applicable Legal Requirements, to plan for and to remediate and render harmless all such Hazardous Materials and Hazardous Environmental Conditions. Remediation plans for such known Hazardous Materials and Hazardous Environmental Conditions shall be provided to Owner for approval prior to undertaking the remediation.

4.1.2 If Design-Builder encounters any unknown Hazardous Environmental Conditions at the Site, it shall stop Work immediately in the affected part of the Work to the extent required to avoid any such safety or health hazard until it has taken such action as is necessary, in accordance with applicable Legal Requirements, to protect the interests of any affected party. Design-Builder shall, immediately upon encountering any Hazardous Environmental Conditions at the Site, notify Owner and, if required by Legal Requirements, assist Owner in providing notifications to all Governmental Units having jurisdiction over the Project or Site.

4.1.3 Design-Builder, in consultation with Owner, shall take all necessary measures required to ensure that Hazardous Environmental Conditions are remediated or rendered harmless in accordance with applicable Legal Requirements. Design-Builder shall, as may be directed by Owner and prior to proceeding with any such work: (a) obtain all environmental site assessments of the affected property and submit copies of such assessments to Owner for its approval; (b) develop remediation plans for the Hazardous Environmental Conditions, subject to Owner's approval; and (c) obtain on Owner's behalf all applicable Governmental Approvals to implement such plans. During the period of any investigation and remediation efforts, Design-Builder shall take all necessary measures to isolate and contain such Hazardous Environmental Conditions from the unaffected parts of the Work, and shall continue the Work to the maximum extent possible on unaffected parts of the Work.

4.1.4 Except for those Hazardous Materials and Hazardous Environmental Conditions set forth in Section 4.1.6 below, Design-Builder will be entitled, in accordance with these General Conditions of Contract, to an adjustment in the Contract Price and/or Contract Time(s) to the extent Design-Builder's cost and/or time of performance have been adversely impacted by the presence of unknown Hazardous Environmental Conditions.

4.1.5 To the fullest extent permitted by Legal Requirements, Owner shall indemnify and hold

harmless Design-Builder from and against any and all claims, losses, damages, liabilities and expenses, including attorneys' fees and expenses, arising out of or resulting from unknown Hazardous Environmental Conditions. Nothing in this Section 4.1.5 shall obligate Owner to indemnify or hold harmless Design-Builder from and against the consequences of the breach of contract, negligence, recklessness or willful misconduct of Design-Builder or any DB-Related Entity.

4.1.6 Notwithstanding anything to the contrary in this Section 4.1, Design-Builder shall bear full responsibility for the handling, treatment, storage, removal, remediation, avoidance, or other appropriate action (if any), with respect to: (a) any Hazardous Material or Hazardous Environmental Condition present at, on, in or under, or migrating and/or emanating to or from the Site, to the extent brought or caused to be brought on the Site by any act or omission of Design-Builder or any DB-Related Entity; (b) Hazardous Materials or Hazardous Environmental Conditions that are part of the Work pursuant to Section 4.1.1 above; and (c) the creation or exacerbation of any known or unknown Hazardous Environmental Condition due to the breach of contract, negligence, recklessness or willful misconduct of Design-Builder or any DB-Related Entity. To the fullest extent permitted by Legal Requirements, Design-Builder shall indemnify, defend and hold harmless each Owner Indemnitee from and against all claims, losses, damages, liabilities and expenses, including attorneys' fees and expenses, arising out of or resulting from Items (a), (b) and/or (c) above.

4.1.7 As between Owner and Design-Builder, Owner is the generator of any pre-existing Hazardous Materials or Hazardous Environmental Condition.

4.1.8 Owner represents that the Site has not been designated as a "Superfund" site by the United States Environmental Protection Agency.

4.2 Inspection of Site Conditions.

4.2.1 Design-Builder represents and warrants that it has, as of the Agreement Date, ascertained the nature and location of the Work, the character and accessibility of the Site, the existence of obstacles to construction which are ascertainable or visible upon a thorough investigation of the Site, the availability of facilities and utilities, the location and character of existing or adjacent work or structures, the surface conditions, and other general and local conditions (including labor) which might affect its performance of the Work or the cost thereof.

4.2.2 Design-Builder shall, after the Agreement Date, undertake such testing, inspections and investigations as may be necessary to perform its obligations under the Contract Documents, including but not limited to additional geotechnical evaluations or Hazardous Materials studies. All reports or analyses generated by Design-Builder's testing, inspections and investigations, including but not limited to additional geotechnical testing, shall be furnished to Owner promptly after such reports or analyses are generated.

4.3 Differing Site Conditions.

4.3.1 Concealed or latent physical conditions or subsurface conditions at the Site that: (a) materially differ from the conditions indicated in the Contract Documents; or (b) are of an unusual nature, differing materially from the conditions ordinarily encountered and generally recognized as inherent in the Work, are collectively referred to herein as "Differing Site Conditions." If Design-Builder encounters a Differing Site Condition, Design-Builder will be entitled to an adjustment in the Contract Price and/or Contract Time(s) to the extent Design-Builder's cost and/or time of performance are adversely impacted by the Differing Site Condition. The term "Differing Site Conditions" excludes: (a) conditions of which Design-Builder had actual or constructive knowledge as of the Agreement Date; and (b) conditions that should have been discovered through a reasonable Site investigation performed in accordance with Section 4.2. For the avoidance of doubt, Hazardous Environmental Conditions are not deemed Differing Site Conditions, and shall be treated as set forth under Section 4.1 above.

4.3.2 Upon encountering a Differing Site Condition, Design-Builder shall provide prompt written notice to Owner of such condition, which notice shall not be later than fourteen (14) days after such condition has been encountered. Design-Builder shall, to the extent reasonably possible, provide such notice before the Differing Site Condition has been substantially disturbed or altered.

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Article 5

Insurance and Bonds

5.1 Design-Builder's Insurance Requirements.

5.1.1 Design-Builder shall obtain and maintain, at its own cost and expense, the insurance coverages specified in Exhibit 7.1 of the Agreement, which insurance shall be in accordance with this Section 5.1.

5.1.2 All insurance required by Section 5.1 shall be from insurance companies that are duly licensed or authorized to do business in the state of Missouri, and have a current policyholder's management and financial size category rating of not less than "A-VIII" according to A.M. Best's Financial Strength and Financial Size Category.

5.1.3 Design-Builder shall deliver to Owner, with copies to each additional insured, the following:

(a) Certificates of insurance and endorsements establishing that Design-Builder has obtained and is maintaining the policies and coverages required hereunder, with the understanding that updated, compliant certificates of insurance and endorsements shall be delivered annually, at least ten (10) days prior to the expiration of any policy, to evidence renewal of the required insurance coverages.

(b) Upon request by Owner or any additional insured, evidence of such required insurance, including documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant endorsements, exclusions, and evidence of insurance required to be purchased and maintained by Design-Builder, Design Consultants, or Subcontractors. In any documentation furnished under this provision, Design-Builder, Design Consultants, and Subcontractors may block out (redact) any confidential premium or pricing information or other information not applicable to this Project or Contract.

(c) Failure of Owner or any additional insured to demand the documents required by this Section 5.1.3, or failure of Owner to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the obligation of the relevant party (i.e., Design-Builder, Design Consultant, or Subcontractor) to obtain and maintain such insurance.

5.1.4 Design-Builder shall require its Design Consultants and Subcontractors to purchase and maintain the insurance coverages specified under Section 7.1 to the Agreement.

5.1.5 Owner does not represent that insurance coverage and limits established in Section 7.1 of the Agreement will be adequate to protect the interests of Design-Builder, Design Consultants, or Subcontractors. Each such party is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Design-Builder deems necessary.

5.1.6 The insurance and insurance limits required under the Agreement are minimums and shall not be deemed as a limitation on Design-Builder's liability, or that of any DB-Related Entity, under the indemnities granted to Owner, additional insureds and other individuals and entities in the Contract Documents or otherwise.

5.1.7 If in any instance Design-Builder has not performed its obligations respecting obtaining and maintaining insurance coverage required hereunder, or is unable to enforce and collect any such insurance for failure to assert claims in accordance with the terms of the insurance policies, then for purposes of determining Design-Builder's liability and the limits thereon or determining reductions in compensation due from Owner to Design-Builder on account of available insurance, Design-Builder shall be treated as if it has elected to self-insure up to the full amount of insurance coverage that would have been available had Design-Builder performed such obligations and not

committed such failure.

5.1.8 Design-Builder, Design Consultants, and Subcontractors shall be solely responsible for any and all deductibles or self-insured retentions that shall apply under any required, or otherwise purchased, insurances and shall have no recourse against Owner for any such costs.

5.1.9 All policies of insurance that Design-Builder is required to purchase and maintain under the Agreement shall:

(a) Contain a provision requiring the insurer to give not less than thirty (30) days' prior notice to Owner whenever the insurer gives Design-Builder a notice of cancellation or non-renewal with respect to the policy (except in the case of any non-premium payment, not less than ten (10) days' prior notice, which the insurer shall be obligated to give to Owner simultaneously with providing such notice to Design-Builder). The provision required by the preceding sentence shall not be deemed to infer a right of cancellation that would otherwise not exist in the absence of such provision.

(b) Delete any specific design-build or similar exclusions that could compromise coverage because of Design-Builder's involvement in the design-build process.

(c) Contain coverage terms and conditions that reflect the industry standard for projects of a similar size, scope, and nature of this Project that the commercial market will provide and support as of the date of such insurance procurement and any subsequent renewals.

(d) Other than for professional liability insurance, workers compensation/employer's liability insurance and builder's risk insurance, where additional insured coverage is required include cross-liability clauses allowing one insured to bring a claim against another insured party. With regard to pollution liability insurance, a cross-liability clause will be allowed as long as it does not impact Owner's ability to sue another insured party and collect under the policy.

(e) Other than for professional liability insurance and workers compensation/employer's liability insurance, be endorsed so that the insurer agrees to waive, to the extent permitted by law, all rights of subrogation or action that it may have or acquire against Owner, Owner Indemnitees, or any additional insured.

(f) Other than for professional liability insurance, workers compensation/employer's liability insurance, automobile liability insurance, and contractor pollution liability insurance, contain a provision under which the insurer agrees that the failure of one insured to observe and fulfill the terms of the policy will not prejudice the coverage of the other insureds.

(g) With regard to builder's risk and any other first-party property insurance, have each policy endorsed to contain a standard mortgagee clause to the effect that Owner and other insureds will not be prejudiced by an unintended and/or inadvertent error, omission or mistaken description of the risk interest in property insured under the policies, incorrect declaration of values, failure to advise insurers of any change of risk interest or property insured, or failure to comply with a statutory requirement.

(h) For commercial general liability and umbrella/excess liability insurance, , not include defense costs within the limits of coverage or permit erosion of coverage limits by defense costs.

(i) Design-Builder's commercial general liability, automobile liability, umbrella or excess, and pollution liability must:

1. Include and list as additional insureds Owner and the Owner Indemnitees, and include coverage for the respective officers, directors, members, partners, and

employees of all such additional insureds;

2. Afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

3. Not seek contribution from insurance maintained by the additional insured; and

4. As to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Design-Builder's acts or omissions, or the acts and omissions of DB-Related Entities, in the performance of Design-Builder's operations.

5.2 Performance and Payment Bonds.

5.2.1 Design-Builder shall provide Owner with the Performance and Payment Bonds in accordance with Section 7.2 of the Agreement.

Article 6 **Payment**

6.1 General.

6.1.1 Owner shall pay Design-Builder for the Work in accordance with Articles 4 and 5 of the Agreement and this Article 6.

6.1.2 Owner shall pay Design-Builder through monthly progress payments described in Section 6.2 below, with payments to be based upon the Schedule of Values agreed upon by the Parties pursuant to Section 2.1.3 above. In making such progress payments, Owner shall retain the amounts set forth in Section 5.2.1 of the Agreement, as well as other amounts permitted under the Contract Documents or at law.

6.2 Monthly Progress Payments.

6.2.1 On or before the date established in the Agreement, Design-Builder shall submit for Owner's review and approval its Application for Payment requesting payment for all Work performed as of the date of the Application for Payment. The Application for Payment shall be accompanied by all supporting documentation required by the Contract Documents, including, without limitation, such documents, information and data as Owner may require to: (a) waive or release lien rights for all Work performed (other than with respect to any retainage then withheld); and (b) evaluate or verify the right to receive payment of any amount requested for payment.

6.2.2 The Application for Payment may request payment for Equipment and Materials not yet incorporated into the Project, provided that: (a) Owner is satisfied that the Equipment and Materials are suitably stored at either the Site or another acceptable location; (b) the Equipment and Materials are protected by suitable insurance; and (c) upon the earlier of incorporation into the Project or payment, Owner will receive the Equipment and Materials free and clear of all liens and encumbrances.

6.2.3 The Application for Payment shall constitute Design-Builder's representation that the Work described therein has been performed consistent with the Contract Documents, has progressed to the point indicated in the Application for Payment, and that title to all Work will pass to Owner free and clear of all claims, liens, encumbrances, and security interests upon the incorporation of the

Work into the Project, or upon Design-Builder's receipt of payment, whichever occurs earlier. The passage of title shall not be construed as relieving Design-Builder from the sole responsibility for all Work upon which payments have been made (including but not limited to risk of loss or the restoration of any damaged Work), or as waiving the right of Owner to require the fulfillment of all of the terms of the Contract Documents.

6.3 Withholding of Payments.

6.3.1 On or before the date established in the Agreement, Owner shall pay Design-Builder all amounts properly due. If Owner determines that Design-Builder is not entitled to all or part of an Application for Payment as a result of Design-Builder's failure to meet its obligations hereunder, it will notify Design-Builder in writing at least five (5) days prior to the date payment is due. The notice shall indicate the specific amounts Owner intends to withhold, the reasons and contractual basis for the withholding, and the specific measures Design-Builder must take to rectify Owner's concerns. Design-Builder and Owner will attempt to resolve Owner's concerns prior to the date payment is due. If the Parties cannot resolve such concerns, Design-Builder may pursue its rights under the Contract Documents, including those under Article 10 below.

6.3.2 Notwithstanding anything to the contrary in the Contract Documents, Owner shall pay Design-Builder all undisputed amounts in an Application for Payment within the times required by the Agreement. Payments which Owner disputes in good faith shall not be deemed due.

6.4 Right to Stop Work and Interest.

6.4.1 If Owner fails to pay timely Design-Builder any amount that becomes due and is not subject to a good faith dispute, then Design-Builder, in addition to all other remedies provided in the Contract Documents, may stop Work pursuant to Section 11.3 below. All payments due and unpaid, other than those subject to a good faith dispute, shall bear interest at the rate set forth in the Agreement.

6.5 Design-Builder's Payment Obligations.

6.5.1 Design-Builder will pay its Design Consultants and Subcontractors, in accordance with its contractual obligations to such parties, all the amounts Design-Builder has received from Owner on account of their work. Design-Builder will impose similar requirements on Design Consultants and Subcontractors to pay those parties with whom they have contracted. Design-Builder will indemnify and defend Owner against any claims for payment and mechanic's liens as set forth in Section 7.3 below.

6.6 Final Payment.

6.6.1 Upon achieving Final Completion in accordance with Section 8.3 below, Design-Builder shall provide Owner with a Final Application for Payment. The Final Application for Payment shall be accompanied by all supporting documentation required by the Contract Documents, including, without limitation the following:

(a) An affidavit that there are no claims, obligations or liens outstanding or unsatisfied for labor, services, Equipment or Materials, construction equipment, taxes or other items performed, furnished or incurred for or in connection with the Work which will in any way affect Owner's interests.

(b) A general release executed by Design-Builder waiving all claims, except for receipt of final payment by Design-Builder and those claims previously made in writing to Owner and remaining unsettled at the time of final payment, which previously made claims shall be specifically listed in an attachment to the general release.

- (c) Consent of Design-Builder's surety to final payment.
- (d) Certificates of insurance confirming that required coverages will remain in effect consistent with the requirements of the Contract Documents.
- (e) Final Project Workforce Monthly Report and Final Companywide Workforce Monthly Report.

6.6.2 After receipt of a proper Final Application for Payment from Design-Builder, Owner shall make final payment by the time required in the Agreement. If Owner is not in agreement with said Application, Owner shall return the final Application for Payment to Design-Builder, indicating in writing the reasons for not recommending final payment, in which case Design-Builder shall make the necessary corrections and resubmit the Final Application for Payment.

6.6.3 Final payment shall be an absolute bar to the assertion of any claim of any type by Design-Builder other than those expressly set forth in the attachment set forth in Section 6.6.1(b) above.

Article 7

Indemnification

7.1 Intellectual Property Infringement.

7.1.1 Design-Builder shall defend any action or proceeding brought against any Owner Indemnitee based on any claim that the Work, or any part thereof, or the operation or use of the Work or any part thereof, constitutes infringement or unauthorized use of any patent, trademark, copyright, or trade secret now or hereafter issued. Owner shall give prompt written notice to Design-Builder of any such action or proceeding and will reasonably provide authority, information and assistance in the defense of same. Design-Builder shall indemnify and hold harmless Owner Indemnitees from and against all damages and costs, including but not limited to attorneys' fees and expenses awarded against Owner Indemnitees or Design-Builder in any such action or proceeding. Design-Builder agrees to keep all Owner Indemnitees regularly informed of all developments in the defense of such actions.

7.1.2 If any Owner Indemnitee is enjoined from the operation or use of the Work, or any part thereof, as the result of any patent, trademark, copyright or trade secret suit, claim, or proceeding, Design-Builder shall at its sole expense take reasonable steps to procure the right to operate or use the Work. If Design-Builder cannot so procure such right within a reasonable time, Design-Builder shall promptly, at Design-Builder's option and at Design-Builder's expense: (a) modify the Work so as to avoid infringement of any such patent, trademark copyright, or trade secret; or (b) replace said Work with Work that does not infringe or violate any such patent, trademark, copyright or trade secret; *provided, however*, that any such modification or replacement shall not adversely affect the performance, use, operation, or any material characteristic of the Project, and shall be subject to the approval of the Owner Indemnitees.

7.2 Tax Claim Indemnification.

7.2.1 If, in accordance with Owner's direction, an exemption for all or part of the Work is claimed for taxes, Owner shall indemnify, defend and hold harmless Design-Builder from and against any liability, penalty, interest, fine, or tax assessment imposed by the applicable Governmental Unit, and reasonable attorneys' fees or other expenses or costs incurred by Design-Builder as a result of defending a claim caused by any action taken by Design-Builder in accordance with Owner's directive with respect to such claimed tax exemption. Owner shall furnish Design-Builder with any applicable tax exemption certificates necessary to obtain such exemption, upon which Design-Builder may rely.

7.3 Payment Claim Indemnification.

7.3.1 Provided that Owner is not in breach of its contractual obligation to make payments to Design-Builder for the Work, Design-Builder shall indemnify, defend and hold harmless Owner Indemnitees from any claims or mechanic's liens brought against Owner Indemnitees or against the Project as a result of the failure of Design-Builder or any DB-Related Entity to pay for any services, Equipment and Materials, materials, labor, equipment, taxes or other items or obligations furnished or incurred for or in connection with the Work. Within three (3) days of receiving written notice from any Owner Indemnitee that such a claim has been asserted or mechanic's lien has been filed, Design-Builder shall commence to take the steps necessary to discharge said claim or lien, including, if necessary, the furnishing of a mechanic's lien bond that will remove such claim or lien from title. If Design-Builder fails to do so, Owner Indemnitees will have the right to discharge the claim or lien and hold Design-Builder liable for costs and expenses incurred, including attorneys' fees.

7.4 Design-Builder's General Indemnification.

7.4.1 Design-Builder, to the fullest extent permitted by law, shall indemnify, hold harmless and defend Owner Indemnitees from and against claims, losses, damages, liabilities, including attorneys' fees and expenses, for bodily injury, sickness or death, and third party property damage or destruction (other than to the Work itself) to the extent resulting from the intentional misconduct or negligent acts or omissions of Design-Builder or any DB-Related Entity. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 7.4.

7.4.2 If an employee of any Design-Builder or any DB-Related Entity has a claim against any Owner Indemnitee, Design-Builder's indemnity obligation set forth in Section 7.4.1 above shall not be limited by any limitation on the amount of damages, compensation or benefits payable by or for Design-Builder or any DB-Related Entity under any employee benefit acts, including workers' compensation or disability acts.

7.5 Defense and Indemnification Procedures.

7.5.1 If any Owner Indemnitee receives notice of or otherwise has actual knowledge of a claim which it believes is within the scope of Design-Builder's indemnification under the Contract Documents, it shall by writing as soon as practicable: (a) inform Design-Builder of such claim; (b) send to Design-Builder a copy of all written materials Owner Indemnitee has received asserting such claim; and (c) notify Design-Builder that either: (i) the defense of such claim is being tendered to Design-Builder; or (ii) Owner Indemnitee has elected to conduct its own defense for a reason set forth below.

7.5.2 If the insurer under any applicable insurance policy accepts tender of defense, Design-Builder and Owner Indemnitee shall cooperate in the defense as required by the insurance policy. If no defense is provided by insurers under potentially applicable insurance policies, then the following provisions shall apply.

7.5.3 If the defense is tendered to Design-Builder, it shall within forty-five (45) days of said tender deliver to Owner Indemnitee a written notice stating that Design-Builder: (a) accepts the tender of defense and confirms that the claim is subject to full indemnification hereunder without any "reservation of rights" to deny or disclaim full indemnification thereafter; (b) accepts the tender of defense but with a "reservation of rights" in whole or in part; or (c) rejects the tender of defense if it reasonably determines it is not required to indemnify against the claim under the Contract Documents. If such notice is not delivered within such forty-five (45) days, the tender of defense shall be deemed rejected.

7.5.4 If Design-Builder accepts the tender of defense, Design-Builder shall have the right to select legal counsel for Owner Indemnitee, subject to reasonable approval of Owner Indemnitee, and Design-Builder shall otherwise control the defense of such claim, including settlement, and

bear the fees and costs of defending and settling such claim. During such defense: (a) Design-Builder shall, at Design-Builder's expense, fully and regularly inform Owner Indemnitee of the progress of the defense and of any settlement discussions; and (b) Owner Indemnitee shall, at Design-Builder's expense for all of Owner Indemnitee's reasonable out-of-pocket third party expenses, fully cooperate in said defense, provide to Design-Builder all materials and access to personnel it requests as necessary for defense, preparation and trial and which or who are under the control of or reasonably available to Owner Indemnitee and maintain the confidentiality of all communications between it and Design-Builder concerning such defense to the extent allowed by law.

7.5.5 Owner Indemnitee shall be entitled to select its own legal counsel and otherwise control the defense of such claim if: (a) the defense is tendered to Design-Builder and it refuses the tender of defense, or fails to accept such tender within forty-five (45) days, or reserves any right to deny or disclaim such full indemnification thereafter; or (b) Owner Indemnitee, at the time it gives notice of the claim or at any time thereafter, reasonably determines that: (i) a conflict exists between it and Design-Builder which prevents or potentially prevents Design-Builder from presenting a full and effective defense; or (ii) Design-Builder is otherwise not providing an effective defense in connection with the claim and Design-Builder lacks the financial capability to satisfy potential liability or to provide an effective defense. Owner Indemnitee may assume its own defense pursuant to the above by delivering to Design-Builder written notice of such election and the reasons thereof.

7.5.6 If Owner Indemnitee is entitled and elects to conduct its own defense pursuant hereto, all reasonable costs and expenses it incurs in investigating and defending and claim for which it is entitled to indemnification hereunder (and any settlements or judgments resulting there from) shall be reimbursed by Design-Builder after completion of the proceeding.

7.5.7 If Owner Indemnitee is entitled to and elects to conduct its own defense, then it shall have the right to settle or compromise the claim with Design-Builder's prior written consent, which shall not be unreasonably withheld or delayed, or with approval of the court, and with the full benefit of Design-Builder's indemnity. Notwithstanding the foregoing, if Owner Indemnitee elects to conduct its own defense and it is later determined that no indemnification obligation existed as to the particular claim, Owner Indemnitee shall pay its own costs and expenses relating thereto. In addition, if Owner Indemnitee elects to conduct its own defense because it perceives a conflict of interest, Owner Indemnitee shall pay its own costs and expenses relating thereto.

7.6 Survival.

7.6.1 All of Design-Builder's obligations under this Article 7 shall survive any termination of the Agreement, whether for cause or convenience.

Article 8 **Contract Times**

8.1 General.

8.1.1 Design-Builder agrees that it will commence performance of the Work and achieve completion of the Work within the Contract Time(s) in accordance with Article 3 of the Agreement.

8.1.2 Design-Builder shall perform the Work, as applicable, in accordance with the Mobilization and Engineering Schedule and the Baseline Schedule. Design-Builder shall provide Owner with monthly updates, or more frequently as required by conditions and progress of the Work, comparing actual progress to the Baseline Schedule, but such updates shall not be deemed to modify the Baseline Schedule or Contract Time(s), nor relieve Design-Builder of its obligations to complete the Work within the Contract Time(s), as may be adjusted in accordance with this Article 8.

8.1.3 The conditions for Acceptance are set forth in Section 8.2 below. Design-Builder acknowledges that Owner may want to take-over and operate some elements of the Work before Acceptance of the entire Work. To accomplish this, the Parties will discuss and agree upon the terms upon which Owner may do so, including but not limited to the impact of such on Design-Builder's responsibility for risk of loss, insurance and warranty.

8.2 Acceptance

8.2.1 The following conditions shall constitute the "Acceptance Date Conditions," each of which must be satisfied in all material respects by Design-Builder in order for the Acceptance Date to occur, and each of which must be and remain satisfied as of the Acceptance Date:

(a) Design-Builder shall have completed the Acceptance Tests and such tests shall have demonstrated that the Project has met all of the Acceptance Standards, as certified by Design-Builder and agreed to by Owner in accordance with the Contract Documents.

(b) Design-Builder and Owner have agreed in writing upon the Punch List (or, if they are unable to agree, Owner shall have prepared and issued the Punch List to Design-Builder within thirty (30) days of Design-Builder having submitted its proposed Punch List to Owner).

(c) All Governmental Approvals required under Legal Requirements and the Contract Documents to be obtained by Design-Builder which are necessary for the continued routine operation of the Project shall be in full force and effect and certified copies of all such Governmental Approvals shall have been delivered to Owner.

(d) Design-Builder shall be in possession of, and shall have delivered to Owner, copies of the warranties of Equipment and Materials, together with copies of all related operating manuals provided by Suppliers.

(e) Design-Builder shall have delivered to Owner the O&M Data in accordance with Section 2.10 above and the Contract Documents.

(f) Design-Builder shall have delivered to Owner all final Record Documents, the final BIM model, and other closeout documents required by the Contract Documents, as applicable to Acceptance.

(g) Design-Builder shall have satisfied its training obligations with respect to Owner's operations and maintenance staff in accordance with the approved Training Plan and the specific requirements of the Project Requirements.

(h) Owner has approved the Acceptance Test Report.

(i) All Liquidated Damages due under the Agreement have been paid or otherwise satisfied for failure of Design-Builder to achieve Acceptance on or before the Scheduled Acceptance Date.

(j) Design-Builder has satisfied all of the requirements for Acceptance set forth in the Project Requirements.

(k) Design-Builder and Owner have executed a Certification of Acceptance that all of the foregoing conditions have been satisfied.

8.2.2 When Design-Builder considers that Acceptance Date Conditions have been achieved, it shall so notify Owner in writing. Owner shall determine, within twenty-one (21) days following its receipt of such notice, whether it concurs that the Acceptance Date Conditions have been achieved. If Owner disagrees, it shall promptly send written notice to Design-Builder of the basis for its

disagreement. Design-Builder shall expeditiously correct the conditions raised by Owner in order to achieve the Acceptance Date Standards. The preceding process will continue until Owner determines that Acceptance has been achieved.

8.2.3 The Acceptance Date shall be the day on which Owner has executed the Certificate of Acceptance. However, for the sole purpose of determining Design-Builder's liability to Owner for Delay Liquidated Damages for failure to achieve Acceptance on or before the Scheduled Acceptance Date, Acceptance shall be deemed effective as of the date Design-Builder has executed the Certificate of Acceptance.

8.3 Final Completion.

8.3.1 Final Completion shall be deemed to have occurred when all of the following conditions have been satisfied:

- (a) Design-Builder has achieved Acceptance in accordance with Section 8.2 above.
- (b) All Work (including all repairs identified during or required due to the performance of successful Acceptance Tests and all clean-up and removal of construction materials, demolition debris and temporary facilities) is complete, and in all respects is in compliance with the Contract Documents.
- (c) Design-Builder shall have delivered to Owner all closeout documents and other deliverables required by the Contract Documents.
- (d) Design-Builder's surety has consented to the release of final payment to Design-Builder.
- (e) Design-Builder has certified to Owner that all of its claims against Owner have been resolved, except for those set forth in the attachment to the general release described in Section 6.6.1(b) above.
- (f) All Liquidated Damages due under the Agreement have been paid or otherwise satisfied.
- (g) Design-Builder has satisfied all of the requirements for Final Completion set forth in the Project Requirements.
- (h) Design-Builder and Owner have executed a Certification of Final Completion that all of the foregoing conditions have been satisfied.

8.3.2 When Design-Builder considers that Final Completion has been achieved, it shall so notify Owner in writing. Owner shall determine, within twenty-one (21) days following its receipt of such notice, whether it concurs that Final Completion has been achieved. If Owner disagrees, it shall promptly send written notice to Design-Builder of the basis for its disagreement. Design-Builder shall expeditiously correct the conditions raised by Owner in order to achieve Final Completion. The preceding process will continue until Owner determines that Final Completion has been achieved.

8.3.3 The Final Completion Date shall be the day on which Owner has executed the Certificate of Final Completion. However, for the sole purpose of determining Design-Builder's liability to Owner for Delay Liquidated Damages for failure to achieve Final Completion on or before the Scheduled Final Completion Date, Final Completion shall be deemed effective as of the date Design-Builder has executed the Certificate of Final Completion.

8.4 Excusable Delays.

8.4.1 The term “Excusable Delay” shall refer to delays in the performance of the Work to the extent caused directly by acts, omissions, conditions, events, or circumstances beyond the reasonable control of Design-Builder and all DB-Related Entities), including, by way of example, acts or omissions of Owner or anyone under Owner’s control (including Owner’s Separate Contractors), changes in the Work, Differing Site Conditions, unknown Hazardous Environmental Conditions, Force Majeure Events, and suspensions of work under Section 11.1 below.

8.4.2 Notwithstanding Section 8.4.1 above, all cost, time, and other risks arising from the following events or circumstances shall be borne exclusively by Design-Builder, shall not be deemed Excusable Delays, and shall not be the basis for any relief, monetary or otherwise, to Design-Builder:

- (a) general market and economic conditions affecting the availability, supply or cost of labor, Equipment and Materials, construction equipment, supplies, or commodities;
- (b) strikes, labor disputes, work slowdowns, work stoppages, boycotts or other similar labor disruptions, unless such strikes, disputes, slowdowns, stoppages, boycotts or disruption affect a specific trade on a national or regional level and were not caused by the improper acts or omissions of Design-Builder or any DB-Related Entity;
- (c) delays in obtaining or delivery of Equipment and Materials, or any other goods or services, from any DB-Related Entity, unless the DB-Related Entity’s reason for delay arises from an event that would otherwise be excusable to Design-Builder under these General Conditions of Contract;
- (d) delays of common carriers, unless the common carrier’s reason for the delay arises from an event that would otherwise be excusable to Design-Builder under these General Conditions of Contract;
- (e) bankruptcy or insolvency of any DB-Related Entity;
- (f) the inability of a DB-Related Entity to perform, unless such inability would be otherwise excusable to Design-Builder under these General Conditions of Contract;
- (g) any acts, omissions, conditions, events, or circumstances that were caused by or arose from the negligent acts, omissions, fault, recklessness, willful misconduct, breach of contract, or violation of law by Design-Builder or any DB-Related Entity; and
- (h) the exercise of any right or any act by Owner permitted under the Contract Documents, except to the extent the Contract Documents expressly require an adjustment in the Contract Time(s) as a result of such exercise or act (e.g., a change in the Work that will delay performance).

8.4.3 If Design-Builder intends to seek Excusable Delay classification for any weather condition, it shall demonstrate, as a condition to qualifying for an Excusable Delay, that the actual weather encountered was unusually severe and abnormal compared with the five-year average weather statistics compiled by the United States National Oceanic and Atmospheric Administration for the time of year and locality of the Site.

8.4.4 If Design-Builder intends to seek Excusable Delay classification for a delay in the issuance of a Governmental Approval, it shall demonstrate that: (a) Design-Builder and all applicable DB-Related Entities have submitted all applications, data, studies, reports, responses and other information required under Legal Requirements in order to obtain the Governmental Approval; (b) Design-Builder and all applicable DB-Related Entities have in all respects used commercially reasonable efforts to obtain the Governmental Approval; and (c) Design-Builder and all applicable DB-Related Entities have consistently maintained a fully responsive, engaged and respectful

professional relationship with the staff and management of the Governmental Unit in a manner that, while not expressly required under Legal Requirements, is generally recognized among regular practitioners in the permitting field as necessary on a practical level to secure similar Governmental Approvals in a timely manner in light of the discretion accorded Governmental Units under Legal Requirements.

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8.5 Adjustment of Contract Time(s).

8.5.1 Design-Builder shall be entitled to request a Change Order adjusting the Contract Time(s) to reflect not more than the amount of time Design-Builder is actually delayed by an Excusable Delay, expressly conditioned upon Design-Builder demonstrating that: (a) Design-Builder has complied with the procedural requirements of Section 8.4 and this Section 8.5; (b) the delay impacts the critical path of the Work as demonstrated by Section 8.5.3 below; (c) the delay was not foreseeable as of the Agreement Date by Design-Builder, and would not have been foreseen as of the Agreement Date by a reasonably experienced design-builder; (d) Design-Builder, in view of all the circumstances, has exercised reasonable efforts to avoid and mitigate the delay and did not, through itself or any DB-Related Entity, cause the delay; and (e) the delay for which relief is requested is not within the scope of those events or circumstances described in Section 8.4.2.

8.5.2 If Design-Builder intends to seek an adjustment in the Contract Time(s) as the result of an Excusable Delay, it shall comply with Sections 8.5.3 and 9.4 below.

8.5.3 Design-Builder shall demonstrate the critical path impact of an Excusable Delay and the impact on the Contract Time(s) through a written time impact analysis ("TIA") establishing the influence of the event on the most current monthly updated Baseline Schedule. Each TIA shall include a fragmentary network, and for events that have yet to occur (such as an Owner proposed change), the fragmentary network shall demonstrate how Design-Builder proposes to incorporate such event into the most current monthly updated Baseline Schedule. The TIA shall demonstrate: (a) the time impact based on the date the event occurred, or, in the instance of an Owner proposed change, the date such proposed change was given to Design-Builder; (b) the status of the Work at such point in time; and (c) the time computation of all affected activities.

8.6 Compensation for Delays

8.6.1 Design-Builder shall be entitled to request an adjustment of the Contract Price pursuant to the provisions of Article 9 for all Excusable Delays for which Design-Builder is entitled to a time extension pursuant to Section 8.5 above ("Compensable Delays"), *provided, however*, that Compensable Delays shall not be deemed to include: (a) Force Majeure Events; or (b) Excusable Delays where Design-Builder's performance was or would have been concurrently delayed or interrupted by any event that does not otherwise qualify as an Excusable Delay ("Concurrent Delay"). Design-Builder's sole remedy for a Concurrent Delay is an extension of the Contract Time(s), provided that Design-Builder has complied with the requirements of Section 8.5 above.

8.7 Recovery Schedules

8.7.1 Notwithstanding the right of Design-Builder to request a time extension for an Excusable Delay pursuant to this Article 8, Design-Builder agrees that it will, if directed by Owner, develop and implement a recovery schedule and plan to improve progress and take such measures to overcome such delay. Should Owner have a reasonable belief that the Contract Time(s) will not be met, then Owner has the right, but not the obligation, to so notify Design-Builder and direct Design-Builder to overcome such delay by working additional overtime, engaging additional personnel and taking such other measures as necessary to complete the Work within the Contract Time(s). If such delay is not an Excusable Delay, Design-Builder shall bear all costs related to such overtime, additional personnel and other measures. If such delay is an Excusable Delay, and Design-Builder has met the requirements of this Article 8 for an adjustment to the Contract Time(s) for such delay, then Design-Builder may request an adjustment to the Contract Price in accordance with the requirements of Article 9 for the increase in costs incurred by Design-Builder directly related to such overtime, additional personnel and other measures.

Article 9

Changes to the Contract Price and Contract Times

9.1 Right of Owner to Make Changes.

9.1.1 Without invalidating the Agreement, Owner may by written order, at any time and from time-to-time, authorize and/or request changes in, additions to, or deletions in the Work, including but not limited to those involving: (a) changes in, additions to, or deletions in the Contract Documents; (b) changes in the method, manner, sequence and time of performance of the Work (provided that Design-Builder retains and accepts full responsibility for all associated construction means, methods, techniques, sequences, and procedures); (c) changes in Owner-furnished services or deliverables, or (d) a direction to accelerate performance of the Work. If Owner proposes making a change in the Work, Owner shall advise Design-Builder and Design-Builder shall follow the processes set forth in Section 9.2 below.

9.1.2 No oral instruction, order or statement by Owner or Owner's Representative shall constitute a change under this Article 9. If Design-Builder believes that any oral instruction, order or statement by Owner may result in a change in the Work or require an adjustment to the Contract Price or the Contract Time(s), Design-Builder shall request that the oral instruction, order or statement be given in writing and shall thereafter comply with the provisions of this Article 9.

9.1.3 A "Change Order" is a written instrument issued after execution of the Agreement signed by Owner and Design-Builder, stating their agreement upon the scope of a change in the Work, and the agreed adjustment, if any, to the Contract Price, Contract Time(s), or any other requirement of the Contract Documents. Unless specifically stated to the contrary in the Change Order, an executed Change Order shall constitute the final and complete compensation and satisfaction for all costs and schedule impacts related to: (a) the implementation of the changes that are the subject of the Change Order; and (b) the cumulative impact of effects resulting from such changes on all prior Work and changes in the Work to be performed as scheduled.

9.1.4 All changes in the Work authorized by applicable Change Order shall be performed under the applicable conditions of the Contract Documents. Owner and Design-Builder shall negotiate in good faith and as expeditiously as possible the appropriate adjustments for such changes.

9.2 Work Change Directives.

9.2.1 A Work Change Directive is a written order prepared and signed by Owner directing a change in the Work prior to agreement on an adjustment in the Contract Price and/or the Contract Time(s).

9.2.2 Upon receipt of a Work Change Directive, Design-Builder shall promptly proceed with the change in the Work involved, unless Owner directs otherwise. Owner and Design-Builder shall negotiate in good faith and as expeditiously as possible the appropriate adjustments for the Work Change Directive. Upon reaching an agreement, the Parties shall prepare and execute an appropriate Change Order reflecting the terms of the agreement.

9.2.3 If the Parties are not able to agree on the method for adjusting the Contract Price for a Work Change Directive within a reasonable time, then Owner shall pay Design-Builder for such Work on a Cost of the Work basis as set forth in Section 9.7.1(c) below.

9.3 Minor Changes in the Work.

9.3.1 Minor changes in the Work do not involve an adjustment in the Contract Price and/or Contract Time(s) and do not materially and adversely affect the Work, including the design, quality, performance and workmanship required by the Contract Documents.

9.3.2 Owner may request minor changes in the Work that do not involve an adjustment in the Contract Price or Contract Time(s), and do not materially or adversely affect the Work. If Design-Builder disputes that such order involves a minor change, Design-Builder shall notify Owner in accordance with Section 9.4 below.

9.3.3 Design-Builder may make minor changes in the Work consistent with the intent of the Contract Documents, *provided, however*, that Design-Builder shall promptly inform Owner, in writing, of any such changes and record such changes on the documents maintained by Design-Builder.

9.4 Procedures Following Owner's Notice of Proposed Change.

9.4.1 Design-Builder shall, within twenty-one (21) days after receipt of notice of a proposed Owner change, prepare and submit to Owner in writing the information set forth in Section 9.5.2 below as if such change were the subject of a Design-Builder Proposed Change Order, and such other information and data as Owner may reasonably request. Owner shall endeavor to review Design-Builder's submittal with Design-Builder within twenty-one (21) days of its receipt of such submittal. If the Parties reach agreement on the terms of Owner's proposed change and Owner elects to proceed with such change, a Change Order shall be executed by the Parties. If the Parties are unable to reach agreement on the terms of the proposed change, Owner shall have the right, in its sole discretion, to direct Design-Builder to proceed with the change by issuing a Work Change Directive to Design-Builder.

9.4.2 Owner shall have the right, at any time and at its sole discretion, not to undertake any proposed change. If Owner elects not to undertake a proposed change for which Design-Builder performed design and preconstruction services in developing its submittal under Section 9.4.1 above, Design-Builder shall be paid its reasonable design and preconstruction costs incurred for such submittal.

9.5 Design-Builder Proposed Change Orders.

9.5.1 If Design-Builder believes that it is entitled under the Contract Documents to an adjustment to the Contract Price, Contract Time(s), or other relief due to any event or situation arising out of or related to the Work (including but not limited to alleged Excusable Delays, disputes over Owner's instructions or interpretation of the Contract Documents), Design-Builder shall, within seven (7) days after Design-Builder knows, or should have reasonably known, of such event or situation giving rise to the requested relief, submit to Owner a written notice labeled "Notice of Design-Builder Proposed Change Order." The Notice of Design-Builder Proposed Change Order shall describe the general nature of the event or situation and, if such Notice involves an Excusable Delay, the probable duration thereof.

9.5.2 Design-Builder shall, within fourteen (14) days after providing Owner with a Notice of Design-Builder Proposed Change Order, submit to Owner in writing: (a) a description of the facts, circumstances and contractual basis for the relief sought, with sufficient specificity for Owner to assess the matter; (b) the cost data supporting any proposed adjustments to the Contract Price; and (c) the scheduling information and analysis required under Section 8.5.3 above to support any request for adjustment to the Contract Time(s).

9.5.3 Owner shall endeavor to review Design-Builder's submittal under Section 9.5.2 above within fourteen (14) days of its receipt of such submittal. If Owner believes that Design-Builder's request is justified, in whole or in part, Owner shall advise Design-Builder and an appropriate Change Order shall be executed. If Owner disputes Design-Builder's request, and the Parties are unable to resolve the dispute, such dispute shall be resolved in accordance with Article 10 below. Owner may request clarifications and/or additional information to assist with its decision to such proposed change order.

9.6 Owner Directive Letters

9.6.1 If the Parties are unable to reach agreement on the terms of a Design-Builder Proposed Change Order under the processes set forth in Section 9.5 above, then Owner may, in its sole discretion, issue to Design-Builder a written notice ("Directive Letter") that directs Design-Builder to proceed in accordance with the terms of such notice notwithstanding the inability of the Parties to reach agreement on the terms of the Design-Builder Proposed Change Order. Design-Builder shall fully comply with all Directive Letters, and shall have the right to pursue its remedies under Article 10 below.

9.7 Contract Price Adjustments.

9.7.1 The increase or decrease in the Contract Price resulting from a change in the Work shall be determined by one or more of the following methods:

- (a) Unit prices set forth in the Agreement or as subsequently agreed to between the Parties;
- (b) A mutually accepted lump sum, properly itemized and supported by sufficient substantiating data to permit evaluation by Owner; or
- (c) If the Parties have not reached agreement on the basis of (a) or (b) above, the Contract Price shall be adjusted based upon the Cost of the Work and Overhead and Profit Markup as set forth in Section 9.8 below.

9.8 Cost of the Work and Overhead and Profit Markup.

9.8.1 The term "Cost of the Work" shall mean costs: (i) reasonably, actually and properly incurred by Design-Builder in the proper performance of the Work associated with the change; (ii) reasonably documented; and (iii) that would not have been incurred but for the change in the Work. The Cost of the Work shall include only the following:

(a) Craft Labor.

(1) Actual wages shall be computed on the base hourly rates paid by Design-Builder to its craft labor for all levels general foreman (or equivalent level) and below to perform the changed Work at the Site or, with Owner's agreement, at locations off the Site. No supervision or project management time above the general foreman level shall be included by Design-Builder as a direct labor cost, as this is covered by the Overhead Markup.

(2) Labor burden shall be established as a percent of the actual wages paid for each craft under (a) above. The burden shall be limited to payment for: vacation allowance, health and welfare, pension, apprenticeship programs and other similar programs as required for each craft, social security, unemployment insurance, and workers' compensation insurance. Labor burden shall not include expenses relating to employee profit sharing plans, bonuses, voluntary employee contributions to charities, savings plans, or general liability insurance

(b) Equipment and Materials. Design-Builder's net cost, including freight and transportation F.O.B Site, for all Equipment and Materials. All actually received quantity discounts and prompt payment discounts shall be reflected as credits for any Equipment and Materials purchased.

(c) Small Tools and Supplies. Small tools and supplies shall be paid based on five percent (5%) of the labor costs allowed in Item .1 above. Equipment and tools having a replacement value of \$500 or less, whether or not consumed or used, shall be considered small tools compensated

by the preceding percentage and no separate payment will be made therefor under any other category of cost.

(d) Construction Equipment.

(1) All construction equipment leased specifically for changes in the Work shall be at Design-Builder's net invoiced cost.

(2) If construction equipment is owned and actually engaged in the performance of the change in the Work, hourly rates will be computed based on the latest version of the "Blue Book Rental Rate for Construction Equipment." Hourly rates will be computed by dividing monthly Blue Book rates (excluding operating costs) by 176, and adjusting for region and depreciation. In the case of any machinery or equipment not referred to in the Blue Book Rental Rates, a monthly rental rate shall be computed on the basis of an amount that is the equivalent of 3% of the purchased price of such equipment. The hourly rate in such cases will be determined by dividing the monthly rate by 176 when actually operating. Payment for equipment idled as a direct result of the change, if applicable, shall be based on 40% of the rate determined herein, without inclusion of operating costs.

(e) Subcontractors. Payments properly made by Design-Builder to Subcontractors for performance of portions of the Work, including any bond premiums incurred by Subcontractors. Each Subcontractor will price its change in the Work based upon the requirements set forth in Items (a) through (d) above.

(f) Design and Engineering Changes.

(1) Payment will be made for the cost of labor for design and engineering services, whether provided by Design-Builder or a Design Consultant, equal to the sum of the following: (i) actual wages (i.e., the base wage paid to the employee exclusive of any fringe benefits); plus (ii) an overhead rate to be agreed-upon between Owner and Design-Builder, not to exceed the applicable audited overhead rate. For Design Consultants, up to an additional ten percent (10%) on the total of such labor and overhead costs may be allowed to account for profit on design and engineering service labor.

(2) Payment will be made for the recovery of necessary expenses for other direct costs incurred in performing the work of a design and/or engineering change order, whether incurred by Design-Builder or a Design Consultant, provided that such costs are not included in Design-Builder's or Design Consultant's indirect cost or overhead rate. Costs for travel, meals and lodging shall be reimbursed in accordance with Owner's Travel Reimbursement Guidelines.

(g) Bond and Builder's Risk Insurance. Payment for additional bond cost will be based upon a rate that reflects the actual additional bond premiums. Payment for additional Builder's Risk Insurance premiums will be based on the actual additional premium for the change.

(h) Miscellaneous. Other costs reasonably and properly incurred in the performance of the Work may be considered Cost of the Work to the extent approved in writing by Owner.

9.8.2 The Overhead and Profit Markup to be applied to the Cost of the Work for a change shall be as follows:

.1 For: (a) craft labor engaged under Section 9.8.1(a) above; (b) Equipment and Materials furnished under Section 9.8.1(b) above; (c) small tools and supplies furnished under Section 9.8.1(c) above; (d) rented and owned construction equipment under Section 9.8.1(d) above; and (e) miscellaneous costs under Section 9.8.1 (h) above, an Overhead and Profit Markup of ten percent (10%) will be applied.

.2 For design professional services labor engaged under Section 9.8.1(f) above, an Overhead and Profit Markup of ten percent (10%) will be applied.

.3 For bonds and Builder's Risk Insurance under Section 9.8.1(g) above, no Overhead and Profit Markup will be applied.

.4 Contractor and each higher-tier Subcontractor not performing the Work will be allowed to apply an Overhead and Profit Markup of five percent (5%) on the lower-tier Subcontractor's direct costs (i.e., excluding the lower-tier Subcontractor's Overhead and Profit Markup, regardless of the tier of the Subcontractor.

9.8.3 In the event of a Compensable Delay, Design-Builder will be entitled to recover for its time-related Project overhead costs that would not have been incurred but for the Excusable Delay. Overhead and Profit Markup of ten percent (10%) will be applied to such Project overhead costs.

9.9 Emergencies.

9.9.1 In any emergency affecting the safety of persons and/or property, Design-Builder shall act, at its discretion, to prevent threatened damage, injury or loss. Any change in the Contract Price and/or Contract Time(s) on account of emergency work shall be determined as provided in this Article 9.

9.10 Duty to Proceed.

9.10.1 Except only for Design-Builder's right to stop work under Section 11.3.1 below, no dispute between Design-Builder and Owner, including but not limited to those relating to the entitlement, cost or time associated with a notice of proposed Owner change or Design-Builder Notice of Proposed Change Order, shall interfere with the progress of the Work. Design-Builder shall have the duty to diligently proceed with the Work in accordance with Owner's instructions despite any dispute, including but not limited to those events where the Parties are in disagreement as to whether instructions from Owner constitute a change to the Work and justify adjustments to the Contract Price and/or Contract Time(s). Design-Builder's sole recourse in the event of such a dispute will be to pursue its rights under Article 10 below.

9.11 Burden of Proof.

9.10.1 Design-Builder shall bear the burden of proof in establishing its entitlement to relief under this Article 9, including but not limited to adjustments in the Contract Price and Contract Time(s).

Article 10

Contract Adjustments and Disputes

10.1 Requests for Contract Adjustments and Relief.

10.1.1 If either Design-Builder or Owner believes that it is entitled to relief against the other for any event arising out of or related to the Work or Project, such Party shall provide written notice to the other Party of the basis for its claim for relief. Such notice shall, if possible, be made prior to incurring any cost or expense and in accordance with any specific notice requirements contained in applicable sections of these General Conditions of Contract. In the absence of any specific notice requirement, written notice shall be given within a reasonable time, not to exceed twenty-one (21) days, after the occurrence giving rise to the claim for relief or after the claiming Party reasonably should have recognized the event or condition giving rise to the request, whichever is later. Such notice shall include sufficient information to advise the other Party of the circumstances giving rise to the claim for relief, the specific contractual adjustment or relief requested and the basis of such request.

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10.2 Dispute Avoidance and Resolution.

10.2.1 The Parties are fully committed to working with each other throughout the Project and agree to communicate regularly with each other at all times so as to avoid or minimize and resolve and any disputes. If any disputes do arise, Design-Builder and Owner each commit to resolving such disputes in an amicable, professional and expeditious manner.

10.2.2 Design-Builder and Owner will first attempt to resolve disputes at the field level through discussions between Design-Builder's Project Manager and Owner's Representative. Such discussions shall conclude within fourteen (14) days of the written notice provided for in Section 10.1.1 unless Owner and Design-Builder mutually agree otherwise.

10.2.3 If a dispute is not resolved at the field level within fourteen (14) days of the written notice provided for in Section 10.1.1, then, upon the written request of either Party, the dispute shall be elevated to Design-Builder's senior representative and Owner's Director or designee. Such individuals shall meet as soon as conveniently possible, but in no case later than thirty (30) days after such a request is made, to attempt to resolve such dispute. Five (5) days prior to any meetings between such individuals, the Parties will exchange relevant information that will assist the Parties in resolving the dispute.

10.2.4 Either Party shall have the right to exercise its right to initiate its rights to litigation under Section 10.4 below if a dispute has not been resolved within sixty (60) days of the request of a Party under Section 10.2.3 above to elevate the dispute to the individuals set forth in Section 10.2.3 above.

10.3 Mediation.

10.3.1 If, after the meeting set forth in Section 10.2.3 above, the senior representatives determine that the dispute cannot be resolved on terms satisfactory to both Parties, the Parties may mutually agree to mediate the dispute. For the avoidance of doubt, mediation is voluntary and will not be a condition precedent to the initiation of litigation. Any mediation will be based upon a process mutually agreed upon by the Parties.

10.4 Litigation.

10.4.1 Any and all legal proceedings between the Parties shall be solely and exclusively initiated and maintained in the state or federal courts of Jackson County, Missouri. Owner and Design-Builder each irrevocably consents to the jurisdiction of such courts in any such proceeding and each Party waives any objection it may have to the jurisdiction of any such proceeding. Any legal proceedings shall consist of a bench trial and not a trial by jury, and each party hereby waives its right to a jury trial in connection with any legal proceedings.

10.4.2 Notwithstanding Section 10.4.1 above, any prevailing Party may seek enforcement of any judgment rendered in a court in any jurisdiction where the non-prevailing Party or its property may be located.

10.5 Duty to Continue Performance.

10.6.1 Unless provided to the contrary in the Contract Documents, Design-Builder shall continue to perform the Work and Owner shall continue to satisfy its payment obligations to Design-Builder, pending the final resolution of any Dispute between Design-Builder and Owner.

Article 11

Stop Work and Termination Rights

11.1 Owner's Right to Stop Work.

11.1.1 Owner may, at any time, without cause and for its convenience, order Design-Builder in writing to stop and suspend the Work. Such suspension shall not exceed either sixty (60) consecutive days or in the aggregate more than one hundred twenty (120) days.

11.1.2 Design-Builder is entitled to seek an adjustment of the Contract Price and/or Contract Time(s) under Articles 8 and 9 below if its cost or time to perform the Work has been adversely impacted by any suspension or stoppage of the Work by Owner under Section 11.1.1.

11.2 Owner's Right to Perform and Terminate for Cause.

11.2.1 If Design-Builder, at any time, fails to: (a) provide a sufficient number of skilled workers; (b) supply the Equipment and Materials required by the Contract Documents; (c) comply with applicable Legal Requirements; (d) timely pay, without cause, Design Consultants or Subcontractors; (e) achieve Acceptance within one hundred eighty (180) days of the Scheduled Acceptance Date, as such date may be adjusted pursuant to Article 8 above; or (f) perform material obligations under the Contract Documents, then Owner, in addition to any other rights and remedies provided in the Contract Documents, by Legal Requirements, or at law or in equity, shall have the rights set forth in Sections 11.2.2 and 11.2.3 below, and as provided at law.

11.2.2 Upon the occurrence of an event set forth in Section 11.2.1 above, Owner may provide written notice to Design-Builder that it intends to terminate the Agreement unless the problem cited is cured, or commenced to be promptly cured, within seven (7) days of Design-Builder's receipt of such notice. If Design-Builder fails to cure, or reasonably commence and diligently continue to cure, such problem, then Owner may give a second written notice to Design-Builder of its intent to terminate within an additional seven (7) day period. If Design-Builder, within such second seven (7) day period, fails to cure, or reasonably commence and diligently continue to cure, such problem, then Owner may declare the Agreement terminated for default by providing written notice to Design-Builder of such declaration. Notwithstanding anything to the contrary, if Owner has provided Design-Builder with three (3) initial notices of Owner's intent to terminate the Agreement for any of the reasons set forth in Section 11.2.1 above, then Owner shall have no further obligation to provide Design-Builder with an opportunity to cure, and may terminate the Agreement for cause as set forth in a written notice from Owner.

11.2.3 Upon declaring the Agreement terminated pursuant to Section 11.2.2 above, Owner may enter upon the Site and take possession, for the purpose of completing the Work, of all Work Product, Equipment and Materials, construction equipment, supplies, scaffolds, tools, appliances and other items thereon, which have been purchased or provided for the performance of the Work, all of which Design-Builder hereby transfers, assigns and sets over to Owner for such purpose, and to employ any person or persons to complete the Work and provide all of the required labor, services, Equipment and Materials, construction equipment, supplies, and other items; *provided, however*, that Owner shall not take possession of any construction equipment, supplies, scaffolds, tools, appliances and other similar items owned or rented by Design-Builder.

11.2.4 In the event of such termination, Design-Builder shall not be entitled to receive any further payments under the Contract Documents until the Work shall be finally completed in accordance with the Contract Documents. If the unpaid balance of the Contract Price exceeds the costs of finishing the Work, including Liquidated Damages and other amounts due, Design-Builder will only be entitled to be paid for Work performed prior to its default (unless otherwise agreed to by the Parties), and the balance will be for the account of and retained by Owner. If the actual and reasonable costs of finishing the Work exceed the unpaid balance, Design-Builder shall, within thirty (30) days of receipt of written notice setting out the amount of the excess costs, pay the

difference to Owner. Such costs and expense shall include not only the reasonable cost of completing the Work (including costs to accelerate the Work as necessary to achieve Acceptance as near as possible to the Scheduled Acceptance Date), but also losses, damages, costs and expense, including reasonable attorneys' fees and expenses, incurred by Owner in connection with the re-procurement and defense of claims arising from Design-Builder's default, subject to the waiver of consequential damages and limitations of liability set forth in Article 6 of the Agreement.

11.2.5 If Owner improperly terminates the Agreement for cause, the termination for cause will be converted automatically to and treated as a termination for convenience under the provisions of Section 11.6 below.

11.3 Design-Builder's Right to Stop Work.

11.3.1 Design-Builder may, in addition to any other rights afforded under the Contract Documents or at law, stop the Work if Owner has failed to pay amounts properly due under Design-Builder's Application for Payment, *provided, however*, that amounts subject to a good faith dispute shall not be deemed properly due.

11.3.2 Should the event set forth in Section 11.3.1 above occur, Design-Builder has the right to provide Owner with written notice that Design-Builder will stop the Work unless said event is cured within seven (7) days from Owner's receipt of Design-Builder's notice. If Owner does not cure the problem within such seven (7) day period, Design-Builder may stop the Work. In such case, Design-Builder shall be entitled to make a claim for adjustment to the Contract Price and/or Contract Time(s) to the extent it incurs additional Costs of the Work or the progress of the Work has been adversely impacted by such stoppage.

11.4 Design-Builder's Right to Terminate for Cause.

11.4.1 Design-Builder, in addition to any other rights and remedies provided in the Contract Documents, may terminate the Agreement for cause for the following reasons:

(a) The Work has been stopped for sixty (60) consecutive days, or more than one hundred twenty (120) days in the aggregate, because of court order, any Government Unit having jurisdiction over the Work, failure of Owner to obtain Governmental Approvals that are Owner's responsibility under the Contract Documents, or orders by Owner under Section 11.1.1 above, provided that such stoppages are not due to the acts or omissions of Design-Builder or any DB-Related Entity; and

(b) Owner's failure to cure the problems set forth in Section 11.3.1 above within sixty (60) days after Design-Builder has stopped the Work.

11.4.2 Upon the occurrence of an event set forth in Section 11.4.1 above, Design-Builder may provide written notice to Owner that it intends to terminate the Agreement unless the problem cited is cured, or commenced to be cured, within seven (7) days of Owner's receipt of such notice. If Owner fails to cure, or reasonably commence to cure, such problem, then Design-Builder may give a second written notice to Owner of its intent to terminate within an additional seven (7) day period. If Owner, within such second seven (7) day period, fails to cure, or reasonably commence to cure, such problem, then Design-Builder may declare the Agreement terminated for default by providing written notice to Owner of such declaration. In such case, Design-Builder shall be entitled to recover in the same manner as if Owner had terminated the Agreement for its convenience under Section 11.6 below.

11.5 Bankruptcy of Owner or Design-Builder.

11.5.1 If either Owner or Design-Builder institutes or has instituted against it a case under the United States Bankruptcy Code (such Party being referred to as the "Bankrupt Party"), such event

may impair or frustrate the Bankrupt Party's ability to perform its obligations under the Contract Documents. Accordingly, should such event occur:

(a) The Bankrupt Party, its trustee or other successor, shall furnish, upon request of the non-Bankrupt Party, adequate assurance of the ability of the Bankrupt Party to perform all future material obligations under the Contract Documents, which assurances shall be provided within ten (10) days after receiving notice of the request; and

(b) The Bankrupt Party shall file an appropriate action within the bankruptcy court to seek assumption or rejection of the Agreement within sixty (60) days of the institution of the bankruptcy filing and shall diligently prosecute such action.

If the Bankrupt Party fails to comply with its foregoing obligations, the non-Bankrupt Party shall be entitled to request the bankruptcy court to reject the Agreement, declare the Agreement terminated and pursue any other recourse available to the non-Bankrupt Party under this Article 11.

11.5.2 The rights and remedies under Section 11.5.1 above shall not be deemed to limit the ability of the non-Bankrupt Party to seek any other rights and remedies provided by the Contract Documents or by law, including its ability to seek relief from any automatic stays under the United States Bankruptcy Code or the right of Design-Builder to stop Work under any applicable provision of these General Conditions of Contract.

11.6 Owner's Right to Terminate for Convenience.

11.6.1 Design-Builder's performance of Work under the Agreement may be terminated by Owner in accordance with this Section 11.6 in whole or in part, without cause or whenever Owner shall determine that such termination is in the best interest of Owner. Any such termination shall be effected by delivery to Design-Builder of a Notice of Termination for Convenience, specifying the extent to which performance of Work under the Agreement is terminated, and the date upon which such termination becomes effective.

11.6.2 Design-Builder shall comply with instructions in the Notice of Termination for Convenience and, unless such notice directs otherwise:

(a) Immediately discontinue the Work on the date specified in such notice and to the extent specified in such notice;

(b) Place no further orders or Subcontracts except as may be necessary for completion or such portion of the Work as is not discontinued;

(c) Assign to Owner any Subcontract relating to the performance of Work that is discontinued that Owner elects in writing, at its sole election and without obligation, to have assigned to it, with Owner assuming, and Design-Builder being relieved of, all obligations under the Subcontract accruing from the date of the assignment;

(d) Promptly cancel or terminate, on terms reasonably and commercially appropriate, all Subcontracts that Owner does not elect to have assigned to Owner to the extent that such Subcontracts relate to the performance of Work that is discontinued;

(e) Complete performance of such part of the Work as shall not have been terminated by the Notice of Termination for Convenience;

(f) Take such action as may be necessary, or as Owner may direct, for the protection and preservation of the property related to the Agreement which is in the possession of Design-Builder and in which Owner has or may acquire an interest; and

(g) Deliver to Owner all Work Product produced during the period commencing on the

Agreement Date to the date of the termination, which Work Product shall, for the avoidance of doubt, become the property of Owner (except for the intellectual property set forth in Section 12.3 below), to the extent that it may not have been the property of Owner before the date of termination.

Design-Builder shall proceed immediately with the performance of the above obligations notwithstanding any delay in determining or adjusting the cost, or any item of reimbursable cost, under this Section 11.6.

11.6.3 In the event of a termination for convenience, Design-Builder shall be entitled to receive only the following with respect to the terminated portion of the Project (to the extent not previously paid or subject to a good faith dispute) as its sole and exclusive remedy for such termination:

(a) Its costs performed through the date of termination in accordance with the Schedule of Values;

(b) The reasonable costs incurred by Design-Builder in the performance of its obligations under Section 11.6.2 above directly resulting directly from such termination, including all actual and reasonable demobilization costs and amounts due in settlement of terminated Subcontracts; and

(c) A fair and reasonable Overhead and Profit Markup attributable to the Work performed on the terminated portion of the Work up to the time of termination.

Design-Builder shall not be entitled to recover any overhead costs or profit on unperformed portions of the Work. In no case shall Design-Builder or any DB-Related Entity be entitled to anticipatory or unearned profits, unabsorbed overhead, opportunity costs, or consequential or other damages as a result of a termination for convenience under this Section 11.6.

11.6.4 The obligation of Owner to pay amounts due in settlement of Subcontracts under Section 11.6.3 above shall be limited to the reasonable costs incurred by Design-Builder in settling and closing out Subcontracts that Owner does not elect to have assigned to it under Section 11.6.3 above and shall be subject to cost substantiation. Any convenience termination settlement payment under any Subcontract shall be calculated in the same manner as provided in Section 11.6.3 above with respect to the convenience termination settlement payment to Design-Builder.

11.6.5 The total sum to be paid to Design-Builder under Section 11.6.3 above shall not exceed the total Contract Price as reduced by the amount of payments otherwise made and as further reduced by the price of Work not terminated.

Article 12

Ownership of Work Product

12.1 Ownership of Work Product

12.1.1 Owner shall own all rights, title and interest in the Work Product upon its receipt of such Work Product. Owner's ownership rights, include without restriction or limitation, the right of Owner, and anyone contracting with Owner, to incorporate any ideas or information from the Work Product into: (a) any other contract awarded in reference to the Project; or (b) any subsequent procurement by Owner on another project. The rights conferred herein to Owner include, without limitation, Owner's ability to use the Work Product without the obligation to notify or seek permission from Design-Builder.

12.2 Use of Work Product at Owner's Risk

12.2.1 Owner's use of the Work Product on any subsequent procurement by Owner on another project shall be at Owner's sole risk, and Design-Builder neither warrants nor represents that the

Work Product is suitable for use on another project without modification. Owner waives any rights to seek recovery from Design-Builder for any claims, damages, liabilities, losses and expenses arising out of or resulting from Owner's use of the Work Product on another project.

12.3 Pre-Existing Intellectual Property

12.3.1 Owner acknowledges and agrees that in the performance of the Work hereunder Design-Builder will use Pre-Existing Intellectual Property. Design-Builder shall retain all right, title and interest in Pre-Existing Intellectual Property. Design-Builder hereby grants to Owner licenses to the Pre-Existing Intellectual Property on a non-exclusive, cost free, irrevocable, perpetual basis for use by Owner. Owner shall not license, transfer or otherwise make available Pre-Existing Intellectual Property to any third-party without the written consent of Design-Builder, which consent is hereby granted for purposes of completing, operating, maintaining or repairing the Project following the termination or completion of this Agreement. Owner's use of any such Pre-Existing Intellectual Property for purposes other than in connection with the Project shall be at its own risk and Design-Builder shall have no liability therefor.

Article 13 **Electronic Data**

13.1 Electronic Data.

13.1.1 The Parties recognize that Contract Documents, including drawings, specifications and three-dimensional modeling (such as Building Information Models) and other Work Product may be transmitted among Owner, Design-Builder and others in electronic media as an alternative to paper hard copies (collectively "Electronic Data").

13.2 Transmission of Electronic Data.

13.2.1 Owner and Design-Builder shall agree upon the software and the format for the transmission of Electronic Data. Each Party shall be responsible for securing the legal rights to access the agreed-upon format, including, if necessary, obtaining appropriately licensed copies of the applicable software or electronic program to display, interpret and/or generate the Electronic Data.

13.2.2 Neither Party makes any representations or warranties to the other with respect to the functionality of the software or computer program associated with the electronic transmission of Work Product. Unless specifically set forth in the Agreement, ownership of the Electronic Data does not include ownership of the software or computer program with which it is associated, transmitted, generated or interpreted.

13.2.3 By transmitting Work Product in electronic form, the transmitting Party does not transfer or assign its rights in the Work Product. The rights in the Electronic Data shall be as set forth in Article 12 above. Under no circumstances shall the transfer of ownership of Electronic Data be deemed to be a sale by the transmitting Party of tangible goods.

13.3 Electronic Data Protocol.

13.3.1 The Parties acknowledge that Electronic Data may be altered or corrupted, intentionally or otherwise, due to occurrences beyond their reasonable control or knowledge, including but not limited to compatibility issues with user software, manipulation by the recipient, errors in transcription or transmission, machine error, environmental factors, and operator error. Consequently, the Parties understand that there is some level of increased risk in the use of Electronic Data for the communication of design and construction information and, in consideration of this, agree, and shall require their independent contractors, Subcontractors and Design Consultants to agree, to the following protocols, terms and conditions set forth in this Section 13.3.

13.3.2 Electronic Data will be transmitted in the format agreed upon in Section 13.2.1 above, including file conventions and document properties, unless prior arrangements are made in advance in writing.

13.3.3 The Electronic Data represents the information at a particular point in time and is subject to change. Therefore, the Parties shall agree upon protocols for notification by the author to the recipient of any changes which may thereafter be made to the Electronic Data, which protocol shall also address the duty, if any, to update such information, data or other information contained in the electronic media if such information changes prior to Final Completion of the Project.

13.3.4 The transmitting Party specifically disclaims all warranties, expressed or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose, with respect to the media transmitting the Electronic Data. However, transmission of the Electronic Data via electronic means shall not invalidate or negate any duties pursuant to the applicable standard of care with respect to the creation of the Electronic Data, unless such data is materially changed or altered after it is transmitted to the receiving Party, and the transmitting Party did not participate in such change or alteration.

Article 14

Retention and Owner's Access to Books and Records

14.1 Owner's Right to Examine, Copy and Audit.

14.1.1 Owner shall have the right to examine, copy and audit all Books and Records in connection with Work to be performed on a Cost of the Work or similar basis, including adjustments for Compensable Delays under Section 9.8.3 and disputes. In the event that Design-Builder is a joint venture, said right to examine, copy and audit shall apply collaterally and to the same extent to the Books and Records of the joint venture sponsor, and those of each individual joint venture member. No audit rights shall extend to any lump-sum amount or unit price once the parties have agreed upon such amount or price, except to the extent such audit rights are required under applicable Legal Requirements.

14.1.2 Upon written notice by Owner, Design-Builder immediately shall make available at its office at all reasonable times the Books and Records for examination, audit, or reproduction. Notice shall be in writing, delivered by hand or by certified mail, and shall provide not fewer than five (5) days' notice of the examination and/or audit. Owner may take possession of such Books and Records by reproducing such Books and Records for off-site review or audit. When requested in Owner's written notice of examination and/or audit, Design-Builder shall provide Owner with copies of electronic and electronically stored Books and Records in a reasonably usable format that allows Owner to access and analyze all such Books and Records. For Books and Records that require proprietary software to access and analyze, Design-Builder shall provide Owner with two licenses with maintenance agreements authorizing Owner to access and analyze all such Books and Records. If Design-Builder is unable to provide the licenses, Design-Builder shall provide Owner with access to Design-Builder's project accounting system whereby Owner can obtain applicable Books and Records, including job cost reports, material distribution reports, labor cost reports, labor productivity reports, standard time/overtime analysis reports, manhour reports, and the like.

14.1.3 Owner has sole discretion as to the selection of an examiner or auditor and the scope of the examination or audit.

14.1.4 Design-Builder shall preserve all of its Books and Records, and Owner may examine, audit, or reproduce the Books and Records, from the Agreement Date until the later of three (3) years after: (a) final payment under this Contract; (b) final settlement of a termination for convenience under Section 12.2; or, in the event of litigation between the Parties, (c) the final resolution of any such litigation.

14.1.5 Failure by Design-Builder to make available to Owner its Books and Records or Design-Builder's refusal to cooperate with a notice of audit shall be deemed a material breach of the Contract and grounds for termination.

14.1.6 Design-Builder shall insert a clause containing all the provisions of this Article 14 in all Subcontracts over \$10,000.

Article 15

Miscellaneous

15.1 Confidential Information.

15.1.1 Confidential Information is defined as information which is determined by the transmitting Party to be of a confidential or proprietary nature and: (a) the transmitting Party identifies as either confidential or proprietary; (b) the transmitting Party takes steps to maintain the confidential or proprietary nature of the information; and (c) the document is not otherwise available in or considered to be in the public domain, and was not available to the receiving Party prior to its disclosure on a non-confidential basis (provided that the source of the information is not known by the receiving Party to be bound by a confidentiality agreement or otherwise prohibited from transmitting such information by a contractual, legal or fiduciary duty), or was not independently developed by the receiving Party without the use of any Confidential Information by the disclosing Party. The receiving Party agrees to maintain the confidentiality of the Confidential Information and agrees to use the Confidential Information solely in connection with the Project.

15.1.2 Design-Builder may share Confidential Information with the other DB-Related Entities as appropriate for the procurement and execution of the Work.

15.1.3 The confidentiality obligations herein shall expire within three (3) years of the Final Completion Date.

15.2 Assignment.

15.2.1 Neither the Agreement nor any right, privilege, delegation, or interest thereunder may be assigned or transferred in whole or in part by Owner or Design-Builder without the prior written consent of the other Party, and any attempted assignment or transfer without such written consent shall be void, except as set forth in Section 15.2.2 below.

15.3 Successorship.

15.3.1 Design-Builder and Owner intend that the provisions of the Contract Documents are binding upon the Parties, their employees, agents, heirs, successors and permitted assigns.

15.4 Governing Law.

15.4.1 This Agreement and all Contract Documents shall be governed by the laws of Missouri, without giving effect to its conflict of law principles or any provision of the laws of Missouri that would void or make unenforceable any waiver, release or limitation on liability or remedies set forth in or required by this Agreement or the Contract Documents.

15.5 Severability.

15.5.1 If any provision or any part of a provision of the Contract Documents shall be finally determined to be superseded, invalid, illegal, or otherwise unenforceable pursuant to any applicable Legal Requirements, such determination shall not impair or otherwise affect the validity, legality, or enforceability of the remaining provision or parts of the provision of the Contract Documents, which shall remain in full force and effect as if the unenforceable provision or part were

deleted.

DRAFT

15.6 Third Party Rights.

15.6.1 Except as set forth below, this Agreement is exclusively for the benefit of Owner and Design-Builder and shall not provide any third parties with any remedy, claim, liability, reimbursement, cause of action or other rights. Notwithstanding the above, it is understood and agreed that: (a) Owner is an intended third-party beneficiary of all Subcontracts; (b) Owner Indemnitees are intended beneficiaries of the indemnification rights afforded to them under the Contract Documents; and (c) nothing shall impair the rights of any DB-Related Entity to seek recovery under Builder's Risk Insurance.

15.7 No Waiver.

15.7.1 The failure of either Design-Builder or Owner to insist, in any one or more instances, on the performance of any of the obligations required by the other under the Contract Documents shall not be construed as a waiver or relinquishment of such obligation or right with respect to future performance.

15.8 Headings.

15.8.1 The headings used in these General Conditions of Contract, or any other Contract Document, are for ease of reference only and shall not in any way be construed to limit or alter the meaning of any provision.

15.9 Amendments.

15.9.1 The Contract Documents may not be changed, altered, or amended in any way except in writing signed by a duly authorized representative of each Party.

END OF GENERAL CONDITIONS OF CONTRACT



REQUEST FOR MODIFICATION OR SUBSTITUTION

(This Form **must** be submitted to CREO KC to request substitutions for an MBE/WBE listed in the Contractor Utilization Plan or for modification of the amount of MBE/WBE participation listed in the Contractor Utilization Plan. This Form shall be an amendment to the Contractor Utilization Plan.)

BIDDER/PROPOSER/CONTRACTOR: _____

ADDRESS: _____

PROJECT NUMBER OR TITLE: _____

AMENDMENT/CHANGE ORDER NO: (if applicable) _____

Project Goals:	_____ % MBE	_____ % WBE
Contractor Utilization Plan:	_____ % MBE	_____ % WBE

1. I am the duly authorized representative of the above Bidder/Contractor/Proposer and am authorized to request this substitution or modification on behalf of the Bidder/Contractor/Proposer.

2. I hereby request that the Director of CREO KC recommend or approve: (check appropriate space(s))

a. ☐ A substitution of the certified MBE/WBE firm _____,
(Name of new firm)
to perform _____,
(Scope of work to be performed by new firm)

for the MBE/WBE firm _____ which is currently
(Name of old firm)
listed on the Bidder's/Contractor's/Proposer's Contractor Utilization Plan to
perform the following scope of work: _____.
(Scope of work of old firm)

b. ☐ A modification of the amount of MBE/WBE participation currently listed on the Bidder's/Contractor's/Proposer's Contractor Utilization Plan from

_____ % MBE _____ % WBE (Fill in % of MBE/WBE Participation currently listed on Contractor Utilization Plan)

TO

_____ % MBE _____ % WBE (Fill in New % of MBE/WBE Participation requested for Contractor Utilization Plan)

- c. Attach 00450.01 Letter of Intent to Subcontract letter for each new MBE/WBE to be added.
- d. Attach a copy of the most recent 00485.01 or on-line M/WBE Monthly Utilization Report

3. Bidder/Contractor/Proposer states that a substitution or modification is necessary because: (check applicable reason(s))



- ☐ The MBE/WBE listed on the Contractor Utilization Plan is non-responsive or cannot perform.
- ☐ The MBE/WBE listed on the Contractor Utilization Plan has increased its previously quoted price without a corresponding change in the scope of work.
- ☐ The MBE/WBE listed on the Contractor Utilization Plan has committed a material default or breach of its contract.
- ☐ Requirements of the scope of work of the contract have changed and make subcontracting not feasible or not feasible at the levels required by the goals established for the contract.
- ☐ The MBE/WBE listed on the Contractor Utilization Plan is unacceptable to the City contracting department.
- ☐ Bidder/Contractor/Proposer has not attempted intentionally to evade the requirements of the Act and it is in the best interests of the City to allow a modification or substitution.

4. The following is a narrative summary of the Bidder's/Contractor's/Proposer's good faith efforts exhausted in attempts to substitute the MBE/WBE firm named above which is currently listed on the Contractor Utilization Plan with other qualified, certified MBE/WBE firms for the listed scope of work or any other scope of work in the project:

5. Bidder/Proposer/Contractor will present documentation when requested by the City to evidence its good faith efforts.

Dated: _____

(Bidder/Proposer/Contractor)

By: _____
(Authorized Representative)



Reset Form

Print Form



MISSOURI DEPARTMENT OF REVENUE
CUSTOMER SERVICES DIVISION
PROJECT EXEMPTION CERTIFICATE

FORM
5060
(REV. 1-2008)

**TO BE GIVEN TO
YOUR CONTRACTOR**

NAME OF EXEMPT ENTITY ISSUING THE CERTIFICATE		MISSOURI TAX EXEMPTION NUMBER	
ADDRESS	CITY	STATE	ZIP
BEGIN DATE FOR PROJECT	PROJECTED COMPLETION DATE	PROJECT NUMBER	
DESCRIPTION OF PROJECT			
PROJECT LOCATION		EXPIRATION DATE	
THIS EXEMPTION DOES NOT APPLY TO THE PURCHASE OR RENTAL OF MACHINERY, EQUIPMENT, OR TOOLS BY THE CONTRACTOR OR SUB-CONTRACTOR.			
Give a signed copy of this certificate, along with a copy of your Missouri Sales/Use Tax Exemption Letter to each contractor and/or subcontractor who will be purchasing tangible personal property for use in this project. It is your responsibility to ensure the validity of the certificate. You must issue a new certificate if any of the information changes.			
EXEMPT ENTITY'S AUTHORIZED SIGNATURE		DATE	
The Missouri exempt entity named above hereby authorizes the purchase, without sales tax, of tangible personal property to be incorporated or consumed in the construction project identified herein and no other, pursuant to Section 144.062, RSMo. I also declare under penalties of perjury that I employ no illegal or unauthorized aliens as defined under federal law and that I am not eligible for any tax exemption, credit or abatement if I employ such aliens.			
NAME OF PURCHASING CONTRACTOR			
ADDRESS	CITY	STATE	ZIP
Contractors present this to your supplier in order to purchase the necessary materials tax exempt.			
NOTE: COMPLETE AND SIGN BOTTOM PORTION IF EXTENDING CERTIFICATE TO YOUR SUBCONTRACTOR.			
NAME OF PURCHASING SUBCONTRACTOR			
ADDRESS	CITY	STATE	ZIP
SIGNATURE OF CONTRACTOR		DATE	

State of Missouri

EXEMPTION FROM MISSOURI SALES AND USE TAX ON PURCHASES

Issued to:

CITY OF KANSAS CITY
414 E 12TH ST 3RD FLOOR
KANSAS CITY MO 64106

Missouri Tax ID
Number: 12490466

Effective Date:
07/11/2002

Your application for sales/use tax exempt status has been approved pursuant to Section 144.030.1, RSMo. This letter is issued as documentation of your exempt status.

Purchases by your Agency are not subject to sales or use tax if within the conduct of your Agency's exempt functions and activities. When purchasing with this exemption, furnish all sellers or vendors a copy of this letter. This exemption may not be used by individuals making personal purchases.

A contractor may purchase and pay for construction materials exempt from sales tax when fulfilling a contract with your Agency only if your Agency issues a project exemption certificate and the contractor makes purchases in compliance with the provisions of Section 144.062, RSMo.

Sales by your Agency are subject to all applicable state and local sales taxes. If you engage in the business of selling tangible personal property or taxable services at retail, you must obtain a Missouri Retail Sales Tax License and collect and remit sales tax.

This is a continuing exemption subject to legislative changes and review by the Director of Revenue. If your Agency ceases to qualify as an exempt entity, this exemption will cease to be valid. This exemption is not assignable or transferable. It is an exemption from sales and use taxes only and is not an exemption from real or personal property tax.

Any alteration to this exemption letter renders it invalid.

If you have any questions regarding the use of this letter, please contact the Division of Taxation and Collection, P.O. Box 3300, Jefferson City, MO 65105-3300, phone 573-751-2836.



KANSAS CITY
MISSOURI

PERFORMANCE AND MAINTENANCE BOND

Project/Contract Numbers: 81001018/ 1715

Project Title: Wastewater Backup Generators

KNOW ALL MEN BY THESE PRESENTS: That _____, as PRINCIPAL (CONTRACTOR), and _____, (SURETY), licensed to do business as such in the State of Missouri, hereby bind themselves and their respective heirs, executors, administrators, successors, and assigns unto Kansas City, Missouri, a constitutionally chartered municipal corporation, (OWNER), as obligee, in the penal sum of _____ Dollars (\$ _____) for the payment whereof CONTRACTOR and SURETY bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

CONTRACTOR has entered into a Contract with OWNER for **Project/Contract Nos. 81001018/1715, Wastewater Backup Generators**, which Contract, including any present or future amendment thereto, is incorporated herein by reference and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if CONTRACTOR shall promptly and faithfully perform said Contract including all duly authorized changes thereto, and including any maintenance requirements contained therein, according to all the terms thereof, including those under which CONTRACTOR agrees to pay legally required wage rates including the prevailing hourly rate of wages in the locality, as determined by the Department of Labor and Industrial Relations or by final judicial determination, for each craft or type of workman required to execute the Contract and, further, shall defend, indemnify, and hold harmless OWNER from all damages, including but not limited to, liquidated damages, loss and expense occasioned by any failure whatsoever of said CONTRACTOR and SURETY to fully comply with and carry out each and every requirement of the Contract, then this obligation shall be void; otherwise, it shall remain in full force and effect.

WAIVER. That SURETY, for value received, hereby expressly agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed thereunder, shall in any way affect the obligations of this Bond; and it does hereby waive notice of any such change, extension of time, or alteration or addition to the terms of the Contract or the Work to be performed thereunder.

IN WITNESS WHEREOF, the above parties have executed this instrument the ____ day of _____, 20__.

CONTRACTOR

Name, address and facsimile number of Contractor

I hereby certify that I have authority to execute this document on behalf of Contractor.

By: _____
Title: _____

(Attach corporate seal if applicable)

SURETY

Name, address and facsimile number of Surety:

I hereby certify that (1) I have authority to execute this document on behalf of Surety; (2) Surety has an A.M. Best rating of A-, V, or better; (3) Surety is named in the current list of "Companies Holding Certificates of Authority as Acceptable Reinsuring Companies: as published in Circular 570 (most current revision) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury; and (4) Surety is duly licensed to issue bonds in the State of Missouri and in the jurisdiction in which the Project is located.

By: _____
Title: _____
Date: _____

(Attach seal and Power of Attorney)



PAYMENT BOND

Project/Contract Numbers: 81001018/ 1715

Project Title: Wastewater Backup Generators

KNOW ALL MEN BY THESE PRESENTS: That _____, as PRINCIPAL (CONTRACTOR), and _____, (SURETY), licensed to do business as such in the State of Missouri, hereby bind themselves and their respective heirs, executors, administrators, successors, and assigns unto Kansas City, Missouri, a constitutionally chartered municipal corporation, (OWNER), as obligee, in the penal sum of _____ Dollars (\$_____) for the payment whereof CONTRACTOR and SURETY bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

CONTRACTOR has entered into a contract with OWNER for **Project/Contract Nos. 81001018/1715, Wastewater Backup Generators**, which Contract, including any present or future amendment thereto, is incorporated herein by reference and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if in connection with the Contract, including all duly authorized modifications thereto, prompt payment shall be made to all laborers, subcontractors, teamsters, truck drivers, owners or other suppliers or for equipment employed on the job, and other claimants, for all labor performed in such work whether done for CONTRACTOR, a subcontractor, SURETY, a completion contractor or otherwise (at the full wage rates required by any law of the United States or of the State of Missouri, where applicable), for services furnished and consumed, for repairs on machinery, for equipment, tools, materials, lubricants, oil, gasoline, water, gas, power, light, heat, oil, telephone service, grain, hay, feed, coal, coke, groceries and foodstuffs, either consumed, rented, used or reasonably required for use in connection with the construction of the work or in the performance of the Contract and all insurance premiums, both for compensation and for all other kinds of insurance on the work, for sales taxes and for royalties in connection with, or incidental to, the completion of the Contract, in all instances whether the claim be directly against CONTRACTOR, against SURETY or its completion contractor, through a subcontractor or otherwise, and, further, if CONTRACTOR shall defend, indemnify and hold harmless OWNER from all such claims, demands or suits by any such person or entity, then this obligation shall be void; otherwise, it shall remain in full force and effect.

Any conditions legally required to be included in a Payment Bond on this Contract, including but not limited to those set out in §107.170 RSMo. are included herein by reference.

SURETY agrees that, in the event that CONTRACTOR fails to make payment of the obligations covered by this Bond, it will do so and, further, that within forty-five (45) days of receiving, at the address given below, a claim hereunder stating the amount claimed and the basis for the claim in reasonable detail, it (a) will send an answer to the claimant, with a copy to OWNER stating the amounts that are undisputed and the basis for challenging any amounts that are disputed, and (b) will pay any amounts that are undisputed. The amount of this Bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder.

While this Bond is in force, it may be sued on at the instance of any party to whom any such payment is due, in the name of OWNER to the use for such party. OWNER shall not be liable for the payment of any costs or expenses of any such suit.

No suit shall be commenced or pursued hereunder other than in a state court of competent jurisdiction in Jackson, Clay or Platte County, Missouri, or in the United States District Court for the Western District of Missouri.

WAIVER. That SURETY, for value received, hereby expressly agrees that no change, extension of time,

alteration or addition to the terms of the Contract or to the Work to be performed thereunder, shall in any way affect the obligations of this Bond; and it does hereby waive notice of any such change, extension of time, or alteration or addition to the terms of the Contract or the Work to be performed thereunder.

IN WITNESS WHEREOF, the above parties have executed this instrument the _____ day of _____, 20____.

CONTRACTOR

Name, address and facsimile number of Contractor

I hereby certify that I have authority to execute this document on behalf of Contractor.

By: _____

Title: _____

(Attach corporate seal if applicable)

SURETY

Name, address and facsimile number of Surety:

I hereby certify that (1) I have authority to execute this document on behalf of Surety; (2) Surety has an A.M. Best rating of A- or better; (3) Surety is named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (most current revision) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury; and(4) Surety is duly licensed to issue bonds in the State of Missouri and in the jurisdiction in which the Project is located.

By: _____

Title: _____

Date: _____

(Attach seal and Power of Attorney)



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER AGENT NAME AND ADDRESS	CONTACT NAME:	
	PHONE (A/C, No, Ext):	FAX (A/C, No):
INSURED CONTRACTOR NAME AND ADDRESS	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	
	INSURER A : ABC INSURANCE COMPANY	
	INSURER B :	
	INSURER C :	
	INSURER D :	
INSURER E :		
INSURER F :		

COVERAGES**CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY ☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PROJECT ☐ LOC	Y	Y	POLICY NUMBER	1/1/2011	Current	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 50,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
A	AUTOMOBILE LIABILITY ☒ ANY AUTO ALL OWNED AUTOS ☒ HIRED AUTOS ☐ SCHEDULED AUTOS NON-OWNED AUTOS	Y	Y	POLICY NUMBER	1/1/2011	Current	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
A	☒ UMBRELLA LIAB EXCESS LIAB ☒ RETENTION \$ 10,000 ☐ OCCUR ☐ CLAIMS-MADE	Y	Y	POLICY NUMBER	1/1/2011	Current	EACH OCCURRENCE \$ 2,000,000 AGGREGATE \$ 2,000,000 \$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	POLICY NUMBER	1/1/2011	Current	☒ WC STATUTORY LIMITS ☐ OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
A	Leased/Rented/Equip. Owned Equipment <u>Builders Risk/Installation Floater</u>	N/A	Y	POLICY NUMBER	1/1/2011	Current	Limit; Deductible Limit; Deductible Limit; Deductible

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Project No. [Title]. Certholder (City) and [Design Professional] and any other entities named in 00800 SCs are named as primary, noncontributing Additional Insureds including products and completed operations, excluding workers compensation, employers liability and professional liability. Waiver of subrogation applies as allowed by law. [The policies required above shall contain no exclusions for work expressly within the subcontractors scope of work.]

CERTIFICATE HOLDER**CANCELLATION**

City of Kansas City, Missouri [Department] [Address] Kansas City, MO [Zip]	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE

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FORM RD-C1

(12/20)

City of Kansas City, Missouri - Revenue Division

AUTHORIZATION TO RELEASE A REVENUE CLEARANCE LETTER

Phone: (816) 513-1120

Fax: (816) 513-1264



I authorize the City of Kansas City, Missouri, Finance Department, Revenue Division, to release a Revenue Clearance Letter for:

Name of taxpayer: _____ FEIN or SSN: _____

(PRINT)

Address: _____

Check this box and complete this section to send the Clearance Letter to a contractor.

☐ I authorize the City to provide a copy of the Taxpayer's Revenue Clearance Letter to the following:

NAME (PRINT)	BUSINESS NAME	TITLE
ADDRESS	CITY, STATE, ZIP CODE	
PHONE NUMBER	FAX NUMBER	EMAIL ADDRESS

☐ I authorize the City to provide the Taxpayer's Revenue Clearance Letter to all City Departments to certify that the Taxpayer is in compliance with the tax ordinances administered by the Commissioner of Revenue.

Please send my first Revenue Clearance Letter to: _____
(Print Name of City Department / Contact Person / Email / Fax Number)

This authorization shall expire one (1) year from the date on the bottom of this form.

The City, Commissioner of Revenue and the Revenue Division personnel (hereinafter "the City"), are hereby held harmless from any and all liability relating to unauthorized disclosure of confidential tax information resulting from release of information under all applicable confidentiality laws including federal, state, or local, including any damages sustained by wrongful transmission of confidential tax information to any other person.

UNDER PENALTIES OF PERJURY, I DECLARE THAT I HAVE EXAMINED THIS AUTHORIZATION, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT IS TRUE, CORRECT AND COMPLETE.

I hereby certify that I am the Taxpayer named herein or that I have the authority to execute this authorization on behalf of the Taxpayer and hold harmless agreement.

NAME (PRINT)	TITLE (IF APPLICABLE)	
SIGNATURE	PHONE NUMBER	DATE

A FACSIMILE OF THIS DOCUMENT SHALL CONSTITUTE AN ORIGINAL

Email completed form to business.license@kcmo.org or mail to:

City of Kansas City, Missouri, Business License Office, City Hall, 1st floor, 414 E. 12th St.,
Kansas City, MO 64106

SECTION 00830

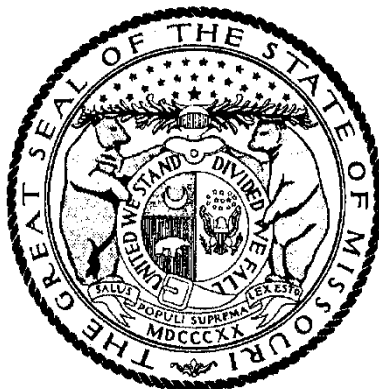
PREVAILING WAGE

1. Annual Wage Order No. 31
2. **0830.03 Division of Labor Standards Rules & Regulations** are incorporated into and made part of this Contract and are available at <http://s1.sos.mo.gov/cmsimages/adrules/csr/current/8csr/8c30-3.pdf>.

Missouri

Division of Labor Standards

WAGE AND HOUR SECTION



MICHAEL L. PARSON, Governor

Annual Wage Order No. 31

Section 048
JACKSON COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by

Todd Smith, Director
Division of Labor Standards

Filed With Secretary of State: March 8, 2024

Last Date Objections May Be Filed: April 8, 2024

Prepared by Missouri Department of Labor and Industrial Relations

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	\$69.50
Boilermaker	\$39.44*
Bricklayer-Stone Mason	\$62.06
Carpenter	\$64.94
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	\$58.02
Plasterer	
Communication Technician	\$62.38
Electrician (Inside Wireman)	\$70.32
Electrician Outside Lineman	\$61.40
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	\$93.11
Glazier	\$59.07
Ironworker	\$70.66
Laborer	\$52.42
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	\$50.24
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	\$66.05
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	\$54.25
Plumber	\$78.88
Pipe Fitter	
Roofer	\$60.69
Sheet Metal Worker	\$76.38
Sprinkler Fitter	\$69.92
Truck Driver	\$54.27
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in RSMo Section 290.210.

Heavy Construction Rates for
JACKSON County

Section 048

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	\$65.11
Millwright	
Pile Driver	
Electrician (Outside Lineman)	\$90.71
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	\$51.85
General Laborer	
Skilled Laborer	
Operating Engineer	\$60.48
Group I	
Group II	
Group III	
Group IV	
Truck Driver	\$53.04
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title.

OVERTIME and HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, **"overtime work"** shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.



ADDENDUM NUMBER ____

Project Number _____

Project Title _____

[NOTE: Add Month/Date/Year for which this Addendum is officially posted by City. Be certain to remove this note before final document is printed.]

ISSUE DATE: _____

[NOTE: Addenda are used to clarify, revise, add to, or delete information in the original bidding documents or in previous addenda prior to opening of bids. Items should be organized in the same order as the original bidding documents Table of Contents. Cite the specific bidding document and the specific location within it where each change is to be made followed by the detailed change. If entire pages or documents are replaced or added as accompanying attachments, state the title of the document and the specific page number(s) removed and/or added. (e.g., Delete Section 01011 - Summary pages 1-6 and add the attached Section 01011 - Summary pages 1-10.). Be certain to remove this note before final document is printed.]

[NOTE: Add Month/Date/Year. Be certain to remove this note before final document is printed.]

Bidders are hereby notified that the Bidding and Contract Documents for the above project, for which Bids are to be received on _____, are amended as follows:

[NOTE: If the bid date is being changed add Month/Day/Year; if not, delete this sentence. Be certain to remove this note before final document is printed.]

The Bid date for this Project stated in Document 00130 - Invitation to Bid shall be changed to: 2:00 PM, on _____.

Information to Bidders The following is provided to Bidders for information only:

[NOTE: Include items under this heading such as Pre-bid meeting attendance list, soils report, etc.; items that should not be contractual, but are useful information to Bidders. Delete this heading and introduction if not applicable for this Addendum. Be certain to remove this note before final document is printed.]

1.

2.

[NOTE: Include Bidder/Proposer questions and answers to those questions. If questions are resolved by a contractual change, reference the contract section and make the appropriate change in one of the sections below. Delete this heading and table if not applicable for this Addendum. Be certain to remove this note before final document is printed.]

Q1.	
A1.	
Q2.	
A2.	
Q3.	

A3.	

[NOTE: Under the following sections, include changes to those documents under the heading with this same title found in Document 00010 - Table of Contents, (including changes to previous addenda). Format for revisions provided below. Delete sections if not applicable to this addendum. Be certain to remove this note before final document is printed.]

Bidding Requirements

1. Add the following section(s):
 - a. Document, Sec. __, Subparagraph __, Page ____
 - b. Document, Sec. __, Subparagraph __, Page ____
- [OR]***
2. Delete the following section(s):
 - a. Document, Sec. __, Subparagraph __, Page ____
 - b. Document, Sec. __, Subparagraph __, Page ____
- [OR]***
3. Delete and replace the following section(s):
 - a. Delete Document, Sec. __, Subparagraph __, Page ____ and replace with the following Document, Sec. __, Subparagraph __, Page ____:
 - b. Delete Document, Sec. __, Subparagraph __, Page ____ and replace with the following Document, Sec. __, Subparagraph __, Page ____:

Contracting Requirements

- 1.
- 2.

Specifications

- 1.
- 2.

Drawings:

- 1.
- 2.

NOTE: Bidders must acknowledge receipt of this Addendum by listing the number and date, where provided, on the Bid Form - Document 00410.



REQUEST FOR INTERPRETATION

Project Number _____

Project Title _____

Contractor _____

RFI Number _____ Date _____

From: _____

To: _____

Re: _____

Spec. Sec. Ref:

Paragraph:

Drawing Ref:

Detail:

Signed: _____

Response: _____

☐ Attachments

Response From:

To:

Date Transmitted: _____ Date Rec'd: _____

Signed: _____
Design Professional

Signed: _____
Owner's Representative

Distribution: ☐ Owner
☐ Contractor
☐ Construction Manager
☐ Design Professional
☐ Consultant _____
☐ Other _____



SUPPLEMENTAL DESIGN INSTRUCTION

Project Number _____

Project Title _____

To Contractor _____

From: _____ SDI No _____ Issue Date: _____

The Work shall be carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Price or Contract Times. Proceeding with the Work in accordance with these instructions indicates your acknowledgement that there will be no change in the Contract Price or Contract Times.

Description:

☐ Attachments (*List*)

(Signature) Design Professional

Date

Distribution: ☐ Owner
☐ Contractor
☐ Construction Manager
☐ Design Professional
☐ Consultant _____
☐ Other _____



REQUEST FOR PROPOSAL

Project Number _____

Project Title _____

To Contractor _____

From: _____ RFP No _____ Issue Date: _____

Please submit an itemized proposal for changes in the Contract Price and Contract Times for proposed modifications to the Contract Documents described herein. Submit proposal within _____ days, or notify the Owner in writing of the date on which you anticipate submitting your proposal.

This is NOT a Change Order, a Work Change Directive or a direction to proceed with the work described in the proposed modifications.

Description:

☐ Attachments

Prepared by Design Professional

Prepared by Construction Manager

REQUESTED by OWNER'S Representative

Distribution: ☐ Owner
☐ Contractor
☐ Construction Manager
☐ Design Professional
☐ Consultant _____
☐ Other _____



CHANGE ORDER

Project Number _____

Project Title _____

Change Order No: _____ Date of Issuance: _____

Ordinance No: _____ Ordinance Effective Date: _____

Contract Notice To Proceed Date: _____

To CONTRACTOR:

The Contract is changed as follows:

This Change Order constitutes compensation in full on behalf of the Contractor and its subcontractors and suppliers for all costs, including impact costs and extended general conditions, and markups directly and indirectly attributable to the Work changes ordered herein, for all delays related thereto and for performance of the changes within the time stated. Contractor hereby releases all claims for delay, interruption, extended general conditions, impact and cumulative impact claims for this Work.

[Note: Identify the specific attachments; example: "Attachment A, Additional Scope of Services." Delete **all** notes before printing final]

☐ See Attached Document(s).

[Note: If the CO does not change the Contract Price, use "Director" instead of "Director of Finance"]

Not valid until signed by the Director of Finance.

The original Contract Price was	_____	\$0.00
Net change by previously authorized Change Orders	_____	\$0.00
The Contract Price prior to this Change Order was	_____	\$0.00
The Contract Price will be (☐ increased by) (☐ decreased by) (☐ unchanged)	_____	\$0.00
The new Contract Price including this Change Order will be	_____	\$0.00
[Note: If revised, establish and enter new dates. If unchanged, enter current contract dates.		
If you are only changing the Final Completion date, add the following reference:		
"The Contract Time for Final Completion will be . . ."		
The Contract Time will be (☐ increased by) (☐ decreased by) (☐ unchanged)	_____	() calendar days
The date of Substantial Completion as of the date of this Change Order therefore is	_____	Enter Date
The date of Final Completion as of the date of this Change Order therefore is	_____	Enter Date

Project No. & Title

Change Order No.

[Note: Include any required additional signatures.]

DESIGN PROFESSIONAL:	By:	Date:
	Title:	
CONTRACTOR:	By:	Date:
	Title:	
CITY:	By	Date:
	Title:	

Approved as to form: _____
Assistant City Attorney

[Note: If this CO does not change the Contract Price, delete the cert. of funds by Finance Director but send signed copy to Finance.]

I certify there is a balance otherwise unencumbered to the credit of the appropriation to which the above amount is chargeable, and a cash balance otherwise unencumbered in the treasury to the credit of the fund from which payment is to be made, each sufficient to meet the above obligation.

By: _____
Director of Finance Date

Distribution: ☐ CITY
☐ CONTRACTOR
☐ DESIGN PROFESSIONAL

REMINDER: CONTRACTOR is responsible for considering the effect this Change Order may have on its ability to meet or exceed the D/M/WBE participation amounts in its Contractor Utilization Plan (CUP) as amended by any previously approved Request for Modification/Substitution. If CONTRACTOR will not be able to achieve the approved participation amounts in performing the work included within this Change Order, or if CONTRACTOR needs to retain the services of additional D/M/WBEs not previously listed in its CUP, CONTRACTOR is advised to submit a Request for Modification/Substitution.



WORK CHANGE DIRECTIVE

Project Number _____

Project Title _____

No.: _____ Date of Issuance: _____

TO:
(CONTRACTOR)

You are directed to proceed promptly with the following work:

Description:

Purpose of Work Change Directive:

Attachments: *(List documents supporting change)*

If the above work results on a change in the Contract Price or Contract Times, any request for a Change Order based thereon will involve one or more of the following methods of determining the effect of the change(s).

Method of determining change in
Contract Price:

- ☐ Unit Prices
- ☐ Lump Sum
- ☐ As Stipulated in General Conditions
- ☐ Other _____

Method of determining change in
Contract Times:

- ☐ CONTRACTOR's Records
- ☐ DESIGN PROFESSIONAL's Records
- ☐ City's Records
- ☐ Other _____

Estimated increase (decrease) in Contract Price:

\$ _____

If the change involves an increase, the estimated Amount is not to be exceeded without further authorization.

Recommended:

Estimated increase (decrease) in Contract Times:

Substantial Completion: _____ days;

Final Completion: _____ days.

If the change involves an increase, the estimated times are not to be exceeded without further authorization.

Recommended:

Recommended:

DESIGN PROFESSIONAL

Construction Manager

City

By (Authorized Signature)

By (Authorized Signature)

By (Authorized Signature)

Distribution:

- ☐ City
- ☐ Contractor
- ☐ Construction Manager

- ☐ Design Professional
- ☐ Consultant
- ☐ Other

WORK CHANGE DIRECTIVE (“WCD”) INSTRUCTIONS

[Note: Do not attach these instructions to the WCD Form]

A. GENERAL INFORMATION

This document was developed for use in situations involving changes in the Work which, if not processed expeditiously, might delay the Project. These changes are often initiated in the field and may affect the Contract Price or the Contract Times. This is not a Change Order, but only a directive to proceed with Work that may be included in a subsequent Change Order. If the WCD may result in an increase in the Contract Price, a contract impact cost analysis must be performed prior to issuing the WCD. Availability of funds and authorization to expend funds must be part of the analysis.

For supplemental instructions and minor changes not involving a possible change in the Contract Price or the Contract Times a Supplemental Design Instruction may be used.

B. COMPLETING THE WORK CHANGE DIRECTIVE FORM

Based on conversations between Design Professional, City's Representative and CONTRACTOR, Design Professional must complete the following:

DESCRIPTION: shall include a summary of the Work included in the WCD. Additional information may be attached to the WCD to further define the scope.

PURPOSE OF WORK CHANGE DIRECTIVE: will identify clearly if the Work included in the WCD is an addition, deletion, revision, or some combination.

ATTACHMENTS: shall identify all attachments included in and made a part of the WCD. Be certain that attachments are clearly labeled.

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT PRICE: Mark the method to be used in determining the final cost of Work involved and the estimated net effect on the Contract Price. If the change involves an increase in the Contract Price and the estimated amount is approached before the additional or changed Work is completed, another WCD must be issued to change the estimated price. Do not leave blank spaces or write “To be determined” (or “TBD”). An estimated dollar figure must be assigned to the Work. If the WCD is not likely to change the Contract Price, the space for estimated increase (decrease) should be marked “No Change in Price”.

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT TIMES: Mark the method to be used in determining the change in Contract Times and the estimated increase or decrease in Contract Times. If the change involves an increase in the Contract Times and the estimated times are approached before the additional or changed Work is completed, another WCD must be issued to change the times or CONTRACTOR may stop the changed Work when the estimated times are reached. Do not leave blank spaces or write “To be determined” (or “TBD”). If the WCD is not likely to change the Contract Times, the space for estimated increase (decrease) should be marked “No Change in Times”.

Once Design Professional has completed and signed the form, all copies should be sent to CITY for authorization because Design Professional does not have authority to authorize changes in Price or Times. Once authorized by CITY, a copy must be sent by Design Professional to CONTRACTOR. Price and Times may only be changed by Change Order signed by CITY, Design Professional, and CONTRACTOR. If the value of the work included in the WCD exceeds the contingency or budget available for the contract, staff must obtain written approval from the Director or his or her designee before the WCD is issued. A Director or his or her designee may not approve a WCD that will exceed City Council authorization. If the work included in the WCD is needed as a result of an emergency, staff may proceed with the issuance of the WCD without

prior written approval even if the value of the work added is expected to exceed the contract contingency balance.

Once the Work covered by this directive is completed or final cost and times are determined. CONTRACTOR must submit proper documentation for inclusion in a Change Order.

IF THIS IS A DIRECTIVE TO PROCEED WITH A CHANGE THAT MAY AFFECT THE CONTRACT PRICE OR THE CONTRACT TIMES A CHANGE ORDER, IF ANY, MUST BE PROCESSED PROMPTLY.

Attachment D_ Project Background Documents.

Drawings files information will be given upon request.

SECTION 02821 – FENCES AND GATES

PART 1 – GENERAL

1.01 SUMMARY

- A. This section covers chain-link fences and gates.
- B. Design-Builder shall furnish all labor, materials, equipment and incidentals as necessary to comply with requirements as shown on Drawings and as specified herein.

1.02 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Section 03000– Concrete

1.03 REFERENCES

- A. American Society of Testing and Materials (ASTM)
 - 1. A90 – Test Method for Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
 - 2. A121 – Standard Specification for Metallic-Coated Carbon Steel Barbed Wire
 - 3. A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - 4. A392 – Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric
 - 5. A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
 - 6. F626 – Specification for Fence Fittings
 - 7. F668 – Specification for Poly (Vinyl Chloride) (PVC)-Coated Steel Chain-Link Fence Fabric
 - 8. F900 – Specification for Industrial and Commercial Swing Gates
 - 9. F934 – Specification for Standard Colors for Polymer-Coated Chain Link Fence Materials
 - 10. F1043 – Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework
 - 11. F1083 – Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
 - 12. F1184 – Specification for Industrial and Commercial Horizontal Slide Gates

1.04 DEFINITIONS

- A. OD – Outside Diameter of Pipe

1.05 SUBMITTALS

- A. Submit as specified in Section 01019 – Closeout Procedures.
- B. Submit manufacturer's literature describing components to be provided, giving manufacturer's name, product component name, and line number for each component.
- C. Technical Submittals Include, but not limited to the following:
 - 1. Catalog data
 - 2. General Arrangements

3. Assembly and disassembly or repair instructions
4. Fabrication Drawings
5. Detail Drawings
6. Schematic and Wiring Diagrams
7. Installation Drawings
8. Mounting Assembly Diagram
9. Performance Data
10. Instruction books and Operation and Maintenance manuals
11. Spare parts lists

D. Quality Assurance Submittals

1. Provide manufacturer's certification that products to be used comply with specified requirements and are suitable for intended application.

1.06 QUALITY ASSURANCE

A. Qualifications

1. Equipment specified herein shall be the product of a reputable and qualified manufacturer who is of proven ability and has at least five (5) years of experience in the production of such equipment in sizes similar to those required on this project. The manufacturer shall have completed and made ready for operation at least twenty-five separate installations in the United States that have been in operation for at least five (5) years.

B. Sourcing – If more than one (1) window is procured via this section, window shall be provided from a single manufacturer.

C. Identification – Products must include a nameplate securely mounted to the equipment and for the motor/driver. At a minimum the nameplate must include the following.

1. Manufacturer's name, product name, and number
2. Manufacturer's Contract/Order Number
3. Weight of Bundle
4. Customer Name and Job Name
5. Product Description Gage, Product Name, and Finish
6. Number of Pieces, Lengths
7. Delivery Area
8. Bundle Number
9. Special Storage Instructions

D. Pre-construction Conference

1. Before any construction Work of commences of the roof, roof assemblies, and roof components, a pre-construction conference must be held and attended by City's Representative, Engineer, and Manufacturer's Technical Representative.
2. At a minimum, the following topics shall be addressed and discussed during the pre-production conference.
 - a. Contract Documents
 - b. Project Safety Plan
 - c. Schedule of technical submittals
 - d. Quality Control
 - e. Delivery, Storage, and Handling
 - f. Field Representative Services

E. Manufacturer's Service

1. The Manufacturer's Technical Representative shall be available to provide on-site technical assistance during commissioning activities.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. All components and accessories shall be handled in a manner that will ensure installation in a sound, undamaged condition. Equipment tools, and methods used in unloading, reloading, hauling, and shipping shall be such that components are not damaged.
- B. For equipment exceeding 50 pounds, lifting eyes and lifting lugs shall be provided to allow for installation.
- C. Boxes and packages shall be properly marked to show its net and total weight, contents within the box and/or package.
- D. Items shall be marked as identified in delivery schedule and as shown in Submittals and include a complete list and bills of materials with each shipment. Each item requiring assembly shall be properly tagged and marked.
- E. If items are shipped separately, they shall be tagged and indicated as such to facilitate proper assembly on-site.

1.08 WARRANTY

- A. Equipment manufacturer shall provide a warranty for all items furnished in accordance with Section 01740. Warranty shall run concurrently with the Contractor's warranty and commence at final completion and CITY's acceptance.
- B. Warranty shall cover all necessary labor, equipment, materials, and replacement parts resulting from faulty or inadequate equipment design, improper assembly or erection, defective workmanship and materials, leakage, breakage or other failure of all equipment and components furnished by the manufacturer.

PART 2 – PRODUCTS

2.01 DESIGN

- A. Type – Fences and Gates shall be of the chain-linked type.
- B. Features
 1. Terminal Posts shall be braced and trussed.
 2. All terminal posts and line posts shall be supported by concrete footings.
 3. In high visibility areas, twisted strand fence fabric may be sufficient in lieu of the use of barbed wire.
 4. All steel components shall be the color ASTM F934 - Black.
- C. Site conditions
 1. Fences and Gates shall meet all design load requirements as specified by Section 01810 – Project Design Criteria
- D. Operating Conditions
 1. Total Height: 9 ft
 - a. Height of Fabric: 8 ft.
 - b. Height of Barbed Wire: 12 in. (Qty. 3 strands above Fence Fabric)
 2. Distance between posts: 10 ft. on center

2.02 COMPONENTS

- A. Chain-Link Fence Fabric
 1. Mesh: 1" x 8 gage (9 gage core)

2. Selvage:
 - a. Top Edge: Twist
 - b. Bottom Edge: Twist
 3. Fabric Installation Location:
 - a. Security Side of Posts
 - b. Posts - Attached 15 in. on center with wire ties
 - c. Rails/Braces/Tension Wires – Attached 24 in. on center with wire ties
 4. Color: ASTM F934 – Black
- B. Industrial Fence Framing
1. Railing
 - a. Top Rail: 1-5/8" OD ASTM F1043 Group 1C
 - b. Middle Rail: 1-5/8" OD ASTM F1043 Group 1C
 2. Posts
 - a. Terminal Post: 2-7/8 in. OD ASTM F1043 Group 1C
 - b. Line Post: 2-3/8 in. OD ASTM F1043 Group 1C
 - c. Gate Post: 4 in. OD ASTM F1043 Group 1C
 3. Fittings:
 - a. Rail Cap: 1-5/8" OD ASTM F1043 Group 1C
 - b. Tie Wires: 9 Gauge
 - c. Tension Wire: 7 Gauge
 4. Truss Rod: Steel Mechanical
 - a. Thickness: 9 Gauge
 - b. Orientation: Diagonal
 5. Tension Wire
 - a. ASTM A392 7 Gauge Galvanized Class 2
 6. Color: ASTM F934 - Black
- C. Industrial Swing Gates
1. Type: ASTM F900 - Double Swing
 2. Width: 24 ft.
 3. Fabric: (Match Chain Link Fence Fabric)
 4. Barbed Wire: (Match Barbed Wire on Fence)
 5. Double swing gate 2" ss-40 black coated pipe frame with match 1" mesh, barb wire and commercial grade swing gate hardware
 6. Color: ASTM F934 - Black
- D. Industrial Horizontal-Slide Gates
1. Type: ASTM F1184 - Cantilever
 2. Width: 20 ft.
 3. Fabric: (Match Chain Link Fence Fabric)
 4. Barbed Wire: (Match Barbed Wire on Fence)
 5. Materials:
 - a. Roller: Nylon
 6. Galvanized Steel
 7. Color: ASTM F934 - Black
- E. Barbed Wire
1. 12-1/2 Gauge 4-point Class 3
 2. Color: ASTM F934 - Black

F. Footings

- a. Refer to Section 03000 - Concrete

2.03 APPROVED VENDORS

- A. Broski Fence
- B. Or Equal

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 03000 – CONCRETE

PART 1 – GENERAL

1.1 SUMMARY

- A. This section covers concrete used throughout wastewater facilities.
- B. Design-Builder shall furnish all labor, materials, equipment and incidentals as necessary to comply with requirements as shown on Drawings and as specified herein.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Section 03100 – Concrete Forms & Accessories
 - 2. Section 03153 – Waterstops
 - 3. Section 03200 – Concrete Reinforcement
 - 4. Section 03600 – Grouting
 - 5. Section 03630 – Epoxies
 - 6. Section 03900 – Concrete Restoration & Cleaning

1.3 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. 211.1 – Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete
 - 2. 232.2R – Use of Fly Ash in Concrete
 - 3. 304 – Recommended Practice for Measuring, Mixing, Transporting and Placing concrete
 - 4. 304R – Guide for Measuring, Mixing, Transporting, and Placing Concrete
 - 5. 304.2R – Placing Concrete by Pumping Methods
 - 6. 305 – Committee Report on Hot-Weather Concreting
 - 7. 305R – Hot Weather Concreting
 - 8. 306 – Committee Report on Cold-Weather Concreting
 - 9. 306R – Cold Weather Concreting
 - 10. 309 – Recommended Practice for Consolidation of Concrete
 - 11. 318 – Building Code Requirements for Reinforced Concrete
 - 12. 347 – Recommended Practice for Concrete Formwork
 - 13. 350 – Code Requirements for Environmental Engineering Concrete Structures and Commentary
- B. American Society of Testing and Materials (ASTM)
 - 1. A615 – Deformed and Plain Billet Steel Bars for Concrete Reinforcement
 - 2. C31 – Test Methods of Making and Curing Concrete Test Specimens in the field.

3. C33 – Concrete Aggregates
4. C39 – Test Method for Compressive Strength of Cylindrical Concrete Specimens
5. C42 – Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
6. C94 – Ready-Mixed Concrete
7. C143 – Slump of Portland Cement Concrete
8. C150 – Portland Cement
9. C156 – Standard Test Method for Water Retention by Liquid Membrane-Forming Curing Compound for Concrete
10. C171 – Standard Specification for Sheet Materials for Curing Concrete
11. C173 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
12. C192 – Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
13. C231 – Standard Test Method for Air Content of Freshly Mixed concrete by the Pressure Method
14. C260 – Standard Specification for Air-Entraining Admixtures for Concrete
15. C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
16. C494 – Standard Specification for Chemical Admixtures for Concrete
17. C1017 – Standard Specification for Chemical Admixtures for use in Producing Flowing Concrete
18. C1077 – Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
19. C1218 – Standard Test Method for Water-Soluble Chloride in Mortar and Concrete
20. C1260 – Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
21. D4783 – Standard Test Methods for Resistance of Adhesive Preparations Container to Attack by Bacteria, Yeast, and Fungi
22. E329 – Standard Specification for Agencies Engaged in Construction Inspection and/or Testing
- C. International Code Council (ICC)
 1. International Building Code (IBC) 2018 with City of Kansas City, MO Amendments
- D. National Ready Mixed Concrete Association (NRMCA)
 1. Quality Control Manual, Section 3 – Certification of Ready Mixed Concrete Production Facilities
- E. Truck Mixer Manufacturers Bureau (TMMB)
 1. TMMB 100 – Truck Mixer, Agitator and Front Discharge Concrete Carrier Standards

1.4 DEFINITIONS

- A. Cold weather – period when for more than 3 successive days the mean daily temperature drops below 40°F.
- B. F_c' – Minimum compressive strength of concrete

- C. Lightweight aggregates – Aggregates with the intended use in concrete masonry units.
- D. Normal-weight aggregate – Aggregates for use in concrete
- E. O.D. – Outside Diameter
- F. Severe Exposure – As defined by ACI 211, Concrete which is exposed to deicing chemicals or other aggressive agents or where the concrete may become highly saturated by continual contact with moisture or free water prior to freezing.
- G. Vented Heaters – Heaters which exhaust flue gases directly to atmosphere and do not enter the heated space.
- H. Water-reducing admixture – may also be referred to as “Plasticizer”

1.5 SUBMITTALS

- A. Submit as specified in Section 01019 – Closeout Procedures.
- B. Submit manufacturer’s literature describing components to be provided, giving manufacturer’s name, product component name, and line number for each component.
- C. Technical Submittals Include, but not limited to the following:
 - 1. Catalog data
 - 2. General Arrangements
 - 3. Assembly and disassembly or repair instructions
 - 4. Fabrication Drawings
 - 5. Detail Drawings
 - 6. Installation Drawings
 - 7. Performance Data
 - 8. Installation Manual
- D. Quality Assurance Submittals
 - 1. Provide manufacturer’s certification that products to be used comply with specified requirements and are suitable for intended application.

1.6 QUALITY ASSURANCE

- A. Qualifications
 - 1. Materials specified herein shall be the product of a reputable and qualified manufacturer who is of proven ability and has at least five (5) years of experience in the production of such equipment in sizes similar to those required on this project.
 - 2. Installer shall be an authorized representative trained and approved.
- B. Identification – All pipe and fittings shall be labeled and provided with an appropriate Material Test Report (MTR). Pipe and fitting shall be properly labeled prior to shipment.
- C. Inspections and Testing
 - 1. Adhesion Testing shall be performed on field samples per ASTM C794
 - 2. Compatibility testing shall be performed on field samples per ASTM C1087
 - 3. Stain testing shall be performed on field samples per ASTM C1248.
 - 4. Testing of samples shall be incorporated into project schedule.

- a. Testing will not be required if sealant manufacturer provides data based on testing not older than 24 months of sealant products for adhesion to and compatibility with joint substrates and other materials used in this application.
 5. Joint sealants shall be tested and qualified per ASTM C1021.
- D. Preconstruction Testing
1. Locate and conduct a field test for each kind of sealant and joint substrate
 2. Provide 7 calendar day notice to CITY's representative when test joints will be erected.
 3. Arrange for joint sealant manufacturer's technical representative to be present during test
 4. Provide a report if the test passed, or failed. If failed, identify the likely cause of failure.
 5. For tests with passing adhesives, sealant shall be considered satisfactory.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. All components and accessories shall be handled in a manner that will ensure installation in a sound, undamaged condition. Equipment tools, and methods used in unloading, reloading, hauling, and shipping shall be such that components are not damaged.
- B. For materials exceeding 50 pounds, lifting eyes and lifting lugs shall be provided to allow for installation.
- C. Boxes and packages shall be properly marked to show its net and total weight, contents within the box and/or package.
- D. Items shall be marked as identified in delivery schedule and as shown in Submittals and include a complete list and bills of materials with each shipment. Each item requiring assembly shall be properly tagged and marked.
- E. If items are shipped separately, they shall be tagged and indicated as such to facilitate proper assembly on-site.

1.8 WARRANTY

- A. Installer shall provide a warranty for all items furnished and installed in accordance with Section 01740. Warranty shall run concurrently with the Contractor's warranty and commence at final completion and CITY's acceptance.
- B. Warranty shall cover all necessary labor, equipment, materials, and replacement parts resulting from faulty or inadequate material selection, defective workmanship and materials, leakage, breakage or other failure of all equipment and components furnished by the installer.

PART 2- PRODUCTS

2.1 GENERAL

- A. All concrete shall be considered subject to the following conditions
 1. Exposed to freezing temperatures while wet
 2. Suitable for building construction per the International Building Code
 3. Watertight

4. Made with normal weight aggregate
- B. Concrete Design
1. Water-Bearing Structures
- Designed per ACI 350 – Environmental Engineering Concrete Structures.
 - Cement Type: ASTM C150 Type V
 - Maximum Water-Cementitious Ratio, by Weight: 0.40
 - F_c' : 5000 psi @ 28 days
 - Minimum Cementitious Material:
 - In instances when there are varied sizes of coarse aggregate, the appropriate amount of cementitious materials shall be determined by

Nominal Maximum Aggregate Size.	Coarse Aggregate (ASTM C33)	Minimum Cementitious Materials
inches	Size No.	lb/cu. yd.
1/2"	7	580
3/8"	8	600
1/2"	7	580
3/4"	67	560
1"	57	535
1-1/2"	467	515

- Maximum Air Content:

Nominal maximum aggregate size, In.	Air Content
inches	%
3/8"	7.5
1/2"	7
3/4"	6
1"	6
1-1/2"	5.5
2"	5
3"	4.5

2. Open flow channels
- Designed per ACI 350 – Environmental Engineering Concrete Structures.
 - Cement Type: ASTM C150 Type V
 - Maximum Water-Cementitious Ratio, by Weight: 0.40
 - F_c' : 5000 psi @ 28 days
 - Minimum Cementitious Material: 610 lb /cu. yd.
 - Maximum Air Content: 6%

3. Fence Footings
 - a. Post Dimensions: 16 in. wide by 42 in. deep
 - b. Cement Type: ASTM C150 Type II or Type III
 - c. f_c' : 3000 psi
 - d. Aggregate: ASTM C33 Size 57
 - e. Expected life of Concrete: 50 years (No Alkali Aggregate reactions or other modes of failure)

2.2 MATERIALS

A. Cement Composition

1. Portland cement is composed of tricalcium silicate, dicalcium silicate, tricalcium aluminate, and tetra-calcium aluminoferrite. Additional cementitious materials such as Fly ash, slag, or silica fume may be used dependent as the maximum percentages are not exceeded within the overall chemical composition.

Substitute Cementitious Materials	Maximum Amount
ASTM C618 - Fly ash or other Pozzolans	25%
ASTM C989 - Slag	50%
ASTM C1240 - Silica fume	10%
Total of fly ash or other Pozzolans, slag, and silica fume	50%
Total of fly ash or other Pozzolans and silica fume	35%

B. Coarse Aggregate

1. Maximum Size:
 - a. Not to exceed any of the following conditions.
 - (i) $1/5$ the narrowest dimension between sides of form
 - (ii) $1/3$ the depth of the slab
 - (iii) $3/4$ " the minimum clear spacing between individual reinforcing bars or wires, bundles of bars, tendons, or ducts.

C. Fine Aggregates

1. Fine aggregates shall be composed of natural sand, manufactured sand, or a combination thereof.
2. Sieve Requirements

Sieve	% Passing
3/8"	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	5-30
No. 100	0-10

D. Admixtures

1. ASTM C494 Type E, Water Reducing and Accelerating
2. Admixtures containing Calcium Chloride shall not be used.

E. Water

1. Type: Potable Water
2. Maximum Chloride Ions:
 - a. Pre-stressed Concrete: 0.06 % by weight of cement
 - b. Reinforced Concrete: 0.10% by weight of cement

PART 3– EXECUTION

3.1 TEMPERATURE REGULATION

A. Hot-Weather Concreting

1. Prior to batching, manufacturer may perform following activities to maintain lower concrete temperatures, but not limited to:
 - a. Aggregate temperature reduction
 - (i) Spraying aggregate
 - (ii) Storing aggregates in spaces not exposed to direct sunlight
 - (iii) Removal of top layer aggregate for use of non-exposed aggregate in the batch
 - (iv) Or Equal.
 - b. Water temperature regulation
 - (i) Use of water with temperature lower than ambient
 - (ii) Use of water with crushed, shaved, or chipped ice

B. Cold-Weather Concreting

1. Prior to batching, manufacturer may perform following activities to maintain lower concrete temperatures, but not limited to:
 - a. Aggregate temperature increase
 - (i) Sand may be heated
 - (ii) Radiant pipes/heaters running through coarse aggregate
 - (iii) Or Equal
 - b. Water temperature regulation
 - (i) Water may be used
 - (ii) Steam may be used when aggregates are below freezing temperatures (<32°F) as long as moisture content equilibrium is maintained

3.2 MIXING AND TRANSPORTATION

- A. At CITY's request, CITY's representative(s) shall be allowed to witness mixing operations if mixed prior to arrival on site.
- B. Batches shall be made at the limited temperature (not ambient temperature)
- C. There are no limits on revolutions of revolving-drum trucks as long as the following conditions are met.
 1. Specified Mixing water is not exceeded

2. No retempering water is added
 3. Concrete has satisfactory plastic physical properties
 4. Satisfactory consistency and homogeneity for satisfactory placement and consolidation
- D. After trucks have delivered concrete to Site, proper concrete washout practices shall be performed before leaving the Site.

3.3 FORMWORK

- A. For formwork installation prior to pouring of any concrete mixes, refer to Section 03100 – Concrete Forms and Accessories
- B. For installation of integral waterstops, refer to Section 03153 – Waterstops.

3.4 REINFORCEMENT

- A. For reinforcement requirements, refer to Section 03200 – Concrete Reinforcement.

3.5 SLUMP TESTING

- A. Shall be performed in accordance with ASTM C143.
- B. Concrete testing shall be performed at 3 day, 7 day, and 28 day periods.
- C. Concrete mixes may be slump tested at the central plant tested prior to transportation. Slump testing shall be performed for each batch at the construction site regardless of whether it has been slump tested at the central plant.
- D. All concrete deliveries shall be slump tested at the construction site before pouring into Concrete formwork.
- E. Slump tests at the construction site shall be performed in the presence of the Resident Project Representative (RPR).
- F. The allowable slumps are as listed below and as indicated in ACI 211.1.

Types of Construction	Slump	
	Maximum (In.)	Minimum (In.)
Reinforced foundation walls and footings	3	1
Plain footings, caissons, and substructure walls	3	1
Beams and reinforced walls	4	1
Building columns	4	1
Pavements and slabs	3	1
Mass Concrete	2	1

3.6 INSTALLATION

- A. Pouring
 1. Concrete shall be dumped into the face of concrete-in-place. Concrete shall not be dumped away from Concrete-in-place.
 2. Concrete poured onto sloped surfaces shall start at the bottom-end of the slope.

3. In the event separation has not been eliminated in filling placing buckets, turn the bucket such that rocks fall on fresh concrete such that it may be readily worked into mass. Separated rocks shall not be dumped in a manner that free rock rolls out on forms or subgrade.
4. Drop Pipes
 - a. The top end of drop pipes shall be a minimum of 6x-8x the maximum aggregate size.

B. Field Control

1. At Engineer or Resident Project Representatives request, a core sample may be taken of any questionable areas or volumes. In areas deemed to be deficient per this Specification, the cost to repair shall be at Contractor's expense.

C. Hot-Weather Concreting

1. Perform in accordance with ACI 305-R – Hot-Weather Concreting.
2. In conditions with excessive high temperatures, low humidity, high wind speeds, concrete surface shall be wetted by fog spray or other means) to prevent crusting of surfaces. For additional means of mitigating evaporation rates greater than 0.2 lb/sq.ft/hr, refer to Section 03100 – Concrete Forms and Accessories
3. Under no conditions, shall water be added to mixtures after concrete slump testing and cylinders are tested for compressive strength.

D. Cold-Weather Concreting

1. Perform in accordance with ACI 305-R – Hot-Weather Concreting.
2. If concrete is to be poured during cold-weather, the subgrade may be covered with frost blankets or other means of heating may be applied to mitigate freezing of subgrade before the pour.
 - a. Frost blanket shall be removed prior to pouring of concrete.
3. Vented heaters may be used.
4. The use of salamander heaters or other heating devices that could expose fresh concrete to polluted atmospheres, exhaust flue gases, or carbon dioxide is not permitted.
5. For additional insulation formwork, refer to Section 03100 – Concrete Forms and Accessories.

3.7 STRENGTH TESTING

- A. Samples shall be from each batch delivered to Site.
- B. The average strength, the difference of values shall not be greater than the Standard deviation identified per ACI 350.
- C. A total of six (6) cylinders shall be taken from each batch for strength testing and in laboratory conditions. Laboratory-cured specimens shall be in accordance with ASTM C39.
 1. Two (2) cylinders shall be strength tested at 3-days.
 2. Two (2) cylinders shall be strength tested at 7-days.
 3. Two (2) cylinders shall be strength tested at 28-days.

- D. A total of six (6) cylinders shall be taken from each batch for strength testing and in field-cured conditions. Specimens field cured shall be in accordance with ASTM C31.
 - 1. Two (2) cylinders shall be strength tested at 3-days.
 - 2. Two (2) cylinders shall be strength tested at 7-days.
 - 3. Two (2) cylinders shall be strength tested at 28-days.
- E. If field-cured concrete specimens are less than 85% of the strength of laboratory-cured concrete specimens, immediate action shall be taken to improve procedures for field curing of concrete.

3.8 COMMISSIONING

- A. After concrete has been allowed to fully cured, Contractor shall schedule an inspection with City, City's representative, and City's inspector.
- B. Concrete shall be free of voids, honeycombs, cracks, and finished surfaces shall not be chipped, cracked, or found to be deficient.
- C. Any deficiencies in concrete shall be repaired and restored per Section 03900 – Concrete Restoration and Cleaning prior to continuing Work.
- D. Embedded pipes may be filled after passing inspection.

END OF SECTION

SECTION 03100 – CONCRETE FORMS AND ACCESSORIES

PART 1 – GENERAL

1.01 SUMMARY

- A. This section covers concrete used throughout wastewater facilities.
- B. Design-Builder shall furnish all labor, materials, equipment and incidentals as necessary to comply with requirements as shown on Drawings and as specified herein.

1.02 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Section 03100 – Concrete Forms & Accessories
 - 2. Section 03153 – Waterstops
 - 3. Section 03200 – Concrete Reinforcement
 - 4. Section 03600 – Grouting
 - 5. Section 03630 – Epoxies
 - 6. Section 03900 – Concrete Restoration & Cleaning
 - 7. Section 15200.150DI – Ductile Iron Pipe & Fittings.

1.03 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. SP. Number 4 – Formwork for Concrete
 - 2. 318 – Building Code Requirements for Reinforced Concrete
 - 3. 347 – Recommended Practice for Concrete Formwork
 - 4. 350 – Code Requirements for Environmental Engineering Concrete Structures and Commentary
- B. American Society of Testing and Materials (ASTM)
- C. International Code Council (ICC)
 - 1. International Building Code (IBC) 2018 with City of Kansas City, MO Amendments

1.04 DEFINITIONS

- A. Shores – Vertical or inclined support members designed to carry the weight of formwork, concrete, and construction loads above concrete.
- B. Reshores – Shores placed firmly under stripped concrete slab or structural member where original formwork has been removed, and requires the new slab or structural member to support its own weight and construction loads posted to it.
- C. Tolerances – The largest deviation minus the smallest deviation from the nominal value over a given length (in ft.) unless otherwise specified.

- D. Permanent Shores – Original shores that remain in place without being disturbed during and after formwork removal, and without permitting new concrete to support its own weight and additional construction loads above.

1.05 SUBMITTALS

- A. Submit as specified in Section 01019 – Closeout Procedures.
- B. Submit manufacturer's literature describing components to be provided, giving manufacturer's name, product component name, and line number for each component.
- C. Technical Submittals Include, but not limited to the following:
 - 1. Catalog data
 - 2. General Arrangements
 - 3. Assembly and disassembly or repair instructions
 - 4. Fabrication Drawings
 - 5. Detail Drawings
 - 6. Installation Drawings
 - 7. Mounting Assembly Diagram
 - 8. Installation Manuals
- D. Quality Assurance Submittals
 - 1. Provide manufacturer's certification that products to be used comply with specified requirements and are suitable for intended application.

1.06 QUALITY ASSURANCE

- A. Qualifications
 - 1. Materials specified herein shall be the product of a reputable and qualified manufacturer who is of proven ability and has at least five (5) years of experience in the production of such equipment in sizes similar to those required on this project.
 - 2. Installer shall be an authorized representative trained and approved.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. All components and accessories shall be handled in a manner that will ensure installation in a sound, undamaged condition. Equipment tools, and methods used in unloading, reloading, hauling, and shipping shall be such that components are not damaged.
- B. For materials exceeding 50 pounds, lifting eyes and lifting lugs shall be provided to allow for installation.
- C. Boxes and packages shall be properly marked to show its net and total weight, contents within the box and/or package.
- D. Items shall be marked as identified in delivery schedule and as shown in Submittals and include a complete list and bills of materials with each shipment. Each item requiring assembly shall be properly tagged and marked.
- E. If items are shipped separately, they shall be tagged and indicated as such to facilitate proper assembly on-site.

1.08 WARRANTY

- A. Installer shall provide a warranty for all items furnished and installed in accordance with Section 01740. Warranty shall run concurrently with the Contractor's warranty and commence at final completion and CITY's acceptance.
- B. Warranty shall cover all necessary labor, equipment, materials, and replacement parts resulting from faulty or inadequate material selection, defective workmanship and materials, leakage, breakage or other failure of all equipment and components furnished by the installer.

PART 2– PRODUCTS

2.01 GENERAL

A. Design

1. Formwork Tolerances

- a. Tolerances listed herein include is for the final cured concrete structure (including any deformations of formwork during concrete pours.

- (i) Environmental Engineering Structure (i.e. basins, clarifiers, wet wells, dry wells,etc.)

1. Form – Size Dimensions

Form Cross-Sectional Variations	+ 1/2 in. - 1/4 in.
Form - Thickness Variations	+ 1/2 in. - 1/4 in.
Form - Footing Variations	+ 1/2 in. - 1/4 in.

2. Form - Location & Orientation Dimensions

		Tolerance over given length			
		10 ft.	20 ft.	30 ft.	40 ft.
Northing-Easting Coordinates			1/2 in.		3/4 in.
Plumb variation	Abovegrade	1/2 in.	3/4 in.		1 1/4 in.
	Buried	1 in.	1-1/2 in.		2-1/2 in.
Level variation	Abovegrade	1/4 in.		1/2 in.	
	Buried	1/2 in.		1 in.	

2. Permanent Forms

- a. Permanent Forms may be use in the installation of clarifiers. The design of such structures shall include weep holes, or ports at the opposite end of the pour to confirm the form is free of voids.

3. Void Forms

- a. Void forms are prohibited in the use of formwork. Prior to concrete installation, the site shall be dewatered to remove any potential groundwater within expansive soils.
4. Construction Joints
 - a. Construction joints shall be placed such that form can be poured within one (1) working day.
 - b. Construction joints may also be the location of expansion/contraction joints in the final concrete structure
5. Through pipes and conduits
 - a. Formwork for thrust blocks, restraint blocks, or other concrete blocks used for underground piping shall apply concrete cover both to reinforcement bars and pipe. Refer to Section 03200 – Concrete Reinforcement.
 - b. Integral waterstops shall be utilized for all water-bearing concrete structures.
6. Embedded pipes and conduits
 - a. The following is spacing requirements for embedded pipes and conduits that are embedded in concrete (not only passing through concrete).

Concrete Slab Thickness	Maximum Conduit / Pipe Size	3x Spacing
4"	3/4" NPS	2.52 in
8"	2" NPS	7.125 in
12"	3" NPS	10.5 in
16"	4" NPS	13.5 in
20"	6" NPS	19.875 in
24"	6" NPS	19.875 in
30"	8" NPS	25.875 in
36"	10" NPS	32.25 in

- b. In the event, two conduits/pipes of different sizes run adjacent or over/under one another, then the spacing applied shall be the larger of the two conduits/pipes.
- c. Routing of embedded pipes and conduits within horizontal slabs shall be between the top and bottom reinforcing bars.
- d. No more than 4% of the cross-sectional area of any column shall be displaced by embedded pipes and conduits.
7. Formwork Accessorieis
 - a. The safety factor of all accessories shall be 2.0.
 - (i) If the form is to support the weight of the forms, concrete, construction live loads, and impact, then the safety factor shall be 3.0.

2.02 MATERIALS

A. Formwork

1. Steel/Aluminum forms shall be utilized unless otherwise specified. The rated capacity of formwork shall meet the lateral pressure and vertical pressure of concrete pouring activities.
 2. Steel formwork for clarifier walls may be permanent forms contingent upon the following items.
 - a. Steel sheathing is smooth and free of burrs or other items that would otherwise detract from the function of the clarifier.
 - b. Steel is the same material as specified by Clarifier manufacturer.
 3. Wood sheathing shall not be used on any surface of any concrete structure servicing process fluids (influent, effluent, sludge, etc.)
- B. Falsework
1. Supports for concrete forms shall meet the rated capacities as specified by Engineer.
 2. Footings shall be of concrete material. For concrete requirements, refer to Section 03000 – Concrete.
- C. Embedded Pipes and Conduits
1. 2” and Less: Carbon Steel, Schedule 40, Socket Welded Ends
 2. 3” and Greater: Carbon Steel, Schedule 40, Beveled Ends
 - a. Pipe and Conduits 3” NPS and greater shall not be considered as replacing structurally.
- D. Accessories
1. Form ties, anchors, hangers, and side form spacers: ASTM A580 316SS.
- E. Joint Sealants
1. Refer to Section 07920 – Joint Sealants
- F. Waterstops
1. Refer to Section 03153 – Waterstops.
- G. Insulation
1. Only to be used for cold-weather concreting.
 2. Minimum R Value: 4
- H. Form Release Agent
1. Type: Chemically Active Form release agent
 2. Certification
 - a. NSF 61 certified
 3. Additional Applicable Standards:
 - a. CEGS Section 03300 – Paragraph 10.8

PART 3– EXECUTION

3.01 PREPARATION

- A. Formwork design – Contractor shall submit formwork implementation plan that includes the installation and removal of shores and reshores.
1. Contractor shall maintain a record of all formwork calculations, materials used, rated capacities of formwork.

- B. Underground structures shall first be excavated accordingly with excavations adhering OSHA requirements. (i.e. sloping of excavations, points of egress, soil stabilization as needed, etc.)

3.02 FORMWORK INSTALLATION

- A. All dimensions including on-centers, sizing, location, and orientations shall be verified prior to installation of reinforcement, form accessories, waterstops and insulation.
- B. Apply form release agents to sheathing as applicable.
- C. Reinforcement
 - 1. Form release agents must not come into contact with reinforcement. If in the event, form release agent has come into contact with reinforcement, reinforcement, must be washed, cleaned immediately prior to pouring concrete.
 - 2. All form ties, form anchors, form hangers, side form spacers, and waterstops shall be installed after reinforcement bars have been placed in formwork.
 - 3. Pipes, conduits, and sleeves shall be installed after reinforcement and ties, anchors, and waterstops has been placed within formwork.
 - a. Piping through an environmental engineering concrete structure shall be Ductile Iron Material. Refer to Section 15200.150DI – Ductile Iron Pipe & Fittings.
 - b. Aluminum pipe and Aluminum conduit is not permitted.
- D. POURING
 - 1. Prior to any pouring of concrete, Formwork shall be checked to be sufficiently tight to prevent leakage of mortar.
 - 2. If installer is above 3.5 feet above grade due to the form height, fall protection and walkways will be provided as applicable by Contractor.
 - 3. Refer to Section 03000 – Concrete for additional requirements.
- E. CONSTRUCTION LOADS
 - 1. Construction loads shall not be added to the concrete structure until all formwork has been removed.
 - 2. Construction loads shall not be added to concrete structure unless the Engineer indicates:
 - a. The structure can support dead loads, live loads, and construction loads.
 - b. Concrete Structure has reached sufficient strength to accommodate construction loads. Refer to strength testing requirements in Section 03000 – Concrete.
- F. STRIPPING
 - 1. Forms may be removed when slabs and structural member may support dead loads, live loads, and construction loads.
 - 2. Any concrete surfaces found to be in need in repair after stripping of formwork shall be repaired promptly. Refer to Section 03900 – Concrete Restoration and Cleaning.
 - 3. If sheathing is to be re-used multiple times throughout project, form must be cleaned with water or compressed air after each use. Form release agent must be re-applied to sheathing before reuse unless manufacturer's instructions indicate otherwise.

3.03 COMMISSIONING

- A. Refer to Section 03000 – Concrete

END OF SECTION

TEMPLATE

SECTION 03200 – CONCRETE REINFORCEMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section covers concrete reinforcement used throughout concrete structures used throughout wastewater facilities.
- B. Design-Builder shall furnish all labor, materials, equipment and incidentals as necessary to comply with requirements as shown on Drawings and as specified herein.

1.02 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Section 03000 – Concrete
 - 2. Section 03100 – Concrete Forms & Accessories
 - 3. Section 03153 – Waterstops
 - 4. Section 09960 – Steel Coatings

1.03 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. 304 – Recommended Practice for Measuring, Mixing, Transporting and Placing concrete
 - 2. 304R – Guide for Measuring, Mixing, Transporting, and Placing Concrete
 - 3. 309 – Recommended Practice for Consolidation of Concrete
 - 4. 315 – Manual of Standard Practice for Detailing Reinforced Concrete Structures
 - 5. 318 – Building Code Requirements for Reinforced Concrete
 - 6. 350 – Code Requirements for Environmental Engineering Concrete Structures and Commentary
 - 7. 439.2R – Steel Reinforcement Properties and Availability
- B. American Society of Testing and Materials (ASTM)
 - 1. A82 – Cold-Drawn Steel Wire for Concrete Reinforcement
 - 2. A184 – Fabricated Deformed Steel Bar Mats for Concrete Reinforcements
 - 3. A185 – Welded Steel Wire Fabric for Concrete Reinforcement
 - 4. A421 - Uncoated Stress-Relieved wire for prestressed Concrete
 - 5. A416 – Uncoated Seven-Wire Stress-Relieved Strand for Prestressed Concrete
 - 6. A497 – Welded Deformed Steel Wire Fabric for Concrete Reinforcement
 - 7. A615 – Deformed and Plain Billet Steel Bars for Concrete Reinforcement
 - 8. A704 – Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement
 - 9. A706 – Low-Alloy Steel Deformed Bars for Concrete Reinforcement
 - 10. A722 – Uncoated High-Strength Steel Bar for Prestressing Concrete

11. A934 – Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
12. A996 – Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement
13. A1065 – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
14. D3963 – Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing bars
15. E329 – Standard Specification for Agencies Engaged in Construction Inspection and/or Testing
- C. American Welding Society (AWS)
 1. D1.4 – Structural Welding Code – Reinforcing Steel
- D. Concrete Reinforcing Steel Institute (CRSI)
 1. Manual of Standard Practice
- E. International Code Council (ICC)
 1. International Building Code (IBC) 2018 with City of Kansas City, MO Amendments
- F. Society for Protective Coatings (SSPC)
 1. SP-10 – Near-White Metal Blast Cleaning

1.04 DEFINITIONS

- A. Bundled Bars – group of parallel bars bundled in contact to act as a unit.
- B. Rebar – Reinforcement Bar
- C. #X – Size of Bar to be indicated by the Engineer.

1.05 SUBMITTALS

- A. Submit as specified in Section 01019 – Closeout Procedures.
- B. Submit manufacturer's literature describing components to be provided, giving manufacturer's name, product component name, and line number for each component.
- C. Technical Submittals Include, but not limited to the following:
 1. Catalog information
 2. Batch Number, Heat Number, and chemical composition
 3. General Arrangements
 4. Assembly and disassembly or repair instructions
 5. Fabrication Drawings
 6. Detail Drawings
 7. Installation Drawings
 8. Manufacturer's Installation Instructions
- D. Quality Assurance Submittals
 1. Provide manufacturer's certification that products to be used comply with specified requirements and are suitable for intended application.

1.06 QUALITY ASSURANCE

A. Qualifications

1. Materials specified herein shall be the product of a reputable and qualified manufacturer who is of proven ability and has at least five (5) years of experience in the production of such equipment in sizes similar to those required on this project.
2. Installer shall be an authorized representative trained and approved.

B. Identification – All steel shall be provided with an appropriate Material Test Report (MTR). Materials shall be properly labeled prior to shipment.

C. Inspections and Testing

1. Bend Testing shall be performed on field samples per ACI 318. Bend testing shall be performed for batch of steel produced.
2. Testing of samples shall be incorporated into project schedule.
 - a. Testing will not be required if rebar manufacturer provides data for the batch not older than 24 months where bend testing has already been performed.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. All components and accessories shall be handled in a manner that will ensure installation in a sound, undamaged condition. Equipment tools, and methods used in unloading, reloading, hauling, and shipping shall be such that components are not damaged.
- B. For materials exceeding 50 pounds, lifting eyes and lifting lugs shall be provided to allow for installation.
- C. Boxes and packages shall be properly marked to show its net and total weight, contents within the box and/or package.
- D. Items shall be marked as identified in delivery schedule and as shown in Submittals and include a complete list and bills of materials with each shipment. Each item requiring assembly shall be properly tagged and marked.
- E. If items are shipped separately, they shall be tagged and indicated as such to facilitate proper assembly on-site.

1.08 WARRANTY

- A. Installer shall provide a warranty for all items furnished and installed in accordance with Section 01740. Warranty shall run concurrently with the Contractor's warranty and commence at final completion and CITY's acceptance.
- B. Warranty shall cover all necessary labor, equipment, materials, and replacement parts resulting from faulty or inadequate material selection, defective workmanship and materials, leakage, breakage or other failure of all equipment and components furnished by the installer.

PART 2– PRODUCTS

2.01 GENERAL

- A. All design and material requirements listed herein shall adhere to the requirements of ACI 318. Additionally, all basins, clarifiers, or other concrete structures below finished grade shall meet the requirements of ACI 350.
- B. The installation of reinforcement shall adhere to the requirements of the CRSI Manual of Standard Practice.

2.02 DESIGN

A. Concrete Structure Exposure Type

1. The reinforcement material type for the concrete structure is based on the type of exposure. Refer to the table below for the exposure type of each concrete structure.

Concrete Structure	Type of Exposure
Sidewalks	Normal Exposure
Vaults	Normal Exposure
Box Culvert	Severe Exposure
Columns - Building Interior - 2nd Floor and higher	Normal Exposure
Columns - Building Interior - 1st Floor and lower	Severe Exposure
Columns - Exterior	Normal Exposure
Floors - Building Interior – 1 st floor and lower	Severe Exposure
Floors - Building Interior - 2nd floor and higher	Normal Exposure
Walls - First floor and lower	Severe Exposure
Walls - 2nd Floor and higher	Normal Exposure
Influent/Effluent Channels	Severe Exposure
Trench Drains	Severe Exposure
Manholes	Severe Exposure
Wet Wells	Severe Exposure
Dry Wells	Severe Exposure
Clarifier Walls	Severe Exposure
Clarifier Bottoms	Severe Exposure
Basin Bottoms	Severe Exposure

B. Reinforcing Bars

1. Include at least one terminal location for a grounding wire to be connected if designer chooses to cathodically-protect reinforcement. If terminal is not in use for protection, it must be covered and protected from weather. (snow, ice, dirt, debris)
2. Single Bars can be replaced with bundle bars contingent upon
 - a. Meeting the equivalent cross-sectional area of the single bar.
 - b. Adhering to the table below. Number of Bundled bars excludes the splice bar.

Single Bar	#3	DNB								
	#4	DNB								
	#5	2	DNB							
	#6	4	2	DNB						
	#7	DNB	3	DNB	DNB					
	#8	DNB	3	2	DNB	DNB				
	#9	DNB	DNB	3	2	DNB	DNB			
	#10	DNB	DNB	4	2	2	DNB	DNB		
	#11	DNB	DNB	DNB	3	2	DNB	DNB	DNB	
	#14	DNB	DNB	DNB	DNB	3	2	2	DNB	DNB
	#18	DNB	DNB	DNB	DNB	DNB	DNB	4	3	2
Bundled Bars										

DNB = Do Not Bundle

3. Bend Diameter

- The total hook length will be the summation of the bend length (90°, 135° degree, 180°), and the free end extension length.

Bend Requirements					
Reinforcing Bar Size	Nominal Diameter	Minimum Bend Diameter	Hook - Free End Extension Length		
			180 Deg. Bend	90 Deg. Bend	Stirrup and Tie Hooks
					90 Deg or 135 Deg. Bend
	in.	in.	in.	in.	in.
#3	0.375	2 1/4	2 5/8	4 5/8	2 5/8
#4	0.5	3	2 5/8	6 1/8	3 1/8
#5	0.625	3 3/4	2 5/8	7 5/8	3 7/8
#6	0.75	4 1/2	3 1/8	9 1/8	4 5/8
#7	0.875	5 1/4	3 5/8	10 5/8	5 3/8
#8	1	6	4 1/8	12 1/8	6 1/8
#9	1.128	9 1/2	4 5/8	13 5/8	6 7/8
#10	1.27	10 3/4	5 1/8	15 2/8	7 5/8
#11	1.41	12	5 6/8	17	8 4/8
#14	1.693	18 1/4	6 7/8	20 3/8	10 2/8
#18	2.257	24	9 1/8	27 1/8	13 5/8

b. Prefabrication Requirements

- The following reinforcing bars to be used for curved surfaces may be fabricated/ bent on-site if the structure is built for normal exposure and epoxy coating is not required.

Asset	Size	Minimum Bar Size
Columns	6 in. - 48 in.	#3 and Larger
Cylindrical Concrete Walls	Up to 25 ft. diameter	#5 and Larger
	Up to 70 ft. diameter	#7 and Larger
	Up to 100 ft. diameter	#8 and Larger
	Up to 200 ft. diameter	#9 and Larger

C. BAR SUPPORTS

1. Bar supports shall be used for applications on the outer surface of concrete formwork that will be next to exposed earth. If the rebar is needing to be supported on the bottom of footings or slabs, dobies may also be used.
2. Only to be used in applications for horizontal slabs and to maintain 3 in. of clearance from the exposed earth to rebar location. For all other applications, the use of Ties shall be utilized.
3. For top mats of reinforcement located above bottom reinforcement mats, stirrups shall be utilized for support.

D. SPLICES

1. Used for beams and/or girders that require bars longer than commonly available in industry.
2. Butt splices shall be used in vertical bar applications. For welded bar butt splices, the bottom bar shall be square cut and the top bar shall be beveled on all sides of the top bar.
3. Lap splices shall be used in lateral bar applications.

E. COLUMNS

1. Spirals
 - a. Spacing between each turn shall be no greater than 3 inches or no greater than 1/3 max size aggregate used.
 - b. Top and bottom include 1.5 extra turns.
2. Column Ties
 - a. Vertical bars in tied columns must be tied together laterally
 - b. Lap splices not permitted for #14 and #18 bars.
3. Bundled Bars
 - a. May be used for Column Ties

F. COATINGS

1. Rust-inhibitor coatings other than Epoxy coatings shall be approved by Engineer. Rust-inhibitor coatings may be used for concrete reinforcement considered normal exposures.

G. CONCRETE COVER

1. All concrete reinforcement shall have the minimum concrete cover as specified by ACI 318.
2. Cast-In-Place
 - a. Cast against and permanently exposed to earth 3.00 in.
 - b. Exposed to earth or weather
 - (i) #6 through #18 Bars 2.00 in.
 - (ii) #5 bar, W31 wire, D31 wire, and smaller 1.50 in.
 - c. Not exposed to weather or in contact with ground
 - d. Slabs, Wall Joists
 - (i) #14 and #18 bars 1.50 in.
 - (ii) #11 bar and smaller 0.75 in.
 - e. Beams, columns:
 - (i) Primary reinforcement, ties, stirrups, spirals 1.50 in.
 - f. Shells, folded plate members:
 - (i) #6 Bar and larger 0.75 in.
 - (ii) #5 Bar, W31 wire, D31 wire, and smaller 0.50 in.
3. Precast
 - a. Exposed to earth or weather
 - (i) Wall panels
 1. #14 and #18 Bars 1.500 in.
 2. #11 Bar and smaller 0.750 in.
 - (ii) Other members
 1. #14 and #18 Bars 2.000 in.
 - b. Not exposed to weather or in contact with ground
 - (i) Slabs, walls, joists
 1. #14 and #18 Bars 1.250 in.
 2. #11 Bar and smaller 0.625 in.
 - (ii) Beams, columns, primary reinforcement Min. 0.625 in.
Max. 1.500 in.
 - (iii) Ties, stirrups, and spirals 0.375 in.
 - (iv) Shells, folded plate members
 1. #6 Bar and larger 0.625 in.
 2. #5 Bar, W31 Wire, D31 Wire, and smaller 0.375 in.

2.03 MATERIALS

- A. Welded Wire Fabric is only permitted for sidewalks not exceeding 6 ft width.
- B. Exposures
 1. Normal Exposure
 - a. Billets, #X Bar, ASTM A615, Grade 60, Rust-Inhibitive Coat
 - b. Rail, #X Bar, ASTM A998 Grade 60, Rust-Inhibitive Coat
 - c. Axle, #X Bar, ASTM A998 Grade 60, Rust-Inhibitive Coat
 - d. Low Alloy, #X Bar, ASTM A706, Grade 60, Rust-Inhibitive Coat

- e. Deformed Wire Fabric, Welded, #X, ASTM A497 Grade 60, Rust-Inhibitive Coat
- f. Tie Wire, #16 Gauge, ASTM A580 316SS
- 2. Severe Exposure
 - a. #3 Bar - #5 Bar
 - Billets, #X Bar, ASTM A615, Grade 60, ASTM A775 Epoxy Coat, 9-12 mils DFT
 - Rail, #X Bar, ASTM A998 Grade 60, ASTM A775 Epoxy Coat, 9-12 mils DFT
 - Axle, #X Bar, ASTM A998 Grade 60, ASTM A775 Epoxy Coat, 9-12 mils DFT
 - Low Alloy, #X Bar, ASTM A706 Grade 60, ASTM A775 Epoxy Coat, 9-12 mils DFT
 - b. #6 Bar - #11 Bar
 - Billets, #X Bar, ASTM A615, Grade 60, ASTM A775 Epoxy Coat, 12-16 mils DFT
 - Rail, #X Bar, ASTM A998 Grade 60, ASTM A775 Epoxy Coat, 12-16 mils DFT
 - Axle, #X Bar, ASTM A998 Grade 60, ASTM A775 Epoxy Coat, 12-16 mils DFT
 - c. #6 Bar - #11 Bar
 - Low Alloy, #X Bar, ASTM A706 Grade 60, ASTM A775 Epoxy Coat, 12-16 mils DFT
 - d. Tie Wire, #16 Gauge, ASTM A580 316SS, PVC coated.
 - Must be used exclusively when Epoxy-coated rebar is required.

PART 3– EXECUTION

3.01 SURFACE PREPARATION

- A. All rebar shall have a SSPC-SP10 near-white finish.

3.02 COATING APPLICATION

- A. All coatings shall be applied after all bending of rebar has been applied. Coatings shall not be performed before rebar has been bent. Surfaces shall be free of surface oxidation before application of coating has commenced.
- B. Reinforcements with epoxy coatings shall adhere to the requirements of ASTM A934.
- C. For welded joints, a spray application of coating shall be reapplied after the weld has been performed with a thickness no less than the fusion-bonded epoxy coating.
- D. For more information on coating of steel, refer to Section 09960 – Steel Coatings.

3.03 REINFORCEMENT INSTALLATION

- A. Prior to any pouring of concrete over reinforcement, the coating on the reinforcement shall be inspected and free of holiday defects, scratches, pinholes, or other defects that could inhibit the coating's ability to protect the reinforcement from corrosion.

- B. All dowel rebar shall be capped per OSHA requirements until concrete is poured into formwork.
- C. Waterstops may be installed after passing inspection and installed within concreted formwork. Refer to Section Section 03153 – Waterstops.

END OF SECTION

SECTION 03600 – GROUT

PART 1 – GENERAL

1.01 SUMMARY

- A. This section covers cementitious grout and epoxy grout used throughout wastewater facilities.
- B. Design-Builder shall furnish all labor, materials, equipment and incidentals as necessary to comply with requirements as shown on Drawings and as specified herein.

1.02 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Section 03900 – Concrete Restoration and Cleaning
 - 2. Section 04220 – Concrete Masonry Units

1.03 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. 351 – Grouting between Foundations and Bases for Support of Equipment and Machinery
 - 2. 503R – Use of Epoxy Compounds With Concrete
- B. American Society of Testing and Materials (ASTM)
 - 1. C109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars using 2-inch cube specimens
 - 2. C267 – Standard Test Methods for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacing and Polymer Concretes
 - 3. C531 – Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant mortars, Grouts, Monolithic Surfacing, and Polymer Concretes
 - 4. C579 – Standard Test Method for Compressive Strength of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing's and Polymer Concretes.
 - 5. C580 – Standard Test Method for Flexural Strength and Modulus of Elasticity of chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes
 - 6. C1107 – Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-Shrink)
 - 7. C1181 – Standard Test Methods for Compressive Creep of Chemical-Resistant Polymer Machinery Grouts.
- C. International Concrete Repair Institute (ICRI)
 - 1. Guideline 310.2 – Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays

1.04 SUBMITTALS

- A. Submit as specified in Section 01019 – Closeout Procedures.
- B. Submit manufacturer's literature describing components to be provided, giving manufacturer's name, product component name, and line number for each component.
- C. Quality Assurance Submittals
 - 1. Provide manufacturer's certification that products to be used comply with specified requirements and are suitable for intended application.

1.05 QUALITY ASSURANCE

- A. Qualifications
 - 1. Materials specified herein shall be the product of a reputable and qualified manufacturer who is of proven ability and has at least five (5) years of experience in the production of such equipment in sizes similar to those required on this project.
 - 2. Installer shall be an authorized representative trained and approved.
- B. Identification – All materials shall be labeled and provided with an appropriate Safety Data Sheet and properly labeled prior to shipment.
- C. Inspections and Testing
 - 1. Compressive Strength of cementitious grouts shall be determined per ASTM C109
 - 2. Chemical Resistance of grouts shall be determined per ASTM C267.
 - 3. Coefficients of Thermal Expansions shall be determined per ASTM C531.
 - 4. Compressive Strength of epoxy grouts shall be determined per ASTM C579.
 - 5. Compressive Creep of epoxy grouts shall be determined per ASTM C1181.
 - 6. Testing of samples shall be incorporated into project schedule.
 - a. Testing will not be required if grout manufacturer provides data based on testing not older than 24 months of grout products for adhesion to and compatibility with substrates and other materials used in this application.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. All components and accessories shall be handled in a manner that will ensure installation in a sound, undamaged condition. Equipment tools, and methods used in unloading, reloading, hauling, and shipping shall be such that components are not damaged.
- B. For materials exceeding 50 pounds, lifting eyes and lifting lugs shall be provided to allow for installation.
- C. Boxes and packages shall be properly marked to show its net and total weight, contents within the box and/or package.
- D. Items shall be marked as identified in delivery schedule and as shown in Submittals and include a complete list and bills of materials with each shipment. Each item requiring assembly shall be properly tagged and marked.
- E. If items are shipped separately, they shall be tagged and indicated as such to facilitate proper assembly on-site.

1.07 WARRANTY

- A. Installer shall provide a warranty for all items furnished and installed in accordance with Section 01740. Warranty shall run concurrently with the Contractor's warranty and commence at final completion and CITY's acceptance.
- B. Warranty shall cover all necessary labor, equipment, materials, and replacement parts resulting from faulty or inadequate material selection, defective workmanship and materials, leakage, breakage or other failure of all equipment and components furnished by the installer.

PART 2– PRODUCTS

2.01 GENERAL

- A. All products listed herein are approved for use. Any product to be approved by CITY must be a product from a CITY-approved manufacturer.
- B. Installation of products must comply with manufacturer's written installation procedures and individual product data sheet application bulletins.

2.02 ACCEPTABLE MANUFACTURERS

- 1. Cementitious Grouts
 - a. Masterbuilders Inc.
 - b. Sauereisen Cements
 - c. Sika Corporation inc.
 - d. Five Star Products Inc.
 - e. L&M Construction Chemicals Inc.
- 2. Epoxy Grouts
 - a. BASF Construction Chemicals, Inc.
 - b. Five Star Products Inc.
 - c. L&M Construction Chemicals Inc.

2.03 Products

- A. Cementitious Grout - ASTM C1107 Grade C
- B. Epoxy Grout

1. Compressive Strength (ASTM C579 B)	9600 psi at 24 hours 15000 psi at 28 days
2. Flexural Strength (ASTM C580)	4700 psi
3. Tensile Strength (ASTM C307)	2000 psi
4. Height Change	Positive Expansion
5. Effective Bearing Area	> 95%
6. Creep (ASTM C1181)	$\leq 4.2 \times 10^{-3}$ in/in
7. Coefficient of Thermal Expansion	24.5×10^{-6} in/in°F

2.04 FEATURES

- A. All grouts shall be non-shrink and flowable.

2.05 APPLICATIONS

- A. Cementitious Grouts shall be used in the following applications:
 - 1. Concrete Masonry Grout – Refer to Section 04220 – Concrete Masonry Units
 - 2. Anchorage to Foundations including:
 - a. Structural Steel columns
 - b. High-Mast Lighting
 - c. Low-Mast Lighting
 - d. Tank/Vessel Supports
 - e. Building Shells
 - 3. Filling of honeycombs or voids in non-water bearing surfaces
- B. Epoxy Grouts shall be used in the following applications
 - 1. Anchorage to Foundations including:
 - a. Rotating Equipment
 - b. Reciprocating Equipment
 - c. Vibrating Equipment
 - 2. Filling of honeycombs or voids in
 - a. Water bearing surfaces
 - b. Foundations and Floors supporting chemical tanks
 - c. Foundations below the water table.
 - 3. Tiling
- C. Color – (As specified by Engineer or Architect)

PART 3– EXECUTION

3.01 SURFACE PREPARATION

- A. Mechanical abrasion shall be used for surface preparation. The surface roughness of any foundation will range from CSP-6 to CSP-9.
- B. Surface preparation is not required for usage of grout with Concrete Masonry Units.
- C. Presoak concrete surface continuously ranging from 8 hours to 24 hours prior to grouting. At the completion of presoaking, remove any standing water.

3.02 INSTALLATION

- A. All formwork surfaces shall be pre-treated with a bond-inhibitor before grout fills the form.
- B. Grout shall be applied per the manufacturer's instructions.
- C. If using grout within a baseplate, first confirm the baseplate has means to release air at the opposite end of the pour.
- D. After grout has cured, remove all formwork. If formwork had misapplied bond-inhibitor, Contractor shall take precaution to remove formwork without affecting finished grout.

END OF SECTION

SECTION 03630 – EPOXIES

PART 1 – GENERAL

1.01 SUMMARY

- A. This section covers epoxies, epoxy gels, and epoxy bonding agents used throughout wastewater facilities.
- B. Design-Builder shall furnish all labor, materials, equipment and incidentals as necessary to comply with requirements as shown on Drawings and as specified herein.

1.02 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Section 03900 – Concrete Restoration and Cleaning

1.03 REFERENCES

- A. American Society of Testing and Materials (ASTM)
 - 1. C881 – Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
 - 2. C882 – Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Sheet
 - 3. C883 – Standard Test Method for Effective Shrinkage of Epoxy-Resin Systems Used with Concrete
 - 4. D638 – Standard Test Method for Tensile Properties of Plastics
 - 5. D695 – Standard Test Method for Compressive Properties of Rigid Plastics
- B. International Code Council (ICC)
 - 1. International Building Code (IBC) 2018 with City of Kansas City, MO Amendments
- C. Society for Protective Coatings (SSPC)
 - 1. SP-10 – Near White Metal Blast Cleaning

1.04 DEFINITIONS

- A. Existing – Pertaining to concrete objects that have already been cured
- B. New – New objects being adhered to with object including fresh concrete and/or equipment or hatches.
- C. Injection – Epoxy application process of filling voids within concrete after capping the crack.

1.05 SUBMITTALS

- A. Submit as specified in Section 01019 – Closeout Procedures.
- B. Submit manufacturer's literature describing components to be provided, giving manufacturer's name, product component name, and line number for each component.
- C. Quality Assurance Submittals

1. Provide manufacturer's certification that products to be used comply with specified requirements and are suitable for intended application.

1.06 QUALITY ASSURANCE

A. Qualifications

1. Materials specified herein shall be the product of a reputable and qualified manufacturer who is of proven ability and has at least five (5) years of experience in the production of such equipment in sizes similar to those required on this project.
2. Installer shall be an authorized representative trained and approved.

B. Identification – All materials shall be labeled and provided with an appropriate Safety Data Sheet and properly labeled prior to shipment.

C. Inspections and Testing

1. The tensile properties of each epoxy shall be determined per ASTM D638.
2. Compressive properties of each epoxy shall be determined per ASTM D695.
3. Epoxy equivalent shall be such that the compressive strength with fillers is not less than the concrete it is binding to.
4. Testing of samples shall be incorporated into project schedule.
 - a. Testing will not be required if sealant manufacturer provides data based on testing not older than 24 months of epoxy products for adhesion to and compatibility with substrates and other materials used in this application.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. All components and accessories shall be handled in a manner that will ensure installation in a sound, undamaged condition. Equipment tools, and methods used in unloading, reloading, hauling, and shipping shall be such that components are not damaged.
- B. For materials exceeding 50 pounds, lifting eyes and lifting lugs shall be provided to allow for installation.
- C. Boxes and packages shall be properly marked to show its net and total weight, contents within the box and/or package.
- D. Items shall be marked as identified in delivery schedule and as shown in Submittals and include a complete list and bills of materials with each shipment. Each item requiring assembly shall be properly tagged and marked.
- E. If items are shipped separately, they shall be tagged and indicated as such to facilitate proper assembly on-site.

1.08 WARRANTY

- A. Installer shall provide a warranty for all items furnished and installed in accordance with Section 01740. Warranty shall run concurrently with the Contractor's warranty and commence at final completion and CITY's acceptance.
- B. Warranty shall cover all necessary labor, equipment, materials, and replacement parts resulting from faulty or inadequate material selection, defective workmanship and materials, leakage, breakage or other failure of all equipment and components furnished by the installer.

PART 2– PRODUCTS

2.01 GENERAL

- A. All products listed herein are approved for use. Any product to be approved by CITY must be a product from a CITY-approved manufacturer.
- B. Installation of products must comply with manufacturer's written installation procedures and individual product data sheet application bulletins.

2.02 ACCEPTABLE MANUFACTURERS

1. BASF
2. Dayton Superior
3. Sika Corporation

2.03 APPLICATIONS

- A. The epoxy used will depend on the type of application of the epoxy. For the type of Epoxy used, refer to the application table below. The physical requirements of the Epoxy selection shall be no less than the minimum of the physical requirements in ASTM C881.

Epoxy Classification				
Object 1	Object 2	Condition Obj.1 - Condition Obj. 2	Adhesion Type	Epoxy Selection
Non-Load Bearing Wall		Existing	Injection	Type I Grade 1
Non-Load Bearing Wall		Existing	Exposed Rebar	Type I Grade 3
Non-Load Bearing Wall	Non-Load Bearing Wall	Existing	Surface Crack	Type I Grade 3
Non-Load Bearing Wall	Non-Load Bearing Wall	Existing - Existing	Mate	Type II Grade 3
Non-Load Bearing Wall	Non-Load Bearing Wall	Existing - New	Mate	Type II Grade 3
Load Bearing Floor		Existing	Injection	Type IV Grade 1
Load Bearing Floor		Existing	Surface Crack	Type IV Grade 2
Load Bearing Floor		Existing	Exposed Rebar	Type IV Grade 2
Load Bearing Floor	Hatch	Existing - New	Mate	Type IV Grade 3
Load Bearing Wall		Existing	Injection	Type IV Grade 1
Load Bearing Wall		Existing	Exposed Rebar	Type IV Grade 3
Load Bearing Wall		Existing	Surface Crack	Type IV Grade 3

Load Bearing Wall	Load Bearing Wall	Existing - New	Mate	Type IV Grade 3

B. For all other applications not listed herein, Contractor shall coordinate with Owner's Representative for approval of selected epoxy. In general, the grade of epoxy/Viscosity is based on the following application locations.

1. Voids within Cracks – Grade 1
2. Horizontal Surfaces – Grade 2
3. Vertical Surfaces – Grade 3

C. The Class of Epoxy used shall be dependent on the temperature of the concrete it is adhered to. Use the following table for Class Determination

Normal Conditions	Class C
Cold-Weather Concreting	Class A
Hot-Weather Concreting	Class F

D. Color – (Match existing application surface)

PART 3– EXECUTION

3.01 INSTALLATION

- A. Epoxies shall be applied per the manufacturer's instructions.
- B. For the use of epoxy in the restoration of concrete, refer to Section 03900 – Concrete restoration and cleaning.

END OF SECTION

SECTION 13315 - PROCESS INSTRUMENTATION AND CONTROLS - PRODUCTS

PART 1 – GENERAL

1.01 SCOPE.

- A. This section covers the furnishing, installation, and services for the field-mounted instruments and analyzers, major systems, panels, and subassemblies.
- B. Refer to Instrumentation General Provisions, Section 13300.

1.02 RELATED WORK

- A. Refer to Section 13300

1.03 SUBMITTALS

- A. Refer to Section 13300.

1.04 REFERENCE STANDARDS

- A. Refer to Section 13300.

1.05 QUALITY ASSURANCE

- A. Refer to Section 13300.

1.06 WARRANTY

- A. Special warranty specified in Section 01740 (3-year).

1.07 MAINTENANCE AND TEST EQUIPMENT

- A. In addition to the tools and test equipment specified in section 13300, provide the following complete with cabling cases, patch cords, etc.
 - 1. One handheld smart transmitter calibrators provided by the transmitter manufacturer to calibrate all smart field transmitters provided.
 - 2. One dead weight tester suitable for testing/calibrating pressure instruments provided. The dead weight tester shall be as manufactured by Ametek, Type 10 or equal.
 - 3. The spares listed above shall be packed in a manner suitable for long-term storage and shall be adequately protected against corrosion, humidity and temperature.
 - 4. Provide other spare parts as indicated on the individual device specifications.

PART 2 – PRODUCTS

2.01 FIELD MOUNTED INSTRUMENTS

- A. The Engineer shall determine whether a product is an "or equal" based upon the information listed herein and the manufactures data sheets regarding the models specified. Alternate equipment must meet the criteria listed herein and any additional information in the manufactures data sheets in order to be accepted as an "or equal".
 - 1. Magnetic Flowmeter
 - a. Flow Element

- (i) Type.
 - 1. Pulsed DC electromagnetic induction type and shall provide a signal which is linear to the liquid flow rate.
- (ii) Functional Performance:
 - 1. Power requirements - Match to converter/ transmitter.
 - 2. Accuracy - Plus or minus 1 percent of rate (including converter/transmitter).
 - 3. Temperature rating - Suitable for process liquid temperature up to 70 degrees C and an ambient of 65 degrees C.
 - 4. RFI protection - Provide RFI protection.
 - 5. Pressure rating - 240 PSI if 150 lb flanges are used, 700 PSI if 300 lb flanges are used.
 - 6. Additional - Meter shall be capable of running empty indefinitely without damage to any component
- (iii) Physical:
 - 1. Metering Tube: Carbon steel unless otherwise indicated. Stainless steel on all sludge applications.
 - 2. Pressure limitation: 16 Bar (230 psi)
 - 3. Flanges: **ANSI** 150 lb, carbon steel unless otherwise indicated. Provide 316 stainless steel on all sludge applications. Flangeless wafer type may be used if compatible with adjacent piping.
 - 4. Liner - Polyurethane unless noted otherwise.
 - 5. Electrodes - 316 stainless steel, bullet nosed or elliptical self cleaning type unless otherwise noted.
- b. Housing - Meters in below grade vaults, basements, etc., shall be designed for accidental submergence in 30 feet of water for 24 hours. Meters above grade shall be of splash proof/drip proof design unless otherwise noted. Where hazardous areas are indicated, the equipment shall be rated for that area.
- c. Painting - All external surfaces shall be painted with a chemical and corrosion resistant epoxy finish.
- d. Accessories/Options Required:
 - (i) Factory calibration - All flow tubes and transmitters shall be factory calibrated together. A copy of the report shall be in the O&M manual.
 - (ii) Grounding - Meter shall be grounded per the manufacturers recommendation. Provide ground ring, ground wires, gaskets. etc., as required or as otherwise noted. All materials shall be suitable for liquid being measured.
 - (iii) Ultrasonic cleaning - Where indicated on the instrument device schedules, provide a continuous ultrasonic electrode cleaning system. The ultrasonic generator shall be housed in a NEMA 4X wall mounted cabinet. Provide all necessary cables and connectors. The

ultrasonic generator shall be powered through the special cables to the magnetic flowmeter.

- e. Manufacturers:
 - (i) Rosemount
 - (ii) ABB
 - (iii) Or Equal
- 2. Flow Converter/Transmitter
 - a. Type:
 - (i) Match to flow element.
 - b. Functional/Performance:
 - (i) Power requirements - 120V AC plus or minus 10percent
 - (ii) Accuracy - As defined for flow element
 - (iii) Temperature - minus 25 degrees C to plus 65 degrees C.
 - (iv) Output - Isolated 4-20 mA into 0-1000 ohms.
 - c. Physical:
 - (i) Housing - NEMA 4X remote. wall mount.
 - d. Accessories/Options Required:
 - (i) Cable - Provide signal cable between magmeter and signal converter
 - (ii) Indicator - Provide local indicator with scale engraved 0-100 percent which indicates actual converter output signal.
 - (iii) Totalizer - Where indicated on the Instrument Device Schedule provide a seven digit, nonreset totalizer on the face of the enclosure. and a scalable pulse output to drive the totalizer. The totalizer multiplier shall be a power of 10.
 - (iv) Zero Return Unit - Where indicated on the instrument device schedule provide a zero return unit. The unit shall be powered from the converter/transmitter, and may be mounted in a separate **NEMA 4X** enclosure. The device shall drive the magmeter output to **4 mA DC** on no flow conditions.
 - e. Manufacturer:
 - (i) Supplied with flow element.
- 3. Debris Box Ultrasonic Level Sensor
 - a. Type:
 - 1. The transducer generates an ultrasonic signal and receives an echo from the liquid or solid surface.
 - b. Operational/Functional:
 - (i) Sensor shall be potted/encapsulated in a chemical and corrosion resistant PVC or CPVC housing. Sensors shall be designed for continuous submersion without damage.
 - (ii) Temperature limits - minus 22 degrees F to plus 150 degrees F

- (iii) Relative humidity - 0 to 100 percent.
 - (iv) It shall be possible to locate the sensor 100 feet from the level transmitter. All necessary cabling connecting the sensor to the remote mounted transmitter shall be supplied.
 - c. Options/Accessories Required.
 - (i) The Contractor shall be responsible for coordinating all sensor mounting requirements and shall furnish dimensional and elevation drawings to ensure a proper and satisfactory installation.
 - d. Manufacturer:
 - (i) Emerson MSL600 Control Unit and Transducer
- 4. Transmitter/Converter
 - a. Type:
 - (i) Microprocessor based device which converts the sensor output signal to the debris *level* output.
 - b. Functional/Performance:
 - (i) Temperature limits - Units furnished with NEMA 12 enclosures shall be rated 30 degrees F to 120 degrees F. Units furnished **with NEMA 4** enclosures shall be provided with internal space heaters and thermostats and shall be suitable for temperatures of minus 15 degrees F to plus 120 degrees F
 - (ii) Accuracy - Shall be plus or minus 0.25 percent for the transducer and converter.
 - (iii) Transmitter shall ignore momentary loss-of-echo signals and shall indicate loss of echo on the transmitter unit.
 - (iv) Output - Isolated 4-20 ma linear to the specified engineering units.
 - (v) Power requirements - 120V AC, 60 Hz.
 - (vi) Display - 4 digit 18mm LCD, scaled to read in engineering units of flow, level, or volume as indicated on the instrument flow device schedule.
 - (vii) Programmable parameters to be protected using E2PROM - battery backup protection is not acceptable.
 - (viii) All required device programming interface equipment is to be provided.
 - c. Physical:
 - (i) Provide NEMA 4 enclosures.
 - d. Options/Accessories Required:
 - (i) Provide sensor interconnecting cable between sensor and transmitter.
 - e. Manufacturers:
 - (i) Emerson MSL600 Control Unit and Transducer.
- 5. Ultrasonic level Sensor
 - a. Type
 - (i) The transducer generates an ultrasonic signal and receives an echo from the liquid or solid surface.

- b. Operational/Functional:
 - (i) Sensor shall be potted/encapsulated in a chemical and corrosion resistant PVC or CPVC housing. Sensors shall be capable of being completely submersed without damage.
 - (ii) Temperature limits - minus 22 degrees F to plus 150 degrees F.
 - (iii) Relative humidity - 0 to 100 percent.
 - (iv) Sensors shall have a 6 degree beam angle to minimize reflected interference.
 - (v) It shall be possible to locate the sensor 100 feet from the level transmitter. All necessary cabling connecting the sensor to the remote mounted transmitter shall be supplied.
 - c. Options/Accessories Required:
 - (i) The Contractor shall be responsible for coordinating all sensor mounting requirements and shall furnish dimensional and elevation drawings to ensure a proper and satisfactory installation.
 - d. Manufacturer:
 - (i) Siemens Sitrans XPS-30.
6. Transmitter/Converter
- a. Type:
 - (i) Microprocessor based device which converts the sensor output signal to the debris level output.
 - b. Functional/Performance:
 - (i) Temperature limits - Units furnished with NEMA 12 enclosures shall be rated 30 degrees F to 120 degrees F. Units furnished with NEMA 4 enclosures shall be provided with internal space heaters and thermostats and shall be suitable for temperatures of minus 15 degrees F to plus 120 degrees F
 - (ii) Accuracy - Shall be plus or minus 0.25 percent for the transducer and converter.
 - (iii) Transmitter shall ignore momentary loss-of-echo signals and shall indicate loss of echo on the transmitter unit.
 - (iv) Output - Isolated 4-20 ma linear to the specified engineering units.
 - (v) Power requirements - 120V AC, 60 Hz.
 - (vi) Display - 4 digit 18mm LCD, scaled to read in engineering units of flow, level, or volume as indicated on the instrument flow device schedule.
 - (vii) Programmable parameters to be protected using E2PROM - battery backup protection is not acceptable.
 - (viii) All required device programming interface equipment is to be provided.
 - c. Physical
 - (i) Provide NEMA 4 enclosures.
 - d. Options/Accessories Required:
 - (i) Provide sensor interconnecting cable between sensor and transmitter.

- e. Manufacturers:
 - (i) Siemens Sitrans LUT400.
- 7. Float Level Switch
 - a. Float switches shall be of 3-1/2-in diameter Hermetically sealed, molded polypropylene construction and include normally-open, tilt-type, switch rated for switching 10 ampere resistive loads at 120 VAC.
 - b. Switches shall include nitrile PVC jacketed, Type SO, 3-conductor, No. 14 AWG, cable suitable for underwater service that will extend from the float switch to the PLC control panel.
 - c. Switches shall be rated for the NEMA area in which installed. Provide an intrinsically safe relay for each level switch for hazardous area applications.
 - d. Switches shall include Type 316 stainless steel clamp tube, bracket and "U"-bolts to facilitate strain relief mounting to a 1-inch diameter stainless steel Schedule 40 pipe. Switches shall be installed per the manufacturer's requirements. Switches shall be provided with a 3/16" stainless steel support cable and an attached cord with which it is possible to test the float alarming without having to enter the wet well.
 - e. Level switches shall be manufactured by:
 - (i) Contegra;
 - (ii) Flygt;
 - (iii) Magnetrol,
 - (iv) Or Equal
- 8. Gauge Pressure or Pressure Sensing Level Transmitters
 - a. Type:
 - (i) Microprocessor based, intelligent type.
 - b. Functional/Performance:
 - (i) Range: Range of the transmitter shall be the standard range of the manufacturer closest to the pressure range to be metered.
 - (ii) Accuracy: 0.075 percent of span.
 - (iii) Operating Temperature : -20 to 60 degrees C.
 - (iv) Temperature Effect: Combined temperature effects shall be less than 0.2 percent of maximum span per 28 degrees C temperature change.
 - (v) Output: 4-20 mA OC linear with pressure or level. with HART protocol. Zero
 - (vi) adjustable over the range of the instrument provided calibrated span is greater than the minimum calibrated span.
 - (vii) Stability: 0.05 percent of upper range limit for 1 year.
 - (viii) Display: Digital indicator displaying pressure or level in the engineering units indicated in the Instrument Device Schedule.
 - (ix) Diagnostics:

1. Self-diagnostics with transmitter failure driving output to above or below
2. Out of range limits.
3. Simulation capability for inputs and loop outputs.
4. Test terminals available to ease connection for test equipment without opening the loop.
5. Registers to record minimum and maximum pressure and temperatures transmitter has been exposed to shall be available.
6. Run-time clock available to determine usage for warranty purposes 5-year warranty on this clock reading is included.
- (x) Over Range Protection: Provide positive over range protection to 150 percent of the maximum pressure of the system being monitored by the instrument.
- (xi) If required to meet the range or suppression/elevation requirements, a differential pressure transmitter shall be provided.
- c. Physical:
 - (i) Enclosure : NEMA 4X (IP66), explosion proof, approved for Class I, Division 1, Groups C and D (EEx d IIC T5).
 - (ii) Process Wetted Parts: Isolating diaphragm and other wetted metal parts shall be 316L stainless steel, unless otherwise indicated in the device schedule. Gaskets and O rings shall be Teflon.
 - (iii) Power Supply: 24 VDC loop power.
 - (iv) Sensor Fill Fluid: Silicone.
- d. Accessories/Options Required :
 - (i) Provide span and zero adjustment at each transmitter and through the handheld programming unit.
 1. Configuration of the transmitter may be accomplished using the local
 2. display and pushbuttons without the use of an external programming device.
 3. NOTE : Siemens, ABB and Foxboro have this capability
 - (ii) For each transmitter provide a 316 stainless steel block & bleed shut off valve. Valves may be mounted directly to the instrument or separately mounted. Valves shall be by the instrument manufacturer or by DIA Manufacturing or Anderson Greenwood.
- e. Approved Manufacturer(s):
 - (i) Rosemount 3051CG.
 - (ii) Foxboro IGP20.
 - (iii) Or equal.
9. Combustible Gas Detector Sensor
 - a. Type:
 - (i) Explosion proof. NEC Class 1, Division 1, Group A, B, C and D.

- (ii) Infrared sensor.
 - b. Functional/Performance:
 - (i) To sense the presence of methane gas prior to reaching explosive levels.
 - (ii) To provide early warning and indication to personnel.
 - (iii) Response Time - 6 second time constant when exposed to 50 percent methane.
 - (iv) Range - 0 to 100 percent LEL
 - (v) Alarm Settings - Field adjustable.
 - (vi) Temperature Limits: -20 to 45 degrees C (-4 to 113 degrees F).
 - (vii) Expected Life - 5 years.
 - (viii) Moisture resistant.
 - c. Physical:
 - (i) Housing - high impact, copper free aluminum.
 - (ii) Catalytically treated -ceramic active bead.
 - (iii) Wall or pipe mounting with corrosion resistant mounting hardware.
 - (iv) Shielded two-wire or three-wire sensor wiring.
 - (v) Adjustable alarm setting.
 - d. Manufacturer:
 - (i) Emerson, Millennium II Gas Detector.
10. Indicating Transmitter/Controller
- a. Type:
 - (i) Electronic.
 - (ii) Lower explosive level (LEL) indicator.
 - b. Functional/Performance:
 - (i) To sense the presence of explosive gas and oxygen and indicate the gas concentration on a front mounted indicator.
 - (ii) LCD Indicating meter
 - (iii) Provide contacts to alert personnel of gas concentration alarm levels.
 - (iv) Form C contacts for remote indication (local alarm relay module).
 - (v) Response Time - Less than 10 seconds for 50 percent of sensor range.
 - (vi) 4-20 mA output
 - (vii) The combustible gas and the hydrogen sulfide sensors are to be wired to a common Controller.
 - c. Manufacturer :
 - (i) Emerson M22 Transmitter.
11. Hydrogen Sulfide Gas Detector Sensor
- a. Type:
 - (i) Explosion proof NEC Class 1, Division 1, Group A, B, C and D.
 - (ii) Electrochemical or solid state diffusion type.

- b. Functional/Performance:
 - (i) To sense the presence of toxic gas at low levels which present a hazard to human safety.
 - (ii) To provide early warning to personnel before toxic levels are reached.
 - (iii) Range - 0 to 100 ppm.
 - (iv) Alarm Setting - 50 ppm.
 - (v) Temperature Limits: -20 to 45 degrees C (-4 to 113 degrees F).
 - (vi) Expected Life - 1 year .
 - (vii) Moisture resistant.
 - c. Physical:
 - (i) General purpose sensor with corrosion resistant materials.
 - (ii) Encapsulated electronics.
 - (iii) Wall or pipe mounting with corrosion resistant mounting hardware.
 - (iv) Shielded two-wire or four-wire sensor wiring.
 - (v) Adjustable alarm setting.
 - d. Manufacturer:
 - (i) Sensor: Emerson, Millennium II Gas Detector.
 - (ii) Indicating Transmitter/Controller: Emerson M22 Transmitter
12. Temperature Indicating Transmitter
- a. Resistance Temperature Detector (RTD)
 - b. Type: 100 ohm platinum sensor.
 - c. Operation: The metal changes electrical resistance uniformly with temperature.
 - d. Function: Platinum resistance temperature sensor; 24 VDC two wire transmitter, 4-20 mA output.
 - e. **Display:** Digital indicator displaying pressure or level in the engineering units indicated in the Instrument Device Schedule
 - f. Physical: Sensor - Platinum; Sheath all welded and hermetically sealed Type 316 stainless steel; 1/2-in NPT process connection with fittings as required for mounting. 4" sensor probe.
 - g. Manufacturers:
 - (i) Rosemount. or equal.
13. Door Switch
- a. The door switches shall be UL rated corrosion resistant, surface mounted, hermetically sealed and enclosed within solid aluminum housing and stainless steel armored cable.
 - b. Manufacturer:
 - (i) Amseco
 - (ii) GE Intertog ix.
14. Seal Water Flow Switch
- a. The flow switch shall detect water flow of the pump's seal water. A SPOT snap switch will close on detection of water flow.

- b. Manufacturers:
 - (i) Dwyer Series V6
 - (ii) W E. Anderson
 - (iii) Or equal.
- 15. Pressure Gauge 1,
 - a. Type:
 - (i) Bourdon tube actuated pressure gauge.
 - b. Functional/Performance:
 - (i) Accuracy - Plus *or* minus 1.0 percent of span or better.
 - c. Physical:
 - (i) Case - Phenolic shock resistant or 316 stainless steel for surface/stem mounting with a pressure relieving back. The case shall be vented for temperature/atmospheric compensation. Gauge shall be capable of being liquid filled in the field or at the factory.
 - (ii) Window - Clear acrylic or shatter proof glass.
 - (iii) Bourdon Tube - 316 stainless steel
 - (iv) Connection - ½-in NPT.
 - (v) Gauge size - 4.0-in minimum.
 - (vi) Pointer travel - Not less than 200 degrees nor more than 270° arc.
 - (vii) Range - As indicated in the instrument device schedule.
 - d. Accessories/Options Required:
 - (i) Shutoff valve - Each gauge shall have a process shutoff valve which can also be used as an adjustable pressure snubber.
 - (ii) Special scales - Engineer reserves the right to require special scales and/or calibration if the manufacturers standard is not suitable for the application.
 - (iii) Gauges listed as liquid filled in the instrument device schedule shall be liquid filled at the factory.
 - e. Manufacturers:
 - (i) McDaniel Inc.

PART 3 – EXECUTION

3.01 GENERAL

- A. See execution requirements in Section 13300.

END OF SECTION

SECTION 13315-A PROCESS INSTRUMENTATION AND CONTROLS - INSTRUMENT SCHEDULE

<i>Instru No /SA Loop</i>	<i>Description</i>	<i>Type</i>	<i>Low</i>	<i>High</i>	<i>EGU</i>

2.01 B- Mag Meter

11 31	FI T	Pump No 1 Flow	AI	0	12	MGD
11 32	FI T	Pump No 2 Flow	AI	0	12	MGD
11 33	FI T	Pump No 3 Flow	AI	0	12	MGD

2.01 C - Debris Level Transmitter - Ultrasonic

10 41	U T	Debns Box No 1 Debris Level	AI	0	20	Feet
10 42	LI T	Debns Box No 2 Debns level	AI	0	20	Feet

2.01 D - Liquid Level Transmitter- Ultrasonic

10 21	LI T	Bar Screen No 1 Inlet level	AI	0	40	Feet
10 31	LI T	Bar Screen No 2 Inlet Level	AI	0	40	Feet
11 01	LI T	Pump Stat10n Wet Well level 1	AI	0	50	Feet
11 02	LI T	Pump Station Wet Well level 2	AI	0	50	Feet

2.01 E - Level Switch

10 00	LSH	Influent Structure Level	DI	Normal	High
11 03	LSH	Pump Station Wet Well level	DI	Normal	High
11 03	LSHH	Pump Sta\On Wet Well Level	DI	Normal	High High
11 03	LSL	Pump Station Wei Well level	Of	Normal	low
11	LSH	Pump Station Sump	DI	Normal	High

40	Alarm Level			

2.01 F - Pressure Switch

11	PI	Pump No. 1 High	AI	0	100	PSI
11	T	Discharge Pressure				
11	Pr	Pump No. 2 High	AI	0	100	PSI
12	T	Discharge Pressure				
11	PI	Pump No 3 High	AI	0	100	PSI
13	T	Discharge Pressure				

2.01 G - LEL Detector

10	A	Bar Screen Area LEL	01	Normal	High	
05	A					
10	Ar	Bar Screen Area LEL	AI	0	100	%
05	T					

2.01 H - H2S Detector

1006		Bar Screen Area H2S	DI	Normal	High	
AA						
1006		Bar Screen Area H2S	AI	0	100	ppm
ArT						

2.01 I – Temperature

11	TI	Pump Station Outdoor	DI	0	20	Deg F
05	T	Ambient Temperature			0	
11	TI	Pump Station Electrical	OI	0	20	Deg F
06	T	Room Temperature			0	
11	TI	Pump Station Pump Room	DI	0	20	Deg F
07	T	Temperature			0	

2.01 J - Door Switch

10	ZS	Bar Screen Room Door	01	Normal	Open
10	H	Open			
11	ZS	Pump Station Mam Door	DI	Normal	Open
00	H	Open			

2.01 K - Flow Switch

11 11	FS H	Pump No 1 Seal Water Flow	DI	No Flow	Flow
11 12	FS H	Pump No 2 Seal Water Flow	DI	No Flow	Flow
11 13	FS H	Pump No 3 Seal Water Flow	DI	No Flow	Flow

SECTION 13500 - INSTRUMENTATION AND CONTROL SYSTEMS

PART 1 – GENERAL

1.01 SCOPE.

- A. This section covers the furnishing and installation of an instrumentation and control system designated as the Supervisory Control and Data Acquisition (SCADA) System.
- B. The system shall be furnished as specified, complete with all software, human machine interface (HMI) hardware, input/output hardware, instrumentation, and all devices, accessories, appurtenances, testing, and training necessary for proper operation.
- C. The scope of work required at each facility is described in general below:

Facility Number/ Description	Scope Description
General	1 – Apply and adapt Section 13500-A; Kansas City MO Wastewater SCADA System – Software Standards and Conventions. 2 - Reverse engineer existing logic on both replaced and reused programmable logic controllers (PLCs) <i>(as required by the specific project)</i> and program PLCs to implement logic for integration into Rockwell PlantPAx objects. 3 – <i>(as required by the specific project)</i> Develop new or reverse engineer existing logic and graphic screens for both replaced and reused human machine interface (HMI) software and operator interface terminals (OITs) for coordination with the new or revised PLC program. 4 - Develop new PlantPAx graphic screen and database for all facilities using standards 13500-A. 5 - Program all new and existing Ethernet switches to operate on virtual local area networks (VLANs) and to provide network communications required by the SCADA System. 6 - Implement system-wide security for logging on to all operator workstations and OITs. Workstations shall employ RFID scanners as a means of logging onto the workstation. 7 - Provide permanent identification tags for all new and existing SCADA assets as identified on the Drawings.

Facility Number/ Description	Scope Description
Fiber Optic Backbone	1 - Install new single mode fiber optic cable spliced onto Owner's existing fiber optic network to create SCADA System fiber optic backbone as shown on the Drawings. 2 - Provide fiber connections as indicated on the Drawings to create a city-wide fiber ring for communications redundancy.
Task/Information Server	1 - Coordinate with the City's IT SCADA representative to assign all new IP address ranges, central historian point assignments, and interface user names and access levels. 2 – Coordinate with City's representative to share historical and real-time data on the Owner's enterprise network.
6nn/name pump sta	1 - Install new single mode fiber optic cable from existing Owner fiber network into pumping station. Terminate fibers and connect to new fiber patch panel. 2 - <i>(as required by the specific project)</i> Install new Layer 3 Stratix Ethernet switch for connection to fiber optic network and for connection to new or existing PLC and OIT. Provide new PlantPax thin client <i>(if required)</i> . 3 - Provide new single mode fiber patch cables between fiber patch panel and new Layer 3 switch. 4 - Disconnect existing radio from PLC. Remove, reuse, or install new <i>(as required by the specific project)</i> antenna, antenna jumper cable, and power supply connections to the radio in place.
7nn/WWTP	1 – Install fiber backbone into WWTP. 2 – Replace or install new Ethernet switches with new Layer 2 Ethernet switches to facilitate communications within the plant. 3 - Replace existing or install new OITs with new PanelView Plus OITs. 4 – Install PlantPax thin clients in the locations indicated on the Drawings. - Install control room furniture as indicated on the Drawings and as specified.

Facility Number/ Description	Scope Description
<i>7nn/WWTP (if existing PLC and radio is an alternative)</i>	1 - Install antenna on existing radio tower, antenna cable, 220 MHz radio, and security appliance for communicating to radio repeater. 2 - Install and program new Stratus server to implement PlantPax HMI. 3 - Install new layer 3 Stratix Ethernet switch for interface to radio. 4 - Replace one existing Ethernet switches with new Layer 2 Ethernet switch for communicating to the balance of the in-plant network. 5 - No PLCs require replacement, but each PLC shall be reprogrammed to implement PlantPax standards. 6 - No OITs require replacement but each OIT will need reprogrammed to implement PlantPax and new security scheme. 7 - Provide and install four new PlantPax thin clients as indicated on the Drawings. 8 - Demo existing radio, antenna, antenna jumper cable, and power supply connections to the radio.
<i>8nn/repeater site (as needed)</i>	1 – Utilize existing radio, omnidirectional antenna and PLC. 2 – Modify existing PLC and coordinate with City's IT SCADA representative to transfer data to Central SCADA System.

1. Associated Sections. This section also includes the equipment and services specified in the following sections.
 - a. Section 13500-A KANSAS CITY MO WASTEWATER SCADA SYSTEM SOFTWARE STANDARDS AND CONVENTIONS
 - b. Section 13501 SCADA SYSTEM CALIBRATION, TESTING, TRAINING AND COMMISSIONINGSection 13510
COMPUTER SYSTEM HARDWARE Section 13520
COMPUTER SYSTEM SOFTWARE
 - c. Section 13530 PROGRAMMABLE LOGIC CONTROLLERS
Section 13540 RADIO EQUIPMENT
 - d. Section 13550 SOFTWARE CONTROL BLOCK DESCRIPTIONS
Section 13561 PANEL MOUNTED INSTRUMENTS
 - e. Section 13566 MISCELLANEOUS INSTRUMENTS
 - f. Section 13570 PANELS, CONSOLES, AND APPURTENANCES
Section 13590 NETWORK SYSTEMS
 - g. Section 13591 METALLIC AND FIBER OPTIC
COMMUNICATION CABLE AND CONNECTORS

1.02 GENERAL.

- A. Equipment furnished and installed under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with the Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.
 1. General Equipment Stipulations. The General Equipment Stipulations shall apply to all equipment and materials furnished under this section. If requirements in this specification differ from those in the General Equipment Stipulations, the requirements specified herein shall take precedence.
 2. Drawings. The Drawings indicate locations and arrangements of equipment and may include installation details and block and one-line diagrams showing connections and interfaces with other equipment. The input/output (I/O) lists are attached as an appendix to the Programmable Logic Controllers section.
 3. Codes, Permits and Agency Approvals. All work performed, and all materials used shall be in accordance with the National Electrical Code, and with applicable local regulations and ordinances. Where mandated by codes, panels, assemblies, materials, and equipment shall be listed by Underwriters' Laboratories. Contractor shall, as part of their work, arrange for and obtain all necessary permits, inspections, and approvals by the authorities having local jurisdiction of such work. This shall include any third-party inspections and testing of panels and equipment.

4. Supplier's Qualifications. Equipment and software furnished under this section and under other related sections listed in the Scope paragraph above shall be designed, coordinated, and supplied by a single manufacturer or supplier, hereinafter referred to as the System Supplier. The System Supplier shall be regularly engaged in the business of supplying computer-based monitoring, control, and data acquisition systems. The Contractor shall utilize the services of the System Supplier to coordinate all control system related items, to check-out and calibrate instruments, and to perform all testing, training, and startup activities specified to be provided.

The following firms have been prequalified to perform the work:

R.E. Pedrotti Company, Inc.
5855 Beverly Ave, Suite A
Mission, KS 66202
913.677.3366

Integrated Controls, Inc.
15707 Mahaffie St.
Olathe, KS 66062
913.782.9600

Durkin, Inc.
2383 Chaffee Dr.
St. Louis, MO 63146
314.432.2040

The System Suppliers not listed but wishing to be considered qualified shall be regularly engaged in the business of supply computer-based monitoring, control, and data acquisition systems of similar complexity and shall provide the following minimum information about their qualifications:

- a. Number of design office staff that are qualified technical design personnel and the Allen Bradley training they have attended. System Supplier shall have a minimum of 5 qualified staff.
- b. Number of competent and experienced service personnel to service the hardware and software furnished for this project.
- c. The intended supplier shall furnish the information requested in the Instrumentation and Control System Supplier Questionnaire bound elsewhere in the Documents. References including contact names, telephone numbers, and general project description shall be included in the questionnaire. The users and project lists shall be for similar control equipment, software, and type of projects.

- d. Experience statement proving that the supplier has as a minimum 5 years of experience in the design, coordination and supply of computer-based monitoring, control, and data acquisition systems for water or wastewater facilities using Rockwell Software PlantPax and Allen Bradley PLCs.
5. Coordination. Systems supplied under this section shall be designed and coordinated by System Supplier for proper operation with related equipment and materials furnished by other suppliers under other sections of these specifications, under other contracts, and, where applicable, with related existing equipment. All equipment shall be designed and installed in full conformity with the Drawings, specifications, engineering data, instructions, and recommendations of the manufacturer, and the manufacturer of the related equipment.
6. Related Equipment and Materials. Related equipment and materials may include, but will not be limited to, instrumentation, motor controllers, valve actuators, chemical feeders, analytical measuring devices, conduit, cable, and piping as described in other sections or furnished under other contracts.
7. Device Tag Numbering System. All new and existing SCADA devices shall be provided with permanent identification tags. The tag numbers shall agree with System Supplier's equipment drawings and shall be as close as practical to the tag numbers used on the Drawings and any device schedules. All field-mounted devices shall have stamped stainless steel identification tags. Panel, subpanel, and rack-mounted devices shall have laminated phenolic identification tags securely fastened to the device. Hand-lettered or tape labels will not be acceptable.

1.03 GENERAL REQUIREMENTS.

- A. The drawings and specifications indicate the extent and general arrangement of the systems. If any departures from the Drawings or Specifications are deemed necessary by System Supplier, details of such departures and the reasons shall be submitted to Engineer for review with or before the first stage submittal. No departures shall be made without prior written acceptance.
- B. The specifications describe the minimum requirements for hardware and software. Where System Supplier's standard configuration includes additional items of equipment or software features not specifically described herein, such equipment or features shall be furnished as a part of the system and shall be warranted as specified herein.
 1. Governing Standards. Equipment furnished under this section shall be designed, constructed, and tested in accordance with IEEE 519, ANSI C37.90, FCC Part 15 - Class A, and NEMA ICS-1-109.60.

2. Dimensional Restrictions. Layout dimensions will vary between manufacturers and the layout area indicated on the Drawings is based on typical values. The System Supplier shall review the Drawings, the manufacturer's layout drawings and installation requirements, and make any modifications requisite for proper installation subject to acceptance by Engineer. At least three feet of clear access space shall be provided in front of all control system components.
3. Workmanship and Materials. System Supplier shall guarantee all equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, and leakage, breakage, or other failure. Materials shall be suitable for service conditions.

All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practice. Individual parts shall be manufactured to standard sizes and thicknesses so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except for testing.

4. Corrosive Environments. All parts which are exposed to corrosive conditions shall be made from corrosion resistant materials. System Supplier shall submit certification that the instrument manufacturer approves the selection of materials of primary elements that are in contact with the specified process fluid to be inert to the effects of the process fluid.
5. Appurtenances. Signal converters, signal boosters, amplifiers, special power supplies, special cable, special grounding, and isolation devices shall be furnished as needed for proper performance of the equipment.
6. Conformal Coating. Not used.

1.04 SUBMITTALS.

- A. Complete dimensional, assembly, and installation drawings, wiring and schematic diagrams; and details, specifications, and data covering the materials used and the parts, devices and accessories forming a part of the system furnished, shall be submitted in accordance with the submittals section.
- B. Submittal data shall be grouped and submitted in three separate stages. The submittal for each stage shall be substantially complete. Individual drawings and data sheets submitted at random intervals will not be accepted for review.
- C. Equipment tag numbers or identifications used on the Drawings shall be referenced where applicable.

1. First Stage Submittal. The first stage submittal shall include the following items.
 - a. Overview schedule of programming development for site associated with the Work. Schedule should show when programming will begin for and the expected completion, factory testing, and commissioning.
 - b. A detailed list of any exceptions, functional differences, or discrepancies between the system proposed by System Supplier and this specification.
 - c. Product catalog cut sheets on all hardware and software items, clearly marked to show the model number, optional features, and intended service of each device.
 - d. A brief, concise description of the proposed system, including major hardware and software components and personnel training.
 - e. A block diagram or schematic drawing showing the principal items of equipment furnished, including model numbers, and their interrelationships.
 - f. Drawings showing floor and wall space or desktop area requirements for all equipment items, including allowances for door swings and maintenance access.
 - g. Environmental and power requirements, including noise levels, allowable temperature ranges, humidity, and heat release information for each equipment item.
 - h. Standard field termination drawings for all process input/output equipment, showing typical terminations for each type of point available in the system.
 - i. A copy of the proposed software licenses for all software associated with the system.
 - j. Outline for training classes.
 - k. Submittals for factory acceptance test (FAT), site acceptance test (SAT) procedures and forms; network testing procedures and forms; and qualifications for network subcontractor/installer and network engineer as defined in the SCADA System Calibration, Testing, Training and Commissioning section.
 - l. Additional Requirements identified in other Division 13 sections.
2. Second Stage Submittal. Before any equipment is released for shipment to the site and before factory testing is scheduled, the following data shall be submitted.

At System Supplier's option, the first and second stage submittals may be combined.

- a. Updated schedule showing programming development activities for each site associated with the Work. Schedule should show an update

- to the overview schedule showing when programming has been undertaken or will begin for each site and the expected completion, factory testing, and commissioning.
- b. Detailed functional descriptions of all software modules furnished as part of SCADA System.
 - c. HMI and OIT graphic screens printed in color.
 - d. HMI database with any information required by the System Supplier highlighted.
 - e. For all new panels and network enclosures, provide complete panel fabrication drawings and details of panel wiring, piping, and painting. Panel and subpanel drawings shall be to scale and shall include overall dimensions, metal thickness, door swing, mounting details, weight, and front of panel arrangement to show general appearance, with spacing and mounting height of instruments and control devices.
 - f. Wiring and installation drawings for all interconnecting wiring between components of the system and between related equipment and the equipment furnished under this section. Wiring diagrams shall show complete circuits and indicate all connections. If panel terminal designations, inter-device connections, device features and options, or other features are modified during the fabrication or factory testing, revised drawings shall be submitted before shipment of the equipment to the site.
 - g. Fiber termination diagrams to show all fiber terminations at fiber patch panels and final termination at equipment. Fiber termination diagrams shall show individual fiber type (single or multimode), fiber core/cladding dimensions, fiber colors, circuit identifications, and type of terminator.
 - h. Review of drawings submitted prior to the final determination of related equipment shall not relieve System Supplier from supplying systems in full compliance with the specific requirements of the related equipment.
 - i. Input/output listings showing point names, numbers, and addresses. Input/output identification numbers from the contract documents shall be cross-referenced in this submittal.
 - j. Proposed lesson plans or outlines for all training courses specified herein, including schedule, instructors' qualifications and experience, and recommended prerequisites.
 - k. Standard system engineering and user manuals describing the use of the system and application programming techniques for creating reports, graphics, database, historical records, and adding new process I/O nodes to the system.
 - l. Written control functional description with more detail at each stage.

- m. Additional Requirements identified in other Division 13 sections.
- 3. Third Stage Submittal. Complete system documentation, in the form of Operation and Maintenance Manuals, shall be submitted before the commencement of field acceptance testing. Operation and Maintenance Manuals shall include complete instruction books for each item of equipment and software furnished. Where instruction booklets cover more than one specific model or range of device, product data sheets shall be included which indicate the device model number and other special features. A complete set of "as-built" wiring, fabrication, and interconnection drawings shall be included with the manuals. If field-wiring modifications are made after these drawings are submitted, the affected drawings shall be revised and resubmitted. Additional requirements are identified in other Division 13 specification sections.

1.05 PREPARATION FOR SHIPMENT.

- A. All electronic equipment and instruments shall be suitably packaged to facilitate handling and to protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements, shall be kept dry at all times, and shall not be exposed to adverse ambient conditions.
- B. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted surfaces that are damaged prior to acceptance of equipment shall be repainted to the satisfaction of Engineer.
- C. Each shipment shall include an appropriate shipping list that indicates the contents of the package, including the specific instrument tags. The shipping list shall be accessible without exposing the instruments to the atmosphere. The shipping list shall also contain any cautionary notes regarding storage of the instruments, including requirements to protect the instrument from static discharge, desensitizing chemicals (solvents, paints, etc.), or ambient atmospheric conditions.
- D. Individual Instruments shall be appropriately tagged or labeled to positively identify the device. All Identification shall be visible without the need to unpack the instrument from its protective packaging.
- E. Instrument shipment and storage requirements shall be coordinated with Engineer or Owner prior to shipment. System Supplier shall provide adequate storage and be ready to accept the shipment before shipping any equipment to the site. Additional shipping and storage requirements shall be as detailed in the individual instrument specifications.
- F. Components which are shipped loose due to transportation limitations shall be assembled and disassembled by the manufacturer prior to shipment to

assure that all components fit together properly and are adequately supported.

1.06 DELIVERY, STORAGE, AND SHIPPING.

- A. Shipping shall be in accordance with the Product Delivery Requirements section. Handling and storage shall be in accordance with the Product Storage and Handling Requirements section.

1.07 SPARE PARTS.

- A. In addition to spare parts and consumable items specified in other sections, the following spares and consumable items shall be provided:

<u>SPARE PARTS</u>	<u>QUANTITY</u>
Spare I/O card of each type	1
Spare fuses of each type	5
Spare indicating lights or panel lights if applicable	2
Self-sacrificing surge protective devices	2
Magnetic proximity sensing hardware	1
Spare software licensing (<i>if required and specified</i>)	<i>n</i>

- B. Packaging. All spare parts shall be delivered to Owner before final acceptance of the system. Packaging of spare parts shall provide protection against dust and moisture and shall be suitable for storage. Circuit boards and other electronic parts shall be enclosed in anti-static material. All packages shall be clearly marked with the manufacturer's name, part number or other identification, date of manufacture, and approximate shelf life.
- C. Replacement. System Supplier may utilize spare parts and supplies during system installation, de-bugging, startup, or training, but shall restore all such materials and supplies to the specified quantities before final acceptance of the systems.

PART 2 – PRODUCTS

2.01 GENERAL REQUIREMENTS.

- A. All equipment furnished under each section referenced in SCOPE and as shown on the Drawings are a part of this section and shall be selected by System Supplier for its superior quality and intended performance. Equipment and materials used shall be subject to review.
- B. Standard Products. The systems furnished shall be standard products. Where two or more units of the same type of equipment are supplied, they shall be the products of the same manufacturer; however, all components of the systems furnished hereunder need not be the products of one manufacturer unless specified herein.

To the extent possible, instruments used for similar types of functions and services shall be of the same brand and model line. Similar components of different instruments shall be the products of the same manufacturer to facilitate maintenance and stocking of repair parts. Whenever possible, identical units shall be furnished.

2.02 PERFORMANCE AND DESIGN REQUIREMENTS.

- A. The design of the systems furnished hereunder shall utilize concepts, techniques and features that provide maximum reliability and ease of maintenance and repair. The systems shall include board-level devices such as light emitting diodes or other indicators to facilitate quick diagnosis and repair. Diagnostic software shall be furnished to facilitate system-level troubleshooting. Where redundant hardware is provided, the system shall be capable of performing all specified functions, without reconfiguring hardware or software, with only one device of each category in service.
 - 1. Factory Assembly. Equipment shall be shipped completely factory assembled, except where its physical size, arrangement, configuration, or shipping and handling limitations make the shipment of completely assembled units impracticable.

2.03 POWER SUPPLY AND INSTRUMENT SIGNAL.

- A. Power supply to all control system equipment will be 120 volts ac. System Supplier shall be responsible for distribution of power among enclosures, consoles, peripherals, and other components of the system from the power supply receptacles and junction boxes indicated on the Drawings. Power distribution hardware shall include cables and branch circuit overcurrent protection installed in accordance with the electrical section.
- B. Unless otherwise indicated, power supply to the instrumentation will be unregulated 120 volts ac. Unless otherwise indicated, all transmitted electronic analog instrument signals shall be 4-20 mA dc and shall be linear with the measured variable.
 - 1. Facility Distribution System. Equipment not indicated to be powered from an uninterruptible power source shall be suitable for being supplied from the facility distribution system and shall be capable of withstanding voltage variations of ± 10 percent and harmonics up to the limits of IEEE 519 without affecting operation. System Supplier shall provide voltage conditioning or filtering equipment if necessary to meet the requirements specified.
 - 2. Power Supplies. Power supplies for voltages other than those listed above shall be an integral part of the equipment furnished. Internal power supplies shall be regulated, current limiting, and self-protected.

3. Surge Withstand. All equipment shall meet all surge withstand capability tests as defined in ANSI C37.90 without damage to the equipment.

2.04 SERVICE CONDITIONS AND ENVIRONMENTAL REQUIREMENTS.

- A. The equipment provided for the instrumentation and control system shall be suitable for the service conditions specified in the attached equipment sections.
- B. All equipment shall be designed and selected to operate without degradation in performance throughout the environmental extremes specified. Equipment shall be designed to prevent the generation of electromagnetic and radio frequency interference and shall be in compliance with FCC Rules and Regulations, Part 15, for Class A computing devices.
 1. Ambient Temperature and Elevation. All system equipment located in air conditioned rooms shall be suitable for operation in ambient temperatures from 10°C to 35°C and a relative humidity of 10 to 80 percent, noncondensing. All equipment located in non air conditioned indoor areas shall be suitable for an ambient temperature range of 0°C to 50°C and a relative humidity of 10 to 95 percent, noncondensing. All equipment located outdoors shall be suitable for operation in an ambient temperature range -20°C to 60°C and a relative humidity of 5 to 100 percent.
 2. Equipment shall be designed to operate at site elevations from 730 to 1100 feet AMSL.
 3. Deleterious Effects. All system equipment will be installed in areas without anti-static floor construction and without any provisions for control of particulates or corrosive gases other than ordinary office-type HVAC filtering.

All input/output hardware shall meet or exceed, without false operation, all requirements of NEMA ICS-1-109.60, Electrical Noise Tests.

4. Noise Level. The equivalent "A" weighted sound level for any system equipment located in the control room, except printers, shall not exceed 35 dBA. The sound level for printers shall not exceed 65 dBA. Sound reduction enclosures shall be provided where necessary to comply with these limits.
5. Lightning Protection. In addition to other environmental protection specified herein, the entire system shall be provided with lightning protection. Lightning protection measures shall include the following.
 - a. Grounding. All major components of the system shall have a low resistance ground connection. Grounding system provisions indicated on the Drawings shall be modified as recommended by System Supplier.

- b. Surge Suppressors. Surge and lightning suppressors shall be non-faulting, non-interrupting, and shall protect against line-to-line and line-to-ground surges. Devices shall be solid-state metal oxide varistor (MOV) or silicon junction type, with a response time of less than 50 nanoseconds. Surge protective devices shall be applied for the following:
- (i) All 120 VAC power connections to PLCs and control room equipment. Surge arresters shall be Transtector "ACP-100-HW Series", Power Integrity Corporation "ZTA Series", Phoenix Contact "Mains PlugTrab", or MCG Surge Protection "400 Series".
 - (ii) All analog signal circuits where any part of the circuit is outside of the building envelope. Circuits shall be protected at both the transmitter and the control system end of the circuit. Surge protection devices shall not impede or interfere with the use of smart transmitter calibration/communication. Protection devices located near the transmitter shall be Telematic "TP48." Protection devices in control panels shall be Transtector "PDS Series or FSP Series", Telematic "SD Series", Phoenix Contact "PipeTrab Series", or Citel "BP1-24."
 - (iii) All metallic pair (twisted and untwisted) conductor local area network and data highway termination points, where any part of the data highway cable is routed outside of the building envelope. Single-port protective devices shall be Phoenix Contact "PlugTrab Series", Transtector "FSP" Series", or Telematic "NP Series."
 - (iv) All radio antenna leads. Surge protection devices shall be as specified in Radio Equipment section.

2.05 SOFTWARE DOCUMENTATION.

- A. System Supplier shall furnish complete documentation on all software supplied with the systems specified herein.
- B. Operating systems, compilers, assemblers, and utility and diagnostic programs that are standard commercial products of third parties need not be included in the optical media backup. Software documentation shall consist of the following principal items.
 - 1. Two complete back-up copies of system and application software in executable format on optical media compatible with the system furnished.
 - 2. Three sets of user reference manuals for all standard system and application software.
 - 3. One set of user reference manuals for all operating system software.

4. Three sets of printed as-built reference documentation for any special software provided specifically for this contract.
5. For each licensed software product, all documentation provided by the product manufacturer shall be provided. This includes all reference manuals and any other documents that were provided by the manufacturer. One printed set of this documentation shall be supplied for the Project. An electronic copy of documentation that is not copy protected shall also be provided on portable media.

2.06 SOFTWARE LICENSE.

- A. All software programs supplied as a standard part of System Supplier's products for this project shall be licensed to Owner for use on the system specified herein. Such license shall not restrict Owner from using the software on the system provided hereunder or its replacement. Owner shall have the right to make copies of the software for use on the system provided.
- B. Specific requirements of System Supplier's software license are subject to review and approval by Owner and Engineer.

2.07 INSTALLATION TEST EQUIPMENT.

- A. All necessary testing equipment for calibration and checking of system components shall be provided by System Supplier. System Supplier shall also furnish calibration and maintenance records for all testing and calibration equipment used on the site if requested by Engineer.

PART 3 – EXECUTION

3.01 INSTALLATION REQUIREMENTS.

- A. The installation of equipment furnished hereunder shall be by the Contractor or their assigned subcontractors.
 1. Field Wiring. Field wiring materials and installation shall be in accordance with the electrical section.
 2. Device Installation. Device shall be mounted so that they can be easily read and serviced and so that all appurtenant devices can be easily operated.
 3. Salvage of Existing Equipment. Existing equipment and materials removed or replaced under this contract shall be delivered to Owner at a location designated by Owner. Care shall be taken to avoid damage to equipment delivered to Owner.
 4. Any mounting brackets, enclosures, conduits, wiring, or openings that remain after removal of equipment and support hardware shall be removed or repaired in a manner acceptable to Owner and Engineer. Devices containing mercury shall be removed and disposed of by personnel trained in the handling of hazardous materials and using approved procedures.

3.02 SYSTEM SOFTWARE CONFIGURATION.

- A. System software shall be configured by the System Supplier. Configuration services shall consist of the creation of the system database, report formats, operator interface graphic and tabular display screen formats, password and security implementation, and programming of control units to provide a fully functioning system. The System Supplier shall fully configure the system using data provided herein or supplied by the Engineer and/or the Owner after award of the contract.
- B. The system that is delivered to the field for installation, checkout, and startup shall have all files, or databases, that are configurable in size, sized in a manner in which there will be 50% space available for future work after the completion of this project. This sizing should include the addition of memory modules, disk drives, or any other device to insure the 50% spare space availability. All "tuning" of software that is dependent on space requirements shall be done prior to the completion of this project.
- C. Tuning of software programs shall be accomplished in such a manner that the program operates at its highest performance level. These programs include, but are not limited to Microsoft SQL Server, all PLC ladder logic, and others.
- D. Additional configuration requirements are specified in the Software Control Block Descriptions section and the Network Systems section.
 - 1. Control System Database. The control system database shall be developed and configured by the System Supplier. The System Supplier shall enter information obtainable from the existing HMI databases and PLC programs into the database prior to soliciting input from the Engineer and the Owner. The System Supplier shall determine the need for any "pseudo" database points and shall ascertain and enter all information needed to define these points. The System Supplier is responsible for entering all information associated with each point. This includes but is not limited to, descriptions, engineering units, associated displays, areas, security, etc. All fields associated with each database point must be completely filled out accurately.
 - 2. Graphic Screen Displays. The System Supplier shall be responsible for developing and configuring the custom graphic displays. Each piece of major process equipment that is monitored by the SCADA System shall be displayed on one or more graphic screens. Graphic screens shall be representations of the equipment and piping. The screens must accurately show all devices and equipment that is part of the control loops. These items must be done in accordance to the Configuration Standards and Conventions as described later in this section. Alarm and/or event displays shall also be provided and proven functional prior to acceptance

of the system. A means of capturing and printing of all graphic screens shall also be included. The software program provided must be capable of printing the screen in a black and white (using gray scale) or color format.

3. All graphic screens shall be animated to indicate the current state of the piece of equipment. The following graphic screens for each facility shall be provided, as a minimum.

Pumping Facilities *(modify as applicable)*

- North Pump Stations and WWTP Overview
- North Pump Stations and WWTP Key Performance Indicators (KPIs)
- South Pump Station and WWTP Overview
- South Pump Stations and WWTP KPIs
- Pump Station Overview Screen
- Pump Station Pumping
- Pump Station Miscellaneous Systems (2)
- Alarm Summary
- Event Summary

Name WWTP *(modify as applicable)*

- Main Overview of Plant
- KPIs
- Summary screen to vector to all graphic trends
- Screening
- Splitter Box and Aeration Basins
- Aeration Blowers
- Splitter Box and Secondary Clarifiers
- Sludge Loading
- UV Disinfection and Outfall
- Pumping
- Grit Chambers
- Primary Clarifiers and Primary Junction Box
- RAS/WAS Pumping
- Sludge Holding Tank and Pumping
- DAF, Blowers, and Pumping
- Digesters
- Sludge Holding Tank and Transfer Pumps
- Solids Processing
- Secondary Pumping (4)
- Secondary Clarifiers (4)
- Disinfection Storage

- Disinfection Chemical Feed System
 - Effluent Pumping
 - Miscellaneous Systems (4)
 - Alarm Summary
 - Event Summary
4. Report Formats. Report formats shall be developed and programmed by the System Supplier using tag names defined in the database creation. Reports shall be provided as summarized below. All reports will be provided with a header on each page to indicate the contents of each column of information.

Each page shall be numbered and indicate the name of the report and the date and time the report was generated/printed. The report shall also include the time span of the information shown on the report.

- Daily Operating Report – A daily report, listing the major plant variables (up to 50 variables) shall be provided for each wastewater treatment plant. The report shall include hourly values and minimum/maximum/average values where appropriate. A minimum of six separate daily reports shall be provided by the System Supplier.
- Monthly Operating Report – A monthly operating report, which averages the values from the above daily reports, shall be provided for each wastewater treatment plant. The report shall include monthly minimum/maximum/average values where appropriate.
- Five custom reports (up to 50 variables each).

Before submitting the initial draft document, the System Supplier shall meet with the Engineer and/or Owner to review any of the Owner's existing standards and conventions as described herein. All copies of this submittal shall be provided in color to insure the accuracy of each item. No black and white copies will be accepted. The colors used in the printed submittal shall accurately depict the colors and shapes proposed for use on the final system.

In addition to submitting the document for review, an updated version of the document shall be submitted as part of the O&M Manuals. The document shall be revised to document any additional standards that are established throughout the configuration process.

5. Configuration Review Meetings. Proposed graphic screens and report formats shall be reviewed with the Owner and Engineer throughout the configuration process. The System Supplier's programming personnel shall attend all meetings. All meetings shall be held at Owner's facilities.

Meeting Title	Description
Programming Workshop #1 - SCADA Programming Kickoff Meeting	At project initiation, a programming kickoff meeting will be scheduled to review established conventions, transfer all materials and programs to the System Supplier, and review programming schedule. Meeting discussion topics shall include, but not be limited to, the following Items: 1. Tag Naming conventions. 2. PLC to PLC global data mapping. 3. All PLCs to HMI tags mapping. 4. OIT screen colors and navigation. 5. Interlock and Permissive definitions. 6. Communication methods. 7. Standard code blocks for common control functionality. 8. Alarms: Clearing, formats, colors, and status.
Programming Workshop #2a - 30% Progress Meeting	System Supplier will update Owner and Engineer on status of reverse engineering PLC programs, present any process-related questions related to PLC and HMI monitoring and control, and recommend any process control optimizations that have been identified. Prototypical screen sketches (from overview to equipment control screens) shall also be presented and reviewed. Review security and active directory setup, and review event and alarming conventions.
Programming Workshop #2b - Data Exchange Workshop (to be held same day as Workshop #2a)	Data exchange requirements between SCADA and other packages (CMMS, LIMS, TDPASS, and RT-DSS) should be identified in the second portion of this workshop. Identification of this information exchange should be done early in development to ensure the right data is presented within the DMZ to non-SCADA users.
Meeting Title	Description

Programming Workshop #3 - 60% Progress Meeting	System Supplier will update Owner and Engineer on status of PLC programming, present any process-related questions related to PLC and HMI monitoring and control, review screen sketches for Level 1 and Level 2 (Plant and Process Overview screens), and review initial report development.
Programming Workshop #4 - 90% Progress Meeting	System Supplier will provide completed PLC programs for review, and review screen sketches for Level 3 and Level 4 (Process and Process Unit screens). Completed versions of Levels 0, 1, and 2 screens and reports should be provided at the meeting.

Subsequent to Workshop #4, System Supplier shall submit all products for final review. A workshop is not required to review Owner and Engineer comments unless System Supplier requests the meeting.

6. Software Functional Requirements. General functional requirements for system configuration are indicated on the Drawings and described in the specifications. The information presented herein and indicated on the Drawings illustrates the general functional intent of the system and may not be sufficient to fully configure the system. The System Supplier shall be responsible for determining what additional information may be required to complete the configuration tasks, and for obtaining this information from the Engineer or the Owner.

3.03 SYSTEMS CHECK.

- A. System Supplier shall provide the services of a field manager and a trained and experienced field supervisor to assist the installation contractor during installation, and to calibrate, test, and advise others of the procedures for installation, adjustment, and operation. Systems check requirements specified herein are supplemented by requirements specified in the SCADA System Calibration, Testing, Training and Commissioning section.
 1. Field Manager. System Supplier shall appoint a field services manager who shall be responsible for the coordination of all system check-out and startup activities, and who shall be immediately available to Engineer and Owner by phone or on site for the duration of this project.

Field manager shall staff the project with fiber and network specialists during installation and testing of the fiber optic backbone. The fiber specialist and network specialist qualifications shall be provided by Contractor at the project kickoff meeting. Owner and Engineer will review the staffing qualifications.

2. Field Inspection at Delivery. The field supervisor shall inspect major equipment items within five working days of delivery, to assure that the equipment was not damaged during shipment and shall supervise or assist with unpacking, initial placement, and initial wiring of the system.
3. Training for Installation Personnel. field supervisor shall train the installation personnel in reading and understanding submittal drawings, and in the correct installation and wiring procedures for the equipment. Two days shall be included for this training.
4. Field Inspection Prior to Start Up. After installation and wiring connections are complete, the field supervisor, with additional System Supplier's personnel shall verify that each external connection to the system is correctly wired and field process components and devices are functioning as intended. A minimum of 60 working days shall be included for this task, but System Supplier shall be responsible for completing the following scope of work.
 - a. Analog Signals. Analog input signals shall be simulated at the transmitting source and verified to be received at the proper register address in the control system. Analog outputs shall be generated at the control system, and verified to be received with the correct polarity, at the respective receiving device.
 - b. Discrete Signals. Discrete input and output signals shall be simulated and verified that they are received at the respective receiving device, and at the proper voltage.
 - c. Devices by Other Suppliers. If interrelated devices furnished by other suppliers, under other contracts, or by Owner, such as valve actuators, motor controls, chemical feeders, and instruments, do not perform properly at the time of system checkout, the field supervisor shall use suitable test equipment to introduce simulated signals to and/or measure signals from these devices to locate the sources of trouble or malfunction.
 - d. System Check Out Report. The System Supplier shall submit a written report on the results of such tests to Engineer. Additional documentation shall be furnished as requested by Engineer to establish responsibility for corrective measures. System Supplier shall verify, in writing, to Engineer or Owner that System Supplier has successfully completed the external connection check before beginning system startup or field acceptance testing.
 - e. Start Up Assistance. After the field supervisor has completed the system check and submitted his report, System Supplier shall supply a factory-trained engineer and programmer to provide on-site start up assistance. During the startup period, these personnel shall thoroughly check all equipment, correct any deficiencies, and verify

the proper operation of all components. Sixty working days shall be included for this task.

3.04 TESTING.

- A. The system shall be acceptance tested at the factory and on site according to the requirement defined here-in and the SCADA System Calibration, Testing, Training and Commissioning section.
- B. System Supplier shall prepare a testing procedure to be approved by Owner and Engineer that shall demonstrate that the system conforms to the specifications. The testing procedure shall be submitted at least 30 days in advance of testing. The testing shall be conducted by System Supplier and witnessed by Owner and/or Engineer.
- C. System Supplier shall notify Engineer and Owner in writing at least 14 days before the proposed testing date. If the factory acceptance test is concluded unsuccessfully, the test shall be repeated. System Supplier shall reimburse Owner and Engineer for all expenses incurred in connection with attending repeated factory or site testing necessitated by system failure or inadequate preparation.
 - 1. Factory Acceptance Testing. After system assembly and debugging at System Supplier's facility, the system shall be tested before the system is shipped to the site. The factory test shall be conducted on all new components system, including all field I/O devices, communications and network equipment, and peripherals.

Testing for all server systems may be conducted simultaneously or may be scheduled to occur before installation of each server system at the System Supplier's option.

All new components, including all peripherals and associated software, shall be factory tested under simulated operating conditions. All reused PLCs and OITs shall either be emulated or temporary testing units similarly configured shall be included in the testing. Both normal operating sequences and fault conditions shall be simulated. The results shall be noted in the HMI alarm/event log. The testing procedures for hardware and software are described below.

All basic functions shall be demonstrated, including I/O processing, communications, alarm handling, HMI display functions, alarm logging, report generation, and historical data storage, as well as the specific functions listed herein. The system shall operate continuously for at least 72 hours without faults. This operational test may run concurrently with the demonstration of hardware and software functions. The test

procedure shall also include at a least four-hour period for discretionary tests to be conducted by Engineer or Owner.

- a. Hardware Test. Processors, processor modules, and peripheral devices associated with the system shall be assembled together as they will be installed in the field and shall be tested. The test shall demonstrate proper operation of each hardware device and communications among devices and shall include verification of selected analog and discrete inputs and outputs. Redundant hardware shall be tested to demonstrate that the system automatically fails over and automatically resumes operation.
 - b. Software Test. All system software modules specified herein shall be demonstrated. Software tests shall include running all diagnostics, debugging routines, and system test routines. The operating system, advanced process control language compiler, and all associated drivers shall be fully tested and operable for the system test. Software "patches" or changes to bypass failed or flawed modules during the test will not be acceptable.
2. Site Acceptance Testing. After installation and checkout by System Supplier's personnel, the system at each unique SCADA System site shall be subjected to an acceptance test.

Site acceptance testing shall be scheduled after receipt of the System Check Out Report and System Supplier shall verify that all field signal changes are reflected in the proper address locations in the system database.

Should site acceptance testing require shutdown of automated controls for any pump or other treatment process, the Contractor must submit an Operational Change Control Plan (OCCP) for review and approval by Owner and Engineer. See Operational Change Control Plan section for additional information.

The site acceptance testing shall follow the same procedure as the factory testing and shall operate without loss of basic functions. The number of working days of continuous operation for each test at each site shall be ten. The operational demonstration shall confirm that the status, alarm, and process variable signals are valid and are being updated appropriately, and that the discrete and analog output signals from the control system are being correctly transmitted and implemented. Any errors or abnormal occurrences shall be recorded by System Supplier's field representative. System Supplier's field representative need not be continuously present during the site acceptance testing but shall be

available to respond to the site within one hour of notification. The representative shall inspect the system for faults at least once every 24 hours and shall log or record any noted problems. The log shall include a description of the problem, its apparent cause, and any corrective action taken.

- a. Failure of Redundant Equipment. Failure of redundant equipment shall not be considered downtime provided that automatic failover occurs as specified and, in the opinion of Engineer, the failure was not caused by deficiency in design or installation. In the event of repeated failure of any hardware component or software module, the acceptance test shall be terminated and re-started.
- b. Completion of Test. Successful completion of the site acceptance test, including the operational demonstration, is prerequisite to Substantial Completion as specified in the Supplementary Conditions.

3.05 TRAINING.

- A. System Supplier shall conduct training courses for personnel selected by Owner. Training shall be provided in the following categories: Rockwell Automation training, control system maintenance, operator (pre-installation), operator (post-installation), and supplemental shall be provided.
- B. Rockwell Automation training shall be conducted by experienced Rockwell Automation-employed or Rockwell Automation-certified instructors who are familiar with the specific system supplied.
 1. General Training Requirements. In general, System Supplier's standard training courses may be used to meet the training objectives specified. Where standard courses do not meet these objectives, additional coursework shall be developed. Clock hour requirements for each level of training are shall be as listed. A "clock hour" is defined as one hour of instruction or supervised training exercise. Training hour requirements are the number of hours of training to be provided for each student. Additional training time shall be provided if considered necessary to meet the training objectives.
 - a. Training Costs. All costs associated with the training program; excluding travel, lodging, and per diem expenses for Owner's and Engineer's personnel to attend off-site training programs; shall be the responsibility of System Supplier and shall be included in the contract price.
 - b. Lessons. Training lesson plans and other information for the second stage submittal as defined herein shall be submitted at least 30 days prior to the start of training.
 - c. Video Recording. All training sessions shall be video recorded by the System Supplier for Owner's future use in training other personnel.

Video recorded sessions shall be saved to DVD/R media for delivery to Owner. Pre-recorded videos of System Supplier's standard training programs may be substituted if they cover the same topics and are developed for the same versions of hardware and software. Furnishing videos of standard training programs shall not relieve System Supplier from any of the training requirements specified herein.

2. Control System Maintenance Training. System maintenance training shall be provided to enable Owner's personnel to perform routine and preventive maintenance, troubleshoot, and repair all hardware furnished with the system, except equipment provided by the HMI computer manufacturer. Maintenance and repair instruction shall assume that Owner's personnel will repair equipment by replacing circuit boards and modules and shall not include instruction on circuit board level repair.
 - a. Classes. All maintenance training shall be conducted at Owner's facilities. Each session shall consist 8 hours of training for 12 of the Owner's personnel.
 - b. Content of Classes. The training shall cover at least the following topics:
 - (i) Preventive, scheduled maintenance for all equipment.
 - (ii) Function and normal operation of circuit boards and modules.
 - (iii) Diagnosis of hardware failures to the faulted board or module.
 - (iv) Removal and replacement of removable circuit boards and modules.
 - (v) Emergency maintenance and restoration procedures.

The maintenance training program shall be developed for personnel who have experience in electronics maintenance and repair and a general knowledge of computer systems, but not necessarily any familiarity with the specific hardware furnished.

3. Operator Training. Owner's personnel will utilize the system for day-to-day monitoring and/or control of the facilities. The training program shall provide operators with sufficient knowledge to move from screen to screen within the system, understand the contents of group and detailed point displays, react to and acknowledge alarms, adjust control setpoints and alarm limits, configure and print shift reports, print preconfigured reports on demand, control equipment connected to the system, and react to and resolve minor system errors.

Operator training shall be provided for each unique SCADA System site. Sessions for multiple sites may be combined if programming is completed prior to the training session.

- a. Classes. Operator training shall include sessions as specified below.
 - (i) Pre-installation Session. Each pre-installation training session shall consist of 4 hours of training for 12 students at the Owner's facility.
 - (ii) Post-installation Session. The post-installation training shall include three separate, but identical, sessions for three shifts of personnel and shall be conducted at Owner's facilities. Each class shall consist of 8 hours of instruction using the lesson plan submitted and approved for use. The post- installation sessions may have to be conducted outside normal working hours to accommodate the working schedule of Owner's personnel. The post-installation training sessions shall be conducted for 12 of the Owner's operating personnel.
- b. Content of Classes. Each session shall cover at least the following topics.
 - (i) Power-up, "bootstrapping", and shutdown of all hardware devices.
 - (ii) Logging on and off the system and the use of passwords.
 - (iii) Access and interpretation of standard displays and diagnostics.
 - (iv) Use and care of operator workstations, servers, video displays, printers, and other control room hardware.
 - (v) Moving from screen to screen within the graphic display environment.
 - (vi) Interpretation of preconfigured group and detailed point or database displays.
 - (vii) Response to and acknowledgment of alarms.
 - (viii) Adjustment of control set points and alarm limits.
 - (ix) Configuration and printing of shift and other reports by schedule or on demand.
 - (x) Control of field equipment and devices connected to the system.
 - (xi) Manual entries to database points.
 - (xii) Generation of current (real-time) and historical custom and predefined reports and trend displays.
 - (xiii) Appropriate responses to software and hardware errors.
 - (xiv) Enabling and disabling individual inputs and outputs.

The operator-training program shall be developed for personnel with no prior experience with the hardware and software provided as part of the project.

- 4. Supplemental Training. System Supplier shall provide additional training to Owner's personnel on topics of Owner's choosing. Supplemental training shall be conducted in one session at Owner's facilities using the

hardware and software installed for this project. The training shall consist of 8 hours of instruction for 12 students.

END OF SECTION

SECTION 13501 - SCADA SYSTEM CALIBRATION, TESTING, TRAINING AND COMMISSIONING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Calibration, testing, training, and commissioning requirements that apply to the Supervisory Control and Data Acquisition (SCADA) System. SCADA system includes field instruments and devices, control panels, Programmable Logic Controllers (PLC), Human Machine Interface (HMI), Operator Interface Terminals (OIT), networking hardware, and fiber and copper communication cables and associated hardware.
- B. The Contractor is responsible for scheduling, coordinating, and conducting all programming, calibration, testing, training, and commissioning for the SCADA system as required by this section and the Project Requirements section.

1.02 REFERENCES

- A. American National Standards Institute (ANSI).
- B. Electronics Industries Alliance (EIA).
- C. Telecommunications Industry Association (TIA).
- D. International Society of Automation (ISA).

1.03 DEFINITIONS

- A. OLTS: Optical Loss Test Set.
- B. OTDR: Optical Time Domain Reflectometry.
- C. LIA: Laser Institute of America.

1.04 SUBMITTALS

- A. Furnish submittals as specified in the Submittal Procedures section.
- B. Submittals for testing and calibration of the SCADA system shall include detailed test procedures, test forms, calibration forms and checklists. These items shall be submitted to the Engineer for review and acceptance prior to start-up of new automated control for any pump station of treatment process.
- C. Pre-Submittal Conference:

1. Before producing any testing or calibration submittals, Contractor shall schedule a pre-submittal conference for the purposes of reviewing the entire project, equipment, HMI philosophy, control philosophy, schedules, and submittal requirements.
2. The focus of this meeting is on testing and calibration of the new SCADA system and shall be conducted in addition to Configuration Review Meetings required by the Instrumentation and Control System section.
3. The Contractor, planned I&C Engineer-of-Record, electrical subcontractor, System Supplier, and all manufacturers furnishing major pieces of equipment must attend, including but not limited to:
 - a. PLC.
 - b. HMI/OIT.
 - c. Field instruments and devices.
 - d. Fiber and copper networking hardware.
 - e. Control panels.
 - f. Motor control centers.
4. Bring to this meeting, a listing of the testing and calibration submittals that will be provided for the SCADA system and a schedule for when each submittal will be provided.

D. Test procedures:

1. Develop and submit detailed test procedures to show that the integrated SCADA system hardware and software is in compliance with the requirements specified in the Contract Documents.
2. Provide a statement of test objectives for each test.
3. Prepare specific procedures for each process system.
4. Describe the steps to be followed in verifying the correct installation of each process system.
5. Describe sequentially the steps to be followed in verifying the correct operation of each process system, including all features described in the loop descriptions, control strategies, and shown in the Process Flow Diagrams. Implied or generic test procedures are not acceptable.
6. Specify who will perform the test(s), specifically what testing equipment will be used (including serial numbers and NIST-traceable calibration), and how the testing equipment will be used.
7. Describe the expected role of the Owner and the Engineer-of-Record, as well as any requirements for assistance from Owner's staff.
8. Provide the forms and checklists to be used.

E. Test forms:

1. Provide test forms, calibration forms and checklists for each of the following:

- a. Source tests.
 - b. Installation tests.
 - c. Functional tests.
 - d. Instrumentation and Controls Fine-Tuning.
 - e. Communication tests, including all digital communications and all forms of Ethernet.
2. Test forms shall include the detailed test procedures or shall include clear references to separate pages containing the complete test procedure applicable to each form. If references to procedures are used, the complete procedure shall be included with each test binder.
 3. Every page of each test form shall include project name, date, time, name of person conducting the test, signature of person conducting the test, and for witnessed tests, place for signature of person (Engineer-of-Record and Owner) witnessing the test.
 4. Some sample test forms are included at the end of this Section. These test forms show the minimum required test form content. They are not complete and have not been customized for this Project. The Contractor shall develop and submit test forms customized for the Project and meeting all the specified test and submittal requirements.
- F. Testing binders:
1. For each facility to be tested (note: a list of facilities and associated system processes to be tested is provided in the Appendix A of this section), provide and submit a test binder containing all test procedures and individual test forms for the test. References to other documents for test procedures and requirements are not acceptable.
 2. Fill out in advance, headings and all other information known before the test.
 3. Include applicable test plan information, which may include development of an OCCP if testing may temporarily disrupt any part of the sanitary treatment and/or conveyance system. The test plan shall also include a list of all test prerequisites, test personnel, and equipment.
 4. Include or list reference material and provide separately at the time of the test.
 5. Record test results and verify that all test requirements and conditions have been met.
- G. Test reports:
1. At the conclusion of each test, submit a complete test report, including all test results and certifications.
 2. Include all completed test binders, forms, and checklists.

1.05 MEETINGS

- A. Contactor shall facilitate a pre-submittal conferences as described in Paragraph 1.04.B of this section.
- B. See Instrumentation and Control System section paragraph 3-2.05 for additional meeting requirements.

1.06 SEQUENCING

- A. Source Testing:
 - 1. Schedule the source testing after receiving approval of the test procedures submittal.
 - 2. Submit a copy of the test procedures including all forms at least 30 days before any scheduled test date.
 - 3. Notify the Owner of scheduled tests a minimum of 14 days before the date of the test.
- B. General Field Start-up and testing procedures: As specified herein and in the Instrumentation and Control System section – paragraphs 3-3 and 3-4.
- C. Installation Testing:
 - 1. As specified in paragraph 2.01 of this section and Instrumentation and Control System section – paragraph 3-4.
 - 2. Acceptance of the SCADA Installation testing must be provided in writing by the Engineer or Owner before the functional testing may begin.
- D. Training: As specified herein and in the Instrumentation and Control System section– paragraph 3-5.
- E. Functional Testing:
 - 1. Commence after source tests, installation tests, inspections and training have been completed.
 - 2. Submit a copy of the test procedures including all forms at least 30 days before any scheduled test date.
 - 3. Notify the Owner of scheduled tests a minimum of 14 days before the date of the test.
- F. Provide all special tools and spare parts before performance testing, suitably wrapped, and identified.
- G. SCADA Acceptance Testing:
 - 1. Commence following functional testing has been successfully completed and accepted.
 - 2. Submit a copy of the test procedures including all forms at least 30 days before any scheduled test date.
 - 3. Notify the Owner of scheduled tests a minimum of 14 days before the date of the test.

1.07 QUALITY ASSURANCE

- A. Test personnel:
 - 1. Furnish qualified technical personnel to perform all calibration, testing, and verification. The test personnel are required to be familiar with this Project and the equipment, software, and systems before being assigned to the test program.

1.08 OPERATIONS AND MAINTENANCE DATA

- A. Contractor shall provide operations and maintenance (O&M) data for entry into the Owner's Computerized Maintenance Management System (CMMS) by Owner. Data shall be prepared as follows:
 - 1. Owner will provide a template for machine reading assets and maintenance activities into the Owner's CMMS.
 - 2. Access database template will be blank with fields for assets information such as asset additions, asset updates, asset retirements including a rough estimated value, maintenance activities for the assets, PID tags within the asset, and asset categorization.
 - 3. Contractor shall fill out the template documenting changes in the CMMS; insert asset additions including value, work order updates; non-destructive testing updates; and other asset fields. Assets shall be coordinated and categorized with the applicable Drawing tags for entry into Owner's CMMS and Financial Software.

PART 2 - PRODUCTS

2.01 SOURCE QUALITY CONTROL

- A. Source Tests (Factory Acceptance Test):
 - 1. Before the delivery and installation of control panels, PLCs, control system equipment, and other control system components at the job site, but after the procurement and assembly of components, perform Source Tests for each system.
 - 2. Perform tests to show that the system hardware and software is fully operational and in compliance with the requirements specified in the Contract Documents. A sample source test form has been provided at the end of this Section. This form or one similar in both content and detail shall be completed and submitted to Engineer-of-Record upon completion of Source Test.
 - 3. The source tests shall be witnessed by the Contractor and the Owner.
 - a. The Owner retains the right to observe all source tests activities including any and all subsystem preparation, pretests, troubleshooting, retests, warm-up, and software modification and/or update.
 - b. The Owner reserves the right to test any specified function, whether or not explicitly stated in the test submittal.

4. Correction of deficiencies: Any deficiencies observed during the source test shall be corrected and retested before completion of the test.
 - a. Any changes and/or corrections shall be noted on the test forms. Owner shall witness the revisions and/or corrections prior to leaving the test site.
 - b. If the corrections and/or revisions are too extensive to be made while the Owner is scheduled to be at the source test site, the source test shall be, at the Owner or Engineer-of-Record's sole discretion, considered failed, and the test shall be restarted at a later date. All costs for the re-test shall be borne by the Contractor, including Owner's travel expenses.
5. Testing simulation:
 - a. The source tests shall make use of hardware simulators that contain switches, pilot lights, variable analog signal generators, and analog signal level displays, which shall be connected to the I/O points within the SCADA system. All inputs and outputs shall be simulated, and proper control and system operation shall be validated.
 - b. The use of jumper wires, terminal block mounted pilot lights, and loose meters to act as or supply the functionality of a simulator shall not be allowed.
 - c. The hardware simulator may consist of a PLC, operating under a SCADA software package, or other approved software that has its I/O points wired to PLC's I/O points. Software operating on an HMI/OIT may then act as the switches, pilot lights, variable analog signal generators, and analog signal level displays.
6. The source test results submittal shall include a letter, signed by the Contractor's project managers or company officers, certifying that the system is complete, has been tested successfully, and is fully ready for shipment. The submittal shall include completed source test forms, signed by the Contractor's staff and reviewed by the Engineer-of-Record.
7. Panel inspections:
 - a. The Owner will inspect each control panel for completeness, workmanship, fit and finish, and compliance with the Contract Documents and the accepted shop drawings.
 - b. Provide panel inspection forms as part of the source test procedure submittal.
 - c. Inspection to include, as a minimum: Layout, mounting, wire and data cable routing, wire tags, power supply, components and wiring, I/O components layout (including terminals, wiring and relays), device layout on doors and front panels, and proper ventilation operation.
8. I/O test:

- a. Verify that I/O is properly wired to field terminals and is properly mapped into the PLC and the rest of the SCADA system, including all operator interface devices.
- b. Test methodology:
 - (i) Discrete inputs: Apply appropriate input at panel terminal, observe input card indicator, observe data value at each indicated data address, observe data received on all local and remote operator interface displays.
 - (ii) Discrete outputs: Issue commands from operator interface screen, verify output card indicator light and measure response at field wiring terminals. Repeat for each local and remote operator interface screen.
 - (iii) Analog inputs: Apply appropriate analog input signal at panel terminals, observe data value at each indicated data address, and observe data properly received at each operator screen. Check each point at 0 percent, 50 percent, and 100 percent of scale.
 - (iv) Analog outputs: Enter scaled values in the output buffer file, observe the output data file value, and measure appropriate response at panel wiring terminals.
- c. Test forms to include, but not be limited to:
 - (i) PLC and panel number.
 - (ii) I/O type.
 - (iii) I/O tag name.
 - (iv) Panel terminal block numbers.
 - (v) Rack/slot/number of I/O point.
 - (vi) Check-off for correct response for each I/O point.
 - (vii) Space for comments.
 - (viii) Initials of individual performing test.
 - (ix) Date test was performed.
 - (x) Witness' signature lines.
- 9. System configuration test:
 - a. Demonstrate and test the setup and configuration of all local and remote operator interface devices. The test shall be performed using simulated I/O.

- b. Demonstrate all utility software and functions, such as virus protection, backup, optical drive burning, remote updates, network monitoring, etc.
 - c. Demonstrate the proper operation of all peripheral hardware.
 - d. Demonstrate all general functions.
 - e. Demonstrate proper operation of log-on and other access security functions.
 - f. Perform network performance testing to prove it is operating at stated speeds (e.g. gigabit fiber loop).
 - g. Demonstrate the proper operation of all historical data storage, trend, display, backup, and report functions.
 - h. Test automatic fail over of redundant equipment.
 - i. Demonstrate the proper operation of the alarm display and acknowledgement functions.
 - j. Test forms:
 - (i) For each test, list the specification page and paragraph of the function demonstrated, and provide a description of the function.
 - (ii) List the specific tests and steps to be conducted.
 - (iii) For each function, list all of the different sub-functions or ways the function can be used and provide a test check-off for each. Include signature and date lines.
10. Control logic test:
- a. The purpose of this test is to verify that all software functions and control logic works as expected, along with any hardwired logic or functions in the tested control panels. The test shall be performed using simulated I/O.
 - b. Testing requirements:
 - (i) Demonstrate each function in Control Strategies. Demonstrate in detail how each function operates under all design conditions and variety of operating scenarios. Test to verify the application of each general control strategy function to each specific control strategy or loop description.
 - (ii) Demonstrate the proper operation of the programming and configuration for each control strategy. Strategies with similar or identical logic must each be tested individually.
 - (iii) Demonstrate the proper operation of all digital communication links and networks. Verify each digital communication I/O point.
 - (iv) Failure testing: In addition to demonstrating correct operation of all specified features, special effort shall be made to demonstrate how the system responds to and recovers from abnormal conditions including, but not limited to: equipment failure, operator error, communications subsystem error, communications

failures, simulated/forced software lockups, power failure (both utility power and power to SCADA hardware), process equipment failure, and high system loading conditions, as well as concurrent instances of failures.

- c. Test forms:
 - (i) Include the control strategy for the loop being tested.
 - (ii) Identify the cause and effect as each I/O point is toggled through the simulator. Check boxes shall be provided to track proper and/or improper operation of the loop.

- (iii) Any deficiencies or operational changes shall be noted on the forms for correction and documentation. Include signature and date lines.

PART 3 – EXECUTION

3.01 COMMISSIONING

- A. Owner training:
 - 1. Complete Owner training in accordance with the Instrumentation and Control System section– paragraph 3-5.
- B. Installation Tests:
 - 1. General:
 - a. The Owner reserves the right to test any specified function, whether or not explicitly stated in the test submittals.
 - b. Failure testing:
 - (i) In addition to demonstrating correct operation of all specified features, demonstrate how the system reacts and recovers from abnormal conditions including, but not limited to:
 - 1. Equipment failure.
 - 2. Operator error.
 - 3. Communications sub-system error.
 - 4. Power failure.
 - 5. Process equipment failure.
 - 6. High system loading conditions.
 - c. Conduct testing Monday through Friday during first shift no more than 8 hours per day.
 - (i) Testing at other times requires prior written approval of the Owner.
 - 2. LAN Cable Tests:
 - a. After installing the cable and connectors, test all cables using the LAN certification to confirm the installation meets the requirements of the specification.
 - b. Provide test documentation that includes the cable number, total length of cable, a permanent hard copy, as well as a USB or CD copy of all traces.
 - (i) After installing connectors:
 - 1. Perform cable end-to-end testing on all installed cables from both ends of the cable. Test shall include cable system performance tests and confirm the absence of wiring errors.
 - 2. Submit a signed test report presenting the results of the cable testing.

3. Repair or replace any portions of the system not meeting ANSI/TIA/EIA standards for a Category 6 installation.
Repaired sections shall be retested.
 - c. Submit 3 copies of all final documentation (including traces), using the approved test form, to the Owner upon successful completion of the testing.
3. Fiber Optic Cable Tests:
 - a. Test procedures and field test instruments shall comply with applicable requirements of TIA:
 - (i) LIA Z136.2.
 - (ii) TIA 455 78.
 - (iii) TIA 455 133.
 - (iv) TIA 526 7.
 - (v) TIA 526 14.
 - (vi) TIA 586-C.0.
 - (vii) TIA 568-C.1.
 - (viii) TIA 568 C.3.
 - b. Test attenuation and polarity of installed cable with OLTS and installed condition of cabling system and its components with OTDR.
 - c. Verify condition of fiber end face.
 - d. Perform on each cabling link (connector to connector).
 - e. Perform on each cabling channel (equipment to equipment).
 - f. Do not include active devices or passive devices within link or channel other than cable, connectors, and splices. For example, link attenuation does not include such devices as optical bypass switches, couplers, repeaters, or optical amplifiers.
 - g. Document Tests:
 - (i) OLTS dual wavelength attenuation measurements for single mode and multimode links and channels.
 - (ii) OTDR traces and event tables for single mode and multimode links and channels.
 - h. Submit 3 copies of all final documentation (including traces), using the approved test form, to the Owner upon successful completion of the testing.
4. Radio Telemetry System Testing
 - a. Antenna Installation shall be supervised by the System Supplier.
 - b. As a minimum, the following functional tests shall be performed on the radio communication equipment. The tests shall be performed by a radio technician employed by the System Supplier:
 - (i) Antenna Alignment: After the antenna is permanently installed, a power monitor shall be used to properly adjust the antenna for maximum signal strength.

- (ii) Radio Frequency Check: After the radio has been installed, a frequency check shall be conducted to verify conformance with the tolerances.
 - (iii) Ping Test: Perform a ping test to verify communication between the new radio transmitter and repeater.
 - (iv) A written report on the results shall be submitted to the Engineer and Owner for review.
5. Loop Validation Test:
- a. Check all control loops under simulated operating conditions by causing a range of input signals at the primary control elements and observing appropriate responses of the respective control and monitoring elements, final control elements, and the graphic displays associated with the SCADA system. Issue commands from the SCADA system and verify proper responses of field devices. Use actual process inputs wherever practical or specified by Owner.
 - b. Provide “end-to-end” tests:
 - (i) Test SCADA system inputs from field device to SCADA system operator workstations.
 - (ii) Test SCADA system outputs from SCADA operator workstations to field devices and equipment.
 - (iii) Observe and record responses at all intermediate devices.
 - (iv) Test and record operator commands and signal readouts to each operator device where there is more than one operator interface point.
 - (v) For each signal, perform separate tests for HMI computer screens, operator interface terminal (OIT) screens, and local control panels.
 - c. Retest any loop following any necessary corrections.
 - d. Apply simulated sensor inputs corresponding to 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent of span for networks that incorporate analog elements and monitor the resulting outputs to verify compliance to accuracy tolerance requirements.
 - e. Apply continuously variable up and down analog inputs to verify the proper operation and setting of discrete devices (signal trips, etc.).
 - f. Apply provisional settings on controllers and alarm setpoints.
 - g. Record all analog loop test data on test forms.
 - h. Exercise each field device requiring an analog command signal, through the SCADA system. Vary, during the validation process, the output from the PLC and measure the end device position, speed, etc. to confirm the proper operation of the device for the supplied analog signal. Manually set the output from the SCADA screen at 0 percent,

- 25 percent, 50 percent, 75 percent, and 100 percent and measure the response at the final device and at any intermediate devices.
- i. Exercise each field device providing a discrete input to the SCADA system in the field and observe the proper operation at the operator workstation:
 - (i) Test limit switches. Set limits mechanically and observe proper operation at the operator workstation.
 - (ii) Exercise starters, relay contacts, switch contacts, and observe proper operation.
 - (iii) Calibrate and test instruments supplying discrete inputs and observe proper operation.
 - j. Test each device accepting a discrete output signal from the SCADA. Perform the appropriate operator action at the HMI computer screens, operator interface terminal (OIT) screens, and local control panels and confirm the proper operation of the field device:
 - (i) Stroke valves through outputs from the SCADA system, and confirm proper directional operation. Confirm travel limits and any feedback signals to the SCADA system.
 - (ii) Exercise motors starters from the SCADA system and verify proper operation through direct field observation.
 - (iii) Exercise solenoids and other field devices from the SCADA system and verify proper operation through direct field observation.
 - k. Include in the test forms:
 - (i) Analog input devices:
 - 1. Calibration range.
 - 2. Calibration data: Input, output, and error at each test value.
 - 3. Analog input associated PLC register address.
 - 4. Value in PLC register at each test point.
 - 5. Value displayed at each operator interface station (local operator interface displays and SCADA workstations).
 - (ii) Analog output devices:
 - 1. Calibration range.
 - 2. Test value at each test point.
 - 3. Analog output associated PLC register address.
 - 4. Control variable value at field device at each test point.
 - 5. Physical device response at each test point:
 - a. Response to be actual valve position, or motor speed, etc.
 - (iii) Discrete instrument input devices:
 - 1. Switch setting, contact action, and dead band.
 - 2. Valve position switches:
 - a. Response in the PLC as the valve is stroked from the PLC.

- b. Field observed actual valve position, and valve indicator position as the valve is stroked from the PLC.
 - 3. Operator interface switches (control stations and other pilot devices) and associated response.
 - 4. Starter and drive auxiliary device contact response.
 - 5. Response of all other discrete inputs to the PLC.
 - (iv) Discrete output devices:
 - 1. Observed response of field device to the discrete output from the PLC.
 - 2. Observe the proper operation of Open, Close, Start, Stop, On, Off, etc.
 - a. Test equipment used and associated serial numbers.
 - l. Loop validation certifications:
 - (i) After the field device loop tests have been successfully completed, submit a certified copy of all test forms signed by the Contractor, Vendor, and the Owner's representative with test data entered, together with a clear and unequivocal statement that all instrumentation, including all control and signal wiring, has been successfully calibrated, inspected, and tested.
- C. Functional Testing:
 - 1. General:
 - a. Commence Functional tests after completion of all installation tests.
 - b. Purpose: Demonstrate proper operation of all systems with process equipment operating over full operating ranges under conditions as closely resembling actual operating conditions as possible.
 - c. Follow approved detailed test procedures and check lists for Functional Test activities.
 - d. Should functional testing require shutdown of automated controls for any pump or other treatment process, the Contractor must submit an Operational Change Control Plan for review and approval by Water Services and Engineer. See Operational Change Control Plan section for additional information.
 - e. A List of Limitations for Process Disruption has been provided within Appendix A of this Section. The Contractor shall review this list and abide by any limitations stated within this list. These requirements are particularly critical when, disruptions or shutdown to the automated control is anticipated.
 - 2. Control Logic Operational Validation:
 - a. The purpose of control logic validation is to field test the operation of the complete control system, including all parts of the SCADA system, all control panels (including vendor control panels), all

- control circuits, all control stations, all monitored/controlled equipment, and final control elements.
- b. Demonstrate all control functionality required by the SCADA system. Appendix A summarizes key process systems for each facility.
 - c. Test in detail on a function-by-function and sentence-by-sentence basis.
 - d. Thoroughly test all hardware and software functions:
 - (i) Including all hardwired and software control circuit interlocks and alarms.
 - e. Test final control elements, controlled equipment, control panels, and ancillary equipment under startup, shut down, and steady-state operating conditions to verify all logic and control is achieved.
 - f. Control logic validation tests to include, but not limited to: a repeat of all control logic tests from the source test, modified and expanded to include all field instruments, control panels, circuits, and equipment.
3. Loop Tuning:
- a. Optimally tune all electronic control stations and software control logic incorporating proportional, integral, or derivative control. Apply control signal disturbances at various process variable levels and adjusting the gain, reset, or rate settings as required to achieve proper response.
 - b. Verify the transient stability of final control elements operating over the full range of operating conditions, by applying control signal disturbances, monitoring the amplitude and decay rate of control parameter oscillations and making necessary controller adjustments as required to eliminate excessive oscillatory amplitudes and decay rates. As a minimum, achieve 1/4-wave amplitude decay ratio damping (subsidence ratio of 4) under the full range of operating conditions.
 - c. If excessive oscillations or system instability occur, as determined by the Owner, continue tuning and parameter adjustments, or develop and implement any additional control algorithms needed to achieve satisfactory control loop operation.
4. Functional Validation Sheets:
- a. Document each functional test on an approved test form.
 - b. Document loop tuning with a report for each loop, including two-pen chart recordings showing the responses to step disturbance at a minimum of 3 setpoints or process rates approved by the Owner. Show tuning parameters on the charts, along with time, date, and sign-off by Contractor and Owner.
 - c. Include on the form, functions which can be demonstrated on a loop-by-loop basis:

- (i) Tag and Loop number.
 - (ii) Control strategy, or reference to specification tested.
 - (iii) Test procedures: Where applicable, use the Source Test function-by-function, sentence-by-sentence loop test checklist forms modified to meet the requirements of the Functional test. Otherwise, create new forms.
 - d. For functions that cannot be demonstrated on a loop-by-loop basis (such as overall plant power failure), include on the test form a listing of the specific steps and tests to be conducted. Include with each test description the following information:
 - (i) Specification page and paragraph of function demonstrated.
 - (ii) Description of function and/or text from specification.
 - (iii) Test procedures: Use the source loop test checklist forms modified to meet the specific testing conditions of the functional test.
- 5. Functional certification:
 - a. Provide Manufacturer's Certificate of Installation and Functionality Compliance.
 - (i) Including all test forms with test data entered, submitted to the Owner with a clear and unequivocal statement that all Functional test requirements have been satisfied.
- D. Construction Sequencing: Refer to Project Requirements section.
- E. Instrumentation and Controls Fine-Tuning:
 - 1. After the Acceptance Testing, test SCADA System for additional 30 days as specified in this Section to identify issues and make corrections, as needed.
 - 2. General:
 - a. The performance test is part of the Work that must be completed as a condition of Acceptance and Final Completion for the entire Project.
 - b. The complete PLC control and SCADA system must run continuously for the duration of Acceptance Testing.
 - c. Test and use the entire process control system under standard operating conditions.
 - d. Exercise all system functions.
 - e. Log failure, any system interruption and accompanying component, subsystem, or program failure including time of occurrence, duration of each failure, failure classification, and cause:
 - (i) Provide a competently trained technician or programmer on call for the Project Site during all normal working days and hours from the start of the performance test until final acceptance of the system.

- (ii) Response time to the Project Site: 4 hours or less, for a major failure.
- 3. SCADA system testing:
 - a. Exercise each system function, e.g., status report, alarms, logs, and displays several times at a minimum, and in a manner that approximates "normal" system operation.
 - b. Failure of the SCADA system during Acceptance Testing shall be considered as indicating that the programs and operating system do not meet the requirements of the specifications.
 - (i) Corrective action is required before restarting the performance test.
 - c. Only those components, sub-systems, and systems covered in this Section and supplied under this Contract shall be considered for this acceptance test. Problems and failures of other systems shall not be considered as part of this test, except as they display the capabilities of this system to detect failures.
- 4. Failures:
 - a. Classify failures as either major or minor:
 - (i) Minor failure:
 - 1. A small and non-critical component failure or software problem that can be corrected by the Owner's electronic technicians.
 - 2. Log this occurrence but this is not a reason for stopping the test and is not grounds for non-acceptance.
 - 3. Should the same or similar component failure occur repeatedly, this may be considered as grounds for non-acceptance.
 - 4. Failure of one printer or operator station is considered a minor failure providing all functions can be provided by backup equipment, i.e., alternate printers and operator station, and repairs can be made and equipment returned to service within 3 working days.
 - (ii) Major failure:
 - 1. Considered to have occurred when a component, subsystem, software control, or program fault causes a halt in or improper operation of the system and/or when a technician's work is required to make a repair or to re-initiate operation of the system.
 - 2. Cause termination of the performance test.
 - 3. Start a new acceptance test when the causes of a major failure have been corrected.

4. A failure is also considered major when failure of any control system that results in an overflow, underflow, overdose, or underdose condition, or permit violation, occurs.
5. Technician report:
 - a. Each time a technician is required to respond to a system malfunction, they must complete a report, which includes details concerning the nature of the complaint or malfunction and the resulting repair action required and taken.
 - b. If a malfunction occurs which clears itself or which the operator on duty is able to correct, no report is required or logged as specified above.
 - c. If a technician has performed work but no report is written, then a major failure is considered to have occurred.
 - d. Each report shall be submitted within 24 hours to the Owner, or its representative.

3.02 SCHEDULES

- A. Example test forms:
 1. Example test forms are attached at the end of this Section. They may be used as a starting point for the development of Project-specific test forms for this Project.
 2. The example test forms are not intended to be complete or comprehensive. Edit and supplement the forms to meet the requirements for testing and test forms specified in this Section and other Contract Documents.

END OF SECTION

	SOURCE TEST - CONTROL PANELS	
1. GENERAL INSPECTION A. Structural Inspection ☐ Verify Lifting Lugs Installed ☐ Verify enclosure has lock and lock is functional ☐ Confirm that seismic bracing components are provided per manufacturer's installation instructions B. Exterior Inspection ☐ Cabinet exterior is clean, scratch, and dent free ☐ Inspect externally for corrosion and damage Verify ☐ enclosure door opens and closes easily Verify ☐ enclosure has a 3-point latch ☐ Verify enclosure has a flange mounted disconnect (where voltages greater than 120 VAC enter the cabinet) Verify ☐ enclosure has the appropriate NEMA rating (1, 1G, 12, 3R, 4, 4X, etc.) ☐ Verify enclosure is the appropriate size (not grossly larger than design, and will still fit in the plant) Nameplates ☐ Cabinet has identification nameplate ☐ All door labels are straight, spelled correctly, and match the tagging defined in the Contract Cabinet ☐ has a nameplate that includes the following: ☐ Power source(s) ☐ Circuit ID(s) ☐ Integrator's Logo ☐ Short Circuit KAIC ratings ☐ If labels are screwed to door, silicone was utilized to cover screw holes (Labels screwed to the door of a NEMA 4/4X panel technically violates the NEMA rating.) Door Devices ☐ All devices penetrating the outside of panel have gaskets, silicone or both All door ☐ devices are installed (HMIs, Pilot Devices, etc.) ☐ Door mounted equipment is mounted straight and square ☐ All exterior or door mounted equipment present and accounted for, installed and securely fastened NEMA ☐ classification has not been violated due to penetrations ☐ Door mounted equipment has the same NEMA rating as the panel All ☐ door mounted equipment installed at the correct height ☐ All door mounted equipment installed in the correct positions and order (layout of door mounted equipment is grouped properly and in a logical manner) ☐ Doors with multiple penetrations have adequate bracing (if needed) ☐ Visually check condition of indicators , controllers and annunciators Check ☐ that pilot lights illuminate correctly ☐ Check the Push-To-Test function ☐ Ensure correct pilot light color Peripheral Devices ☐ Horn / Beacon is installed (where required) ☐ Silence and Reset pushbutton		
PROJECT NAME: _____ FACILITY NAME: _____ PROCESS AREA: _____ NETWORK ID: _____ WITNESSED BY: _____		TEST DATE: _____ TESTED BY: _____ COMPANY: _____ PAGE: _____ SIGNATURE: _____

	SOURCE TEST - CONTROL PANELS											
1. GENERAL INSPECTION (continued) C. Interior Inspection ☐ Cabinet is cleaned of marks and dirt. Inspect ☐ internally for corrosion and damage. Back panel ☐ is clean of marks and dirt. ☐ Interior of panel vacuumed and shall be free of all debris. Check that ☐ the panel roof is clean and clear of foreign materials. ☐ Bottom of panel has been cut out (where bottom entry is required), with angle iron welded around the bottom perimeter. Re- painting has been performed. ☐ If internal light door limit switch is provided, ensure the light automatically turns "on" when the doors are open. ☐ Intrusion alarms (where required). Interior Labeling ☐ All panel mounted equipment has identification labeling, by using either a Brothers or Phenolic type tags. Verify ☐ that door mounted components are mounted square and symmetrical. ☐ Verify that nameplates are straight, legible, and spelled correctly. ☐ All terminal blocks are identified/labeled with permanent labels including tight end blocks and caps. All ☐ wiring shrink labeled and or phased correctly to the specifications. ☐ All wire labels shrunk completely rotated and aligned alike for easy identification. All ☐ fuses and circuit breakers are labeled with ID and current rating. ☐ System Integrator's label or labels installed on door. Panel ☐ manufacturer model/serial number tag is present. All required ☐ safety/warning tags installed and straight. ☐ Correct UL (typically UL 508) or cUL tag installed and registered and all other associated tags installed and straight (the UL tag might not be installed in the panel at the factory test. If the panel is modified due to changes during the factory test or a punch list generated from the factory test, the UL labeling would need to be re-applied. Some UL shops do not apply the UL label until the panel is released to be shipped.). Wireways ☐ Plastic wire way covers installed properly. ☐ Plastic wireways have no sharp edges. ☐ No wire Ties inside the wireways. ☐ No sharp edges on wire ties. ☐ Separation: White duct is used for DC voltages, Gray duct is used for AC voltages. ☐ Ensure wiring duct is not over-full, includes provision for 20% more wiring and the cover may easily be installed. Panduit recommends 50% duct fill, but 40% is a better practice.												
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	SOURCE TEST - CONTROL PANELS			
1. GENERAL INSPECTION (continued) C. Interior Inspection (continued) Wiring Visually check terminals and condition of internal wirings ☐ Verify that the control panel has been assembled and wired as designed Verify that ☐ all components are operational and perform the functions intended Verify that all ☐ components are sized appropriately for the application ☐ Verify that equipment control circuits function as intended ☐ Back of door wiring is labeled and neatly formed ☐ Back panel to door wiring has sufficient bending radius with spiral wrap Wire ☐ connection has been verified wired to correct points within the panel ☐ Individual wires have been given a pull test to verify a good terminal connection Wire ☐ and cable minimum bending radius have not been violated ☐ All equipment installed straight and square to back panel Wire ☐ colors are correct: ☐ Black and White > AC hot and neutral, respectively Red ☐ > AC control signals ☐ Blue > DC power and control (Blue w/White stripe for DC ground) ☐ Yellow > Foreign voltages (those still present when panel power is disconnected) Green > AC ☐ equipment ground ☐ Black > TSP (+) ☐ White> TSP(-) ☒ Analog wiring shields are continuous (connected by a dedicated terminal block for such shields) ☐ Analog shield wires are grounded within the panel, where not otherwise grounded at the transmitter itself Discrete inputs ☐ are separately fused or protected by a circuit breaker on a "per loop" basis ☐ Intrinsic Safety Wiring ☐ Ensure wiring associated with intrinsic safety circuits or intrinsic safety barriers is kept away from all other wiring by UL minimum ☐ distances or by a physical (grounded metal) barrier preventing non-intrinsically safe wiring from coming in contact with intrinsically ☐ safe circuits or wiring Verify all spare terminals are installed according to the percentage listed in the specifications Grounding ☐ Equipped with "Blackburn" or other grounding type lug ☐ Lug is securely fastened to the panel structure ☐ Verify Grounding bar is installed Verify ☐ Isolated ground bar is installed ☐				
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	SOURCE TEST - CONTROL PANELS	
2. POWER TEST A. AC Power ☐ AC Power is routed correctly within the panel, and is isolated from DC and network wiring. All ☐ fuses are installed and sized properly. ☐ All breakers are installed and sized properly. 24 ☐ VDC Power Supplies are functional. ☐ 24 VDC Power fail contacts are functional. ☐ 24 VDC power supplies are redundant, and have diode modules enabling the hot swap-over between supplies. ☐ 24 VDC supplies are equipped with dry contact failure alarms, wired as PLC inputs to signal failure of any DC power supply. Such alarm inputs to the PLC have been tested as being functional. ☐ Dedicated receptacle is wired to receive a dedicated AC supply. ☐ Verify continuity for all DC commons, ground and AC neutrals. ☐ Verify that the CP temporary input power is connected correctly and is the correct voltage. Close ☐ the CP main circuit breaker(s). ☐ Verify that voltages at subsequent circuit breakers are correct. Close ☐ circuit breakers. ☐ Verify that power feeding interruptible and uninterruptible power supplies is correct. Turn ☐ on power supplies if they are not already on. ☐ Verify that voltages at distribution terminals are correct. ☐ Energize any remaining hardware such as the PLC. B. Uninterruptible Power Supply (UPS) ☐ Mounted appropriately within the cabinet, on a dedicated shelf, or rear of a swing-out sub panel. ☐ Is equipped with maintenance bypass switch (or at least plug/receptacle means for bypassing the unit). Test all ☐ UPS alarms (on inverter, failure, battery failure etc.) ☐ Turn off the AC power supply and verify that the UPS will be switched on to supply the designated vital loads in the control panel. 3. CONTROLS & AUXILIARY DEVICES TEST ☐ Verify all interposing and auxiliary relays are functioning. ☐ Verify panel lights are functioning. Ventilation and Heating ☐ If ventilation fans are fitted, check the fans operate correctly any associated air filters are clean and not blocked. Verify ☐ components are installed in the correct orientation for proper air flow. 4. HARDWIRED INTERLOCK AND SAFETY TEST ☐ Verify that hardwired interlocks through the control panel as shown on schematic drawings are functioning. For example, outlet high pressure switch interlock to a pump. ☐ Verify that all hardwired safety devices through the control panel is functioning. For example, the pull cord emergency stops of conveyors.		
PROJECT NAME: _____ FACILITY NAME: _____ PROCESS AREA: _____ NETWORK ID: _____ WITNESSED BY: _____ TEST DATE: _____ TESTED BY: _____ COMPANY: _____ PAGE: _____ SIGNATURE: _____		

	SOURCE TEST - CONTROL PANELS											
5. PLC TEST A. Components ☐ PLC interior High Temperature alarm is installed, wired to the PLC, and is shown to be functional. ☐ Relays have transient suppression across their coils. This is particularly important for DC coil relays, where diodes in reverse polarity are often used. ☐ TVSS is installed across the main incoming 120 VAC. PLC and PLC Rack ☐ Verify all cards are securely seated. ☐ Ensure clearance around PLC rack has been met, such that convective heat transfer is not impeded by devices erroneously mounted in the "no encroachment" area. Confirm with manufacturer clearance recommendations. B. PLC I/O Test ☐ Furnish I/O test forms and test all the listed input and output points as follows: ☐ Discrete Inputs: Simulate a field contact closure by "shorting" across the appropriate terminal blocks. Observe the transition between a logical "0" and "1" in the PLC software. ☐ Discrete Outputs: Force the output bit to toggle between logical "0" and logical "1" using the PLC software. Measure contact resistance at the wired terminal blocks using a digital meter selected for the "ohms" setting. ☐ Analog Inputs: Connect a signal generator to the appropriate terminal blocks. Tailor the connection depending on whether a 2-wire or 4-wire simulation is required. Modulate the 4-20mA signal. Observe the associated PLC internal memory register to transition between 0-65535 or if scaled in engineering units, between 0 and the maximum scaled engineering unit. The latter method is preferred. ☐ Analog Outputs: Force the output register to a value between 0-65535 or 0-100%, if the scaling block can be manipulated. Observe the measured 4-20mA value increment and decrement using a digital ammeter. C. Redundant Controllers (where required) Test ☐ Remove Communication cable from PLC-1 to verify switching to PLC-1A Remove ☐ Communication cable from PLC-1A to verify switching back to PLC-1 Remove ☐ Power from PLC-1 to verify switching to PLC-1A ☐ Remove Power from PLC-1A to verify switching to PLC-1 ☐ Remove Communication cable from PLC-1 to I/O rack and verify switching to PLC-1A ☐ Remove Communication cable from PLC -1A to I/O rack and verify switching to PLC-1 D. PLC Control Logic Verification ☐ The PLC control strategy is verified by following the Control Logic Verification Form based on the specifications. Each control strategy will be verified by simulating the process and checking the state or value of PLC outputs. The results of equipment status and alarms and process instrument values and trends shall also be verified on the Plant SCADA graphic screens stored in a temporary SCADA computer. Since all PLC input and output wiring has been verified and some field devices are not available during Factory Acceptance Testing, certain inputs will be simulated either by means of additional hardware and/or software as described below. DI states are either simulated by hardwired switches or forced inputs using a programming terminal. ☐ For example, when starters and drives are not provided as part of the contract, jumpers may be installed from the output call relays to the running confirmation inputs to simulate the running state of the motors. ☐ AI values are either simulated by an external source or within software using a programming terminal. ☐ For example, when a level transducer is not provided as part of the contract the level transducer loop current may be simulated with a loop powered potentiometer and adjusted manually for the level input. ☐												
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	SOURCE TEST - CONTROL PANELS	

5. PLC TEST (continued)

D. PLC Control Logic Verification (continued)

Typical Fault Logic

☐ If the fault input is high and the disable (if applicable) for the fault is not high and the common disable (if applicable) is not high begin timing. If any of these conditions changes, stop timing and reset the timer. If the timer reaches its preset, activate the alarm output. If the fault alarm is a shutdown alarm stop the associated motor and latch the alarm so that it remains present even if the condition clears.

The fault condition must return to normal and the alarm must be reset for a latched alarm to clear.

☒ **Typical Fail to Start Logic**

☐ If the motor is called to run (call output high) and no running feedback is received (running input is low) and the fail to start and common alarm disables (if applicable) are not high start timing. If any of these conditions changes, stop timing and reset the timer. If the timer reaches its preset, activate the alarm output, stop calling the motor and latch the alarm.

6. HMI OR OIT TEST

HMI / OIT Functionality

- ☐ Communication with PLC
- ☐ Screen Layouts
- ☐ Screen Navigation
- ☐ Set Point Entry
- ☐ Animation
- ☐ Color Correctness (Green=Run, Red=Off, Amber=Alarm, or the agreed upon convention) Alarms
- ☐ Acknowledge and Reset
- ☐ Security / Access Levels / Passwords

7. NETWORK COMMUNICATION TEST

A. Network Components

- ☒ Fiber optic cabling terminates in a patch panel
- ☒ Media converters are installed and functional
- ☐ Terminating resistors have been installed for trunk/tap topologies or where required Wire and
- ☐ cable bending limitations have not been violated

B. Networking Functions

- ☐ Verify data transfer via the network to different PLCs as shown on the Network Block Diagrams Verify
- ☐ network traffic rate and error margin is acceptable
- ☐
- ☐

PROJECT NAME: _____	TEST DATE: _____
FACILITY NAME: _____	TESTED BY: _____
PROCESS AREA: _____	COMPANY: _____
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	SOURCE TEST - CONTROL PANELS	

8. SOURCE TEST DOCUMENTATION AND RECORD

Panel Documentation

- ☐ As-built panel drawings showing actual panel construction and devices arrangement and c/w Bill of Material. Panel
- ☐ schematic and interconnection drawings.
- ☐ P&ID drawings and schematic drawings for the process area controlled by the panel that is to be tested. I/O list
- ☐ test forms of the process area to be tested.
- ☐ Source test procedure of the process area to be tested.
- ☐ Test record forms of the process area to be tested. Forms shall include area for signature of responsible test personnel. Hard copy of the
- ☐ PLC application program of the process area to be tested.
- ☐ Hard copy of the HMI/OIT graphic screens of the process area to be tested.

9. SOURCE TEST TOOLS AND SOFTWARE

- ☐ Simulation software if required
- ☐ Digital volt meter Fluke 87
- ☐ Process meter Fluke 787
- ☐ Laptop computer with PLC application program
- ☐ Temporary SCADA computer with HMI software and applicable graphic screens Jumper wires
- ☐

PROJECT NAME: _____	TEST DATE: _____
FACILITY NAME: _____	TESTED BY: _____
PROCESS AREA: _____	COMPANY: _____
NETWORK ID: _____	PAGE: _____
WITNESSED BY: _____	SIGNATURE: _____

	INSTALLATION AND CERTIFICATION CHECKLIST DOCUMENTATION	

INSTRUMENT LOOP NO. _____

SERVICE DESCRIPTION _____

A COPY OF LATEST ISSUE OF THE FOLLOWING DOCUMENTS ARE INCLUDED IN THIS INSTRUMENT INSTALLATION CERTIFICATION FILE:

- ☐ INSTRUMENT SPECIFICATION SHEETS (FOR ALL INSTRUMENTS IN THE LOOP)
- ☐ INSTRUMENT INSTALLATION DETAILS (FOR ALL INSTRUMENTS IN THE LOOP)
- ☐ INSTRUMENT LOOP WIRING DIAGRAMS
- ☐ INSTRUMENT INSTALLATION CERTIFICATION CHECKLIST
- ☐ SIZING CALCULATIONS
- ☐ INSTRUMENT INSTALLATION SCHEDULE (APPLICABLE PART)
- ☐ NAMEPLATE SCHEDULE (APPLICABLE PART)
- ☐ VENDOR LITERATURE CALIBRATION INFORMATION

INSTRUMENT LOOP IS PART OF EQUIPMENT START-UP/SHUTDOWN INTERLOCKS? ☐ No ☐ Yes

REMARKS: _____

CHECKED BY (COMPANY) _____ ACCEPTED BY (COMPANY) _____

SIGNATURE _____ SIGNATURE _____

DATE _____ DATE _____

	SWITCHES INSTALLATION AND CALIBRATION CHECKLIST	

INSTRUMENT LOOP NO. _____

SERVICE DESCRIPTION _____

CHECK BELOW, WHEN COMPLETED:

- ☐ BENCH CALIBRATED PER SPECIFICATION SHEET NO. _____
- ☐ VERIFIED PER P&ID NO. _____
- ☐ CORRESPONDS TO SPECIFICATION SHEET NO. _____
- ☐ WIRING CORRECT PER INSTRUMENT LOOP DRAWING NO. _____
- ☐ INSTALLATION CORRECT PER DETAIL NO. _____
- ☐ ACCESSORIES ARE PRESENT AND PROPERLY INSTALLED
- ☐ INSTRUMENT IS ACCESSIBLE FOR MAINTENANCE OR REMOVAL
- ☐ ENGRAVED LAMINATED NAMEPLATE (NO SPELLING ERRORS) PERMANENTLY INSTALLED

INSTRUMENT LOOP IS PART OF EQUIPMENT START-UP/SHUTDOWN INTERLOCKS?

☐ No ☐ Yes

<u>FIELD CALIBRATION CHECK</u>						
CONTACT NO.	FUNCTION	FOR SIGNAL	CONTACT IS TO	AT SPECIFIED VALUE FOR	ACTUAL TRIP POINT WAS	
1	☐ ALARM	☐ INCR	☐ OPEN	SET PT = _____	SET PT = _____	
	☐ S/D PERM	☐ DECR	☐ CLOSE	RESET = _____	RESET = _____	
2	☐ ALARM	☐ INCR	☐ OPEN	SET PT = _____	SET PT = _____	
	☐ S/D PERM	☐ DECR	☐ CLOSE	RESET = _____	RESET = _____	
3	☐ ALARM	☐ INCR	☐ OPEN	SET PT = _____	SET PT = _____	
	☐ S/D PERM	☐ DECR	☐ CLOSE	RESET = _____	RESET = _____	
4	☐ ALARM	☐ INCR	☐ OPEN	SET PT = _____	SET PT = _____	
	☐ S/D PERM	☐ DECR	☐ CLOSE	RESET = _____	RESET = _____	

NOTE: PERM IS ABBREVIATION FOR PERMISSIVE

	TRANSMITTER/CONTROLLER/INDICATOR INSTALLATION AND CALIBRATION CHECKLIST	

☐
☐

INSTRUMENT LOOP IS PART OF EQUIPMENT START-UP/SHUTDOWN INTERLOCKS?

No Yes

INSTRUMENT TYPE INDICATOR ☐ TRANSMITTER ☐ CONTROLLER ☐

☐ OTHER DESCRIPTION _____

INSTRUMENT TAG NO. _____ SERIAL NO. _____

SERVICE DESCRIPTION _____

<u>BENCH CALIBRATION CHECK</u>				
INPUT RANGE = HEAD _____		OUTPUT RANGE = _____		
CORRECTION = _____		☐ LINEAR		
CALIBRATED SPAN = _____		☐ SQUARE ROOT		
% CALIB SPAN	DESIRED VALUE	ACTUAL VALUE	EXPECTED VALUE	ACTUAL VALUE
0				
50				
100				

CHECK BELOW, WHEN COMPLETED:

- ☐ BENCH CALIBRATED PER SPECIFICATION SHEET NO. _____
- ☐ VERIFIED PER P&ID NO. _____
- ☐ CORRESPONDS TO SPECIFICATION SHEET NO. _____
- ☐ WIRING CORRECT PER INSTRUMENT LOOP DRAWING NO. _____
- ☐ INSTALLATION CORRECT PER DETAIL NO. _____
- ☐ ACCESSORIES ARE PRESENT AND PROPERLY INSTALLED
- ☐ INSTRUMENT IS ACCESSIBLE FOR MAINTENANCE OR REMOVAL
- ☐ ENGRAVED LAMINATED NAMEPLATE (NO SPELLING ERRORS) PERMANENTLY INSTALLED

<u>FIELD CALIBRATION CHECK</u>				
INPUT RANGE = _____		OUTPUT RANGE = _____		
% CALIB SPAN	DESIRED VALUE	ACTUAL VALUE	EXPECTED VALUE	ACTUAL VALUE
0				
50				
100				

	TRANSMITTER/CONTROLLER/INDICATOR INSTALLATION AND CALIBRATION CHECKLIST	

- ☐ DIRECT
- ☐ REVERSE
- ☐ ACTION VERIFIED AT 50% SPAN
- ☐ ACTION VERIFIED AT _____ SPAN

CONTROLLER SETTINGS								
SETTING	GAIN	PB	RESET (INTEGRAL)	DERIV. (RATE)	HIGH LIMIT	LOW LIMIT	ELEV. ZERO	ZERO SUPP
PRE-TUNE								
POST-TUNE								

PRE-TUNE SETTINGS					
	GAIN	PB	RESET (REPEAT/MIN)	RESET (MIN/REPEAT)	DERIVATION (MINUTES)
FLOW	1.0	100	10	0.1	N/A
LEVEL	1.0	100	MIN.	MAX.	N/A
PRESSURE	2.0	50	2.0	0.5	N/A
TEMP.	4.0	25	0.1	10	OFF

REMARKS

CHECKED BY (COMPANY) _____

ACCEPTED BY (COMPANY) _____

SIGNATURE _____

SIGNATURE _____

DATE _____

DATE _____

	ANALYZERS INSTALLATION AND CALIBRATION CHECKLIST	

☐

☐

INSTRUMENT LOOP IS PART OF EQUIPMENT START-UP/SHUTDOWN INTERLOCKS? No Yes TYPE OF

INSTRUMENT _____

INSTRUMENT TAG NO. _____ SERIAL NO. _____

SERVICE DESCRIPTION _____

CHECK BELOW, IF TRUE

- ☐ BENCH CALIBRATED PER SPECIFICATION SHEET NO.
- ☐ VERIFIED PER P&ID NO.
- ☐ CORRESPONDS TO SPECIFICATION SHEET NO.
- ☐ WIRING CORRECT PER INSTRUMENT LOOP DRAWING NO.
- ☐ INSTALLATION CORRECT PER DETAIL NO.
- ☐ ACCESSORIES ARE PRESENT AND PROPERLY INSTALLED
- ☐ INSTRUMENT IS ACCESSIBLE FOR MAINTENANCE OR REMOVAL
- ☐ ENGRAVED LAMINATED NAMEPLATE (NO SPELLING ERRORS) PERMANENTLY INSTALLED

REMARKS _____

CHECKED BY (COMPANY) _____ ACCEPTED BY (COMPANY) _____

SIGNATURE _____ SIGNATURE _____

DATE _____ DATE _____

	CONTROL VALVES INSTALLATION AND CALIBRATION CHECKLIST	

☐ ☐

INSTRUMENT LOOP IS PART OF EQUIPMENT START-UP/SHUTDOWN INTERLOCKS?

No Yes

☐ VALVE TAG NO. _____

☐ SERIAL NO. _____

☐ TRANSDUCER TAG NO. _____

☐ SERIAL NO. _____

☐ SOLENOID TAG NO. _____

☐ SERIAL NO. _____

☐ VOLUME BOOSTER TAG NO. _____

☐ SERIAL NO. _____

☐ POSITIONER _____

☐ SERIAL NO. _____

SERVICE DESCRIPTION _____

TRANSDUCER CHECK					
INPUT RANGE =			OUTPUT RANGE =		
CALIBRATED SPAN =			CALIBRATED SPAN =		
BENCH					
SPAN	DESIRED	ACTUAL	SPAN	EXPECTED	ACTUAL
0%			0%		
50%			50%		
100%			100%		
FIELD					
SPAN	DESIRED	ACTUAL	SPAN	EXPECTED	ACTUAL
0%			0%		
50%			50%		
100%			100%		

CHECK BELOW, IF TRUE:

☐ BENCH CALIBRATED PER ABOVE

☐ VERIFIED PER P&ID NO.

☐ CORRESPONDS TO SPECIFICATION SHEET NO.

☐ VALVE SPECIFICATION NO.

☐ TRANSDUCER SPECIFICATION NO.

☐ SOLENOID SPECIFICATION NO.

☐ WIRING CORRECT PER INSTRUMENT LOOP DRAWING NO.

☐ INSTALLATION CORRECT PER INSTRUMENT INSTALLATION DETAILS

☐ VALVE DETAIL NO.

☐ TRANSDUCER DETAIL NO.

☐ SOLENOID DETAIL NO.

	CONTROL VALVES INSTALLATION AND CALIBRATION CHECKLIST	

- ☐ ACCESSORIES ARE PRESENT AND PROPERLY INSTALLED
- ☐ INSTRUMENT IS ACCESSIBLE FOR MAINTENANCE OR REMOVAL
- ☐ ENGRAVED LAMINATED NAMEPLATE (NO SPELLING ERRORS) PERMANENTLY INSTALLED

VALVE CHECK			
FLOW CHECK	☐ PROCESS FLOW DIRECTION THROUGH THE VALVE IS CORRECT		
SAFETY CHECK	ON LOSS OF AIR VALVE FAILS ☐ OPEN ☐ CLOSE	ON LOSS OF POWER SOLENOID FAILS ☐ TO VENT ☐ TO VALVE	
TRAVEL CHECK	FULL OPEN AT _____ PSI	FULL CLOSED AT _____ PSI	MEASURED TRAVEL _____ INCHES
SEATING CHECK	☐ ON BENCH ☐ IN-LINE	RESULTS	ACTUATOR BENCH SET
POSITIONER CHECK			
VALVE FULL OPEN AT _____ PSI TO POSITIONER			
VALVE FULL CLOSED AT _____ PSI TO POSITIONER			
VOLUME BOOSTER CHECK			
BYPASS VALVE (GAIN) ADJUSTING SCREW BACKED OUT _____ TURNS FROM CLOSED TO ENSURE QUICK BUT STABLE OPERATION (TYPICALLY 1-1/2 TO 2 TURNS)			

REMARKS _____

CHECKED BY (COMPANY) _____ ACCEPTED BY (COMPANY) _____

SIGNATURE _____ SIGNATURE _____

DATE _____ DATE _____

APPENDIX 13501.A – LIMITATIONS ON PROCESS DISRUPTION

Facility Number/ Description	Limitations on Process Disruption
General Guidance for Pumping and Process Control Disruption	• Updates to existing PLC programming shall first be tested/proven utilizing a temporary mobile HMI running the same Thin Client software used at each WWTP. • Anticipated shutdowns shall only occur during periods when no rain is forecast for a minimum of 24-hours following the start of planned shutdown. • Any planned shutdown of any pump, screen, treatment process, monitoring equipment or power source shall not exceed 2-hours in duration unless specifically approved otherwise by the Owner. • During replacement and/or reprogramming of existing PLCs, the equipment impacted by this work shall be placed in manual operation. A WSD operator shall be on site at all times during the transition from existing control to the new control. Manual operation of the equipment shall be by WSD staff only. • Prior to testing, the position of monitored valves and gates shall be noted by the Contractor. • Prior to any planned shutdown, the Contractor must draft and submit an Operational Change Control Plan (OCCP) to the Engineer and Water Services for review and approval. • No equipment or process shall be shut down without prior approval and acceptance of the OCCP. See Operational Change Control Plan section for additional information. • For those pump stations or treatment plants currently using radio communications, the existing Transdyn radio communications shall remain operational until the new fiber communications has been established and approved by the Owner or Engineer.
<i>6nn/ Pump Station name</i>	Pumping and Screening <i>(adjust as required for specific project)</i> • During a planned shutdown of automated control, pumps and/or screens shall be placed in manual operation with at least one existing pump in operation at all times. A WSD operator shall be on site at all times during the shutdown period.

Facility Number/ Description	Limitations on Process Disruption
7nn/Name WWTP Example 1 (adjust as required for specific project)	Grit Basins 1 and 2 - Grit pumps are generally operated manually during PLC shutdown/replacement. - During a planned shutdown of automated control, the grit system shall be placed in manual operation. A WSD operator shall be on site at all times during the shutdown period. Primary Clarifiers - Primary clarifiers are Critical components. - No more than one clarifier shall be shutdown at any time. Each clarifier shall be transitioned and proven individually. - During a planned shutdown of automated control, the clarifier shall be placed in manual operation. A WSD operator shall be on site at all times during the shutdown period. Primary Sludge Pumping - Primary Sludge Pumps are generally operated manually. - During a planned shutdown of automated control, the sludge pumps shall be placed in manual operation. A WSD operator shall be on site at all times during the shutdown period.

Facility Number/ Description	Limitations on Process Disruption
	Aeration Basins • Mechanical mixers used for aeration are controlled manually at the device. • During a planned shutdown of automated control, the aeration basin mixing shall be placed in manual operation. A WSD operator shall be on site at all times during the shutdown period. Secondary Clarifiers • Clarifier rakes are controlled manually. • No more than one clarifier shall be shutdown at any time. Each clarifier shall be transitioned and proven individually. • During a planned shutdown of automated control, the clarifier shall be placed in manual operation. A WSD operator shall be on site at all times during the shutdown period. RAS/WAS Pumping • RAS/WAS pumps are generally operated manually. • During a planned shutdown of automated control, the pumps shall be placed in manual operation. A WSD operator shall be on site at all times during the shutdown period. Secondary Scum Pumps • Scum pump operation is controlled based on a timer in the MCC (not from a PLC). • During a planned shutdown of automated control, the pumps shall be placed in manual operation. A WSD operator shall be on site at all times during the shutdown period.
	Chlorine Contact Chambers • Chlorine contact chambers are a gravity fed process with flow monitoring for chemical disinfection. Disinfection Chemical Storage • Chemical storage and monitoring is a manual process. Disinfection Chemical Feed System • Sodium hypochlorite pumps for disinfection are Critical to the process. • Pumps are flow-paced via flow monitoring within the effluent channels. • During the SCADA transition period, operation of the sodium hypochlorite pumps shall be done manually.

Facility Number/ Description	Limitations on Process Disruption
	• Operators will need to increase the number and frequency of grab samples during manual operations in order to meter the amount of chemical disinfectant required. • During a planned shutdown of automated control, the disinfection system shall be placed in manual operation. A minimum of two WSD operators shall be on site at all times during the shutdown period. Final Effluent Pumping • Effluent pumps only operate when the floodwall is closed. Pumps are operated manually. • During a planned shutdown of automated control, the pump system shall be placed in manual operation. A WSD operator shall be on site at all times during the shutdown period.
7nn/ Name WWTP Example 2 (adjust as required for specific project)	Influent Pumping • Total shutdown of the influent pumping system will not be allowed. Pumps shall be transitioned and tested individually with Contractor providing temporary standby pumping with VFD control based on wetwell level during any planned shutdown period. • The temporary pumping capacity shall match the existing operating points when one and two pumps are running at full speed. • The standby temporary means of pumping and control shall be in-place prior to the shutdown period of the MCC and during the transition from DeviceNet to Ethernet/IP. • All starters at the MCC will be replaced and tested for functionality prior to SCADA transitioning. • During a planned shutdown of automated control, pumps shall be placed in manual operation. One existing pump shall remain operational at all times. At least two WSD operators shall be on site at all times during the shutdown period.

	Primary and Secondary Lagoons • Flow to the lagoons is by means of the influent pumps. (see requirements for Influent Pumps for additional information) • Flow between lagoons and return flow from the lagoons to the plant is by gravity. • No automatic control is provided for flow return. Screening and Vortex Grit Chamber

Facility Number/ Description	Limitations on Process Disruption
	• Screens and Grit chambers are controlled with a package PLC panel that is planned for replacement. • Replacement PLC system shall be tested and accepted by Engineer and WSD prior to SCADA integration. • During a planned shutdown of automated control, the screening and grit systems shall be placed in manual operation. A WSD operator shall be on site at all times during the shutdown period. Splitter Box and Aeration Basins • The flow splitter box and aeration basins are operated manually. Aeration Blowers • Although typical operation is to run one aeration basin at a time, the air supply to the diffusers must be continuously maintained to both basins at all times to provide the minimum level of mixing and prevent blockage of diffusers. Splitter Box and Secondary Clarifiers • Flow splitter box and Secondary Clarifier rakes are operated manually. RAS/WAS Pumping • RAS pumping has automatic on/off control based aeration basin level and operation. • WAS pump on/off control is cycled based upon a timer. • All work at the MCC must be tested and accepted by the Engineer and WSD prior to scheduled shutdown. Both RAS and WAS pumps can be controlled manually at the MCC after the bucket has been replaced. • During a planned shutdown of automated control, pumps shall be placed in manual operation. One existing pump shall remain operational at all times. At least two WSD operators shall be on site at all times during the shutdown period. Aerobic Digester • Digester Telescoping valve is operated manually to control water level within digester. • Sludge loading pump can be operated manually for wasting.
	Aerobic Digester (Cont'd) • Blowers are normally operated manually.

Facility Number/ Description	Limitations on Process Disruption
	- Blower operation shall be maintained to minimize odors. UV Disinfection and Outfall - UV disinfection is a Critical process controlled by means of a package control system. - Package control system shall remain fully operational from April 1st to October 31st. - During a planned transition to SCADA at least two WSD operators shall be on site at all times during the transition period. Odor Control - Odor control is a standby system that is normally not in operation. A Packaged control system is used for control. - Contractor should plan to replace and test the controls even though it is not usually in operation.

SECTION 13510 - COMPUTER SYSTEM HARDWARE

PART 1 – GENERAL

1.01 SCOPE.

- A. This section covers the furnishing and installation of standard computer system hardware fully configured to work with the software specified in the computer system software section. Principal items of the computer and peripheral hardware to be furnished are specified or are indicated on the control system block diagram on the Drawings.
- B. System Supplier shall furnish all necessary interconnecting cables, accessories, and appurtenances as well as additional computer or peripheral hardware required for proper operation and to meet the functional requirements indicated on the Drawings and specified herein.
- C. All equipment shall be capable of tolerating and "riding through" a power interruption of 8 milliseconds or less without interruption of normal operation.
 - 1. Control System. Section Instrumentation and Control System shall apply to all computer hardware furnished under this section.

1.02 GENERAL.

- A. Equipment furnished and installed under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with the Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.
 - 1. General Equipment Stipulations. The General Equipment Stipulations shall apply to all equipment and materials furnished under this section. If requirements in this specification differ from those in the General Equipment Stipulations, the requirements specified herein shall take precedence.

1.03 SUBMITTALS.

- A. Submittals shall be as specified in the Instrumentation and Control System section.

1.04 DELIVERY, STORAGE, AND SHIPPING.

- A. Delivery, storage and shipping shall be as specified in the Instrumentation and Control System section.

1.05 SPARE PARTS.

- A. The following spare parts and consumables shall be provided.

1. 3 toner kits
2. 25 writeable media disks
3. 3 ink cartridges of each color

B. All consumables and spares shall be supplied by the computer or printer manufacturer or by a vendor expressly recommended by the manufacturer. System Supplier shall replace any consumables or spares that are spent during setup, testing, and commissioning of the system.

PART 2 – PRODUCTS

2.01 SYSTEM COMPUTERS.

A. System Supplier shall ensure that all computers are configured to operate properly with all software, input/output devices, and peripherals supplied.

1. Server Computers. Each server computer shall be a Stratus server, without exception. Stratus total assurance shall include a minimum 5 year Warranty and support with Active Remote Fault Notification. Each server provided shall be configured identically to allow them to be used interchangeably between applications. The configuration is to be provided as a minimum:

- a. Stratus ft Server 4900
- b. Dual 10 Hyperthreaded core CPU'S 128 GB Memory
- c. 2.8 TB Storage (300 GB 15K RPM 2.5" Disk Drives) 23 GHZ Auto Uptime Layer for VM
- d. Configuration of 23 Virtual Machines US/JP 115-15A NEMA 5-15P
- e. 21-Inch Monitor

2. Engineering Workstation Computers. Each engineering workstation computer shall be comprised of the following configuration. This configuration is to be provided as a minimum:

- a. Processor type Intel Core i7
- b. Processor speed 3.4 GHz
- c. Monitor Type Flat Panel LCD with LED backlight
- d. Monitor Size 23 inch
- e. Memory size (RAM) 8 GB
- f. Manufacturer Hewlett Packard
- g. Number of CPUs One (1)
- h. Graphics Card NVIDIA GeForce GTX (4GB GDDR4 dedicated)
- i. Cache 12 MB
- j. Ethernet Card One (1) 10/100/1000 Mbps RJ-45
- k. Mouse Type Wired Scroll
- l. Keyboard Type Standard Wired Windows Keyboard

- m. Number of USB Ports 4
 - n. CD/DVD Read-Writer Yes
 - o. Sound card and speakers Yes
3. CD-RW/DVD Drive. The CD-RW (read/write)/DVD drive shall be supplied and shall be capable of Orange Book standard with a minimum of 32x read and 8x record and of playing DVD disks. CD-RW/DVD drive shall be manufactured by HP, Sony, Panasonic or equal. CD-RW/DVD drives shall be supplied with spare disks.
 4. Thin Clients. Each thin client shall be comprised of the following configuration. Thin clients shall be NEC Model OPS-APIS-PS, Rockwell Automation Versaview 5200 Non-Display Thin Client, or equal. This configuration is to be provided as a minimum:
 - a. Capable of supporting multiple displays with display port or multiple HDMI ports.
 - b. Support UHD and 1080p display resolution
 - c. Dual 23-Inch LCD with LED backlighting monitors 4 GB RAM
 - d. Gigabit Ethernet network connection
 5. Notebook Computer. A notebook computer shall be provided. The notebook computer shall be configured as a minimum Intel Core i7 processor, minimum 2.8 GHz processor speed, with a 14.1" TFT display, 8 GB of RAM, one 500 GB hard drive, CD/DVD-RW, video controller with 1 GB of memory, and Ethernet card that supports 10/100/1000 Mbps RJ-45 connectivity, and integrated sound. The notebook computer shall be provided with a lithium ion battery to provide a minimum of three hours of use. The notebook computer shall be a Dell Latitude, Toshiba Tecra, or equal.
 - a. The notebook computer shall be provided with a docking station with the following features:
 - (i) Integral 10/100/1000 Base-TX Ethernet connection
 - (ii) Two (2) 3.3V and 5V PCI expansion slots
 - (iii) Monitor and monitor stand
 - (iv) Locking mechanism
 - (v) Standard I/O ports – serial, parallel, video, mouse, keyboard, USB
 - (vi) Standard Windows keyboard
 - (vii) Two/Three button Intellimouse

2.02 MONITORS.

- A. Each server shall be provided with a single monitor in the size indicated in Server Computer paragraph. Each engineering workstation computer shall

be provided with dual monitors in the size indicated in the Engineering Workstation Computers paragraph. Each thin client shall be provided with dual monitors in the size indicated in the Thin Client paragraph.

- B. Monitors shall be LED-backlit LCD with antiglare finish. Monitors shall be capable of providing 1920 x 1080 resolution at 60 Hz. Brightness shall be minimum 250 cd/m². Aspect ratio shall be 16:09 and contrast ratio shall be 1000:1. Monitors shall have integral DisplayPort and HDMI port. Each monitor shall be provided with removable height-adjustable stand for setting on a desk.

2.03 LARGE SCREEN MONITORS.

- A. Three large screen monitors shall be provided for installation in the Operations Center. Each monitor shall be 70-inch diagonal and 4K ultra high definition (UHD) 3840x2160 resolution. Monitors shall be provided complete with wall-mounting hardware and remote control. Motion rate for each monitor shall be 120 Hz minimum. Large screen monitors shall be manufactured by Samsung, Vizio, LG, or Sony.

2.04 BADGE SCANNERS.

- A. Each Engineering Workstation and Thin Client shall be provided with an RFID badge scanner. The badge scanner shall be configured to allow the operators to log onto the workstation or thin client by swiping their Owner-provided RFID. User verification shall come from the SCADA Active Directory. Badge scanners shall be manufactured by Lennel, without exception.

2.05 SYSTEM PRINTERS.

- A. Report Printer. Laser type printers for printing reports shall be provided, and shall be capable of printing on letter, legal, and tabloid sized sheets of standard paper. The printer shall accept paper fed manually or from one of two paper trays, each with a minimum capacity of 200 sheets.

The report printer shall print at least 35 pages of text per minute at a resolution of 1200 dpi or greater. The printer shall contain a minimum of 48 MB of on-board RAM, expandable to 320 MB. The report printer shall be a Hewlett Packard LaserJet Enterprise M500 series or equal.

Each printer(s) shall be provided with a 10/100/1000 Base-TX interface to provide connectivity to the computers over the Ethernet network.

- B. Color Graphics Printer. Color graphics printer(s) for producing color plots of process graphic screens, trends, and charts shall be provided and shall be of color inkjet type. Color graphics printers shall not require the use of

thermally sensitive, chemically treated, or other special paper, and shall meet at least the following minimum requirements:

1. Shall be capable of delivering 20 pages per minute at the best color quality print speed.
2. Shall utilize at least four (4) separate color print heads for accurate color reproduction.
3. Shall have a print quality of 1200 x 1200 dpi in the color print mode.

Color graphics printer(s) shall be Hewlett Packard OfficeJet Pro 8000 Series or equal.

The color graphics printer shall be provided with a 10/100Base-TX interface to provide connectivity to the computers over the Ethernet network.

PART 3 – EXECUTION

3.01 INSTALLATION REQUIREMENTS.

- A. Installation, field check, testing and training shall be as described in the Instrumentation and Control System section.

END OF SECTION

SECTION 13520 - COMPUTER SYSTEM SOFTWARE

PART 1 – GENERAL

1.01 1-1. SCOPE.

- A. This section covers computer system software to be furnished and installed by System Supplier on computer hardware specified in another section.
- B. System Supplier shall furnish standard, field proven, fully debugged and supported software packages for this application with a minimum of additions or changes. Customized or specially written software shall be furnished only if required to meet all functional requirements specified herein.
- C. Software is described in functional categories. System Supplier shall furnish a complete software package including the functional requirements specified, along with any additional software required for proper and efficient operation of the system. Rockwell Automation software shall be purchased from Rensenhoe Electric Supply KCMO as indicated in the Bid Form and Allowances sections and as specified herein.
- D. No attempt has been made to list all software or all characteristics of software required by System Supplier to meet the functional requirements specified, nor to determine the location of the software modules within the system.
- E. The computer control software shall meet the design conditions and performance requirements.
 - 1. Control System. The Instrumentation and Control System section shall apply to all software furnished under this section. Additional software requirements are indicated in the Software Control Block Descriptions section. Software configuration programming standards shall be as discussed in the Instrumentation and Control System section.

1.02 GENERAL.

- A. Software packages shall control computer system level activities as well as higher level process control activities, allowing the process to be monitored and controlled through an interactive operator interface.
 - 1. Interface. Users shall be able to interface to all process control activities through fully interactive software modules initiated and operated using easily recognized icons or custom symbols or driven by full-screen and pull-down menus. Selection of icons or menus shall be through pointing devices and shall not normally require the use of an alphanumeric keyboard. Systems that require the use of typed commands to move from module to module or from display to display are not acceptable.
 - 2. Execution. Throughout the execution of all software modules, the operator shall be presented with all command or operation choices available at that point in the program to make the choices self-explanatory and unambiguous. Question-and-answer or fill-in-the-blank requests are acceptable only where

file names, tag names, or other unique text or numerical information is required.

3. Configuration. All programs shall be self-configuring to obtain the size and configuration of the system from parameters contained in the various files created during system generation. No parameters related to the hardware configuration shall be hard coded into any of the software.
4. Version. All programs shall be the latest version commercially available at the time the system is delivered to Owner. Superseded versions, revisions, or releases are not acceptable.
5. Drawings. Supplementing this section, the Drawings indicate locations and arrangement of computer enclosures and provide one-line and block diagrams regarding the connection and interaction with other equipment.

1.03 SUBMITTALS.

- A. In addition to the requirements of the Instrumentation and Control System section, a complete description of the software packages and modules shall be submitted to verify compliance with this section.

1.04 DELIVERY AND SHIPPING.

- A. Delivery and shipping shall be as in the Instrumentation and Control System section.

PART 2 – PRODUCTS

2.01 OPERATING SYSTEM SOFTWARE.

- A. Server operating system software shall be Windows Server 2016, without exception, and shall include a complete and unmodified operating system that provides system level functions.
- B. Workstation and thin client operating system shall be Windows 10, without exception.

2.02 PROCESS CONTROL SYSTEM APPLICATION SOFTWARE.

- A. Process control software shall enable the operator to monitor and control field devices connected to PLCs, RTUs, or other input/output hardware. The process control system application software shall meet the following minimum requirements and shall exceed these requirements where necessary to comply with the functional requirements of the project. A license shall be issued for each machine loaded with process control software.
 1. Approved Software. The process control system application software shall be Rockwell Automation FactoryTalk SE with PlantPAx, without exception. The control system hardware is specified in another section.

2. Required Software Modules. The following software modules shall be provided, installed, and configured by the System Supplier for Blue River WWTP (BR), Westside WWTP (WS), Rocky Branch WWTP (RB), and Fishing River WWTP (FR).

(N) = New Provided by System Supplier

(RE) = New Provided by System Supplier through Renssenhouse Electric

(RU) = Re-used License

Software	Description	BR	WS	RB	FR
Process Automation System Server (PASS)	Consists of the following modules: -FactoryTalk View SE Server (10 client license for new package) -FactoryTalk Linx -Alarm Management -FactoryTalk Historian Interface	RU	RU	RE	RU
SQL Server	Provides storage of information for use by other applications. This primarily refers to the historical information.	N	N	N	N
Active Directory (replicate)	Manages security authentication using a database within the Windows server domain.	N	N	N	N
Remote Desktop Server/Thin Manager (RDS/TM)	Consists of the following modules (client licenses in parentheses): -FactoryTalk SE Client -Thin Manager -RDS Client Access Licensing	RU (25)	RE (10)	RE (10)	RE (10)

The following licenses are required for the Task/Information Server: *(Software requirements change rapidly – Revise this section at the time of design to the latest and/or currently utilized products)*

Software	Description	Task/Information Server
Domain Controller	Primary SCADA domain controller	N

FactoryTalk Transaction Manager	Provides a “data pump” to collect and supply SCADA data with other applications (1500 point license).	RE
Factory/Talk Historian	Provides centralized historical data storage and retrieval (10,000 point license).	RU
Remote Desktop Gateway	Serves data to users on the Enterprise network.	N
Patch Management	Operating system updates are managed from one location on the SCADA system to ensure consistency between plants.	Owner
Anti-Virus	Similar to operating systems, the anti-virus software will require a server to manage updates to virus definitions.	Owner
SQL Server 2016	Provides storage of information for use by other applications. This primarily refers to the historical information.	N
Factory Talk Network Manager	Overall SCADA network manager	RE
OPC Driver/FactoryTalk Data	Required to exchange information with EmNet server (Rockwell Part No. 9355-LNXGWDSTENE)	RE

Additional requirements for the SCADA System software capabilities and programming are provided in the following sections.

- a. Password Protection. Operator access within the control system software shall be controllable through a password-based security scheme. Operators shall be assigned their own user account and password. Nine Insert alternative levels of security protection shall be provided. Each system display, database block, control action, and software module shall be assigned its own security levels and shall be inaccessible to users without proper security clearance. After initial creation, passwords shall be field alterable, but only by the assigned user or a system administrator.

- b. System Response. All responses to the operator shall be clear, unambiguous, and complete. Every operator menu, target selection, or request shall generate a response providing the range of choices for the next step in the process or indicating that the request or chosen operation has been completed, is being processed, or cannot be performed. Every operator menu or target pick shall generate a graphic or text message response, even if it is a negative one.
- c. Interactive Software Commands. The software's interactive command structures, user interface, menu organization, and procedures shall be consistent and predictable for all software modules throughout the system. Similar operations shall be performed in a similar manner, so that an operator will not need to learn different techniques for initiating the same operation in different software modules.
- d. Operator Commands. The software shall accept each operator command or selection, decode it, and check its validity and correctness in the sequence of data and operations previously presented. Invalid or incorrect commands or menu selections shall not be processed; instead, a message shall be generated which explains why the command or menu selection is invalid. When a command or selection is canceled prior to being fully processed, the software shall clear all pending sequences and shall not initiate any system control commands.
- e. Database. The software shall include a comprehensive interactive database system for creating, sorting, editing, and monitoring all process inputs and outputs and internally used variables and control blocks. The system shall request, receive, process, and store all real-time data according to the information contained in the database. Database points shall be enabled or disabled individually at any time by an operator working at the proper security level. All internal database point information shall be accessible to other external database software applications through ODBC export of comma separated value direct SQL commands.
- f. Alarm Processing. Alarm processing software shall be provided to recognize and report alarms to the operator in an organized, unambiguous, clear, and convenient manner. Alarms shall be classified into at least five priority levels and at least two independent classes. System events shall be considered alarms classified by their own specific priority or class.

- (i) Alarms. Alarm processing software shall generate alarms for at least the following conditions.
1. Discrete input or output change of state if defined as an alarm in the database
 2. Analog value exceeding the alarm limits defined in the database
 3. Analog rate of change exceeding the limits defined in the database
 4. Failure of any process input/output hardware, communications link, or other major hardware component.
- (ii) Acknowledgment. Alarms shall be generated as they occur and shall not be cleared until they have been acknowledged and conditions have returned to normal. shall clear from each operator workstation once they have been acknowledged from any workstation.
- (iii) Alarm Summary Display. An alarm summary display shall be provided which lists at least 100 of the most recent alarms in all classes, with the most recent alarm listed first. Alarms shall appear flashing or in a unique color until they are acknowledged by the operator. Alarms of different priorities shall be easily distinguished on all alarm displays through the use of unique colors or similar methods.
- Each operator workstation in the system shall be configured to display only certain alarms, alarm classes, and alarm priorities based on the preferences of Owner and Engineer.
- (iv) Alarm Logging. Alarm logs shall constitute a hard-copy record and a soft-copy record saved in the historical database of all alarms, events, and significant operator actions. Alarm displays and alarm log entries shall include the date and time that the alarm was detected, the tag name and description of the alarmed point, and an entry describing the nature of the alarm. Alarms shall be logged on an alarm and event printer and saved in the historical database as they occur.
- (v) Responses to Alarms. An audible alarm shall sound at the operator's console at each occurrence of a new high priority alarm event. The audible alarm shall be silenced when it is acknowledged by the operator. Annunciation shall be used to annunciate high priority alarm events.

The audible alarm shall use an external sound system, such as a sound card and external speakers.

- (vi) Alarm Enabling. Alarms originating from database entries such as discrete change of state or analog limit violations shall be enabled or disabled on a point-by-point basis.

Alarms shall be capable of being shelved for an operator-entered period of time. After the alarm shelving time period has elapsed, the shelved alarm shall become active again. Alarm shelving and re-activation shall be logged in the historian.

- (vii) Operator Interface. System software shall be suitable for creation and modification of alphanumeric and graphic displays and linking of dynamic fields to database variables.

- (viii) System Storage. The system shall be capable of storing and utilizing full-screen user displays and pop-up windows, each containing any number of the following components.

1. Static and dynamic alphanumeric information
2. Static and dynamic or object-based graphics
3. Dynamic bar graph displays
4. Dynamic analog real-time and historical trends displays
5. Static and dynamic bitmap (Windows .BMP compatible) graphics

- (ix) Component and Configuration Information. The software shall enable the user to reuse components and configuration information from any screen or pop-up window with or without modification. All configuration information shall be displayed in any of 256 colors, flashing or non-flashing. Dynamic fields shall change color or from flashing to non-flashing and back in response to a change in value, state, or alarm condition of the linked variable. Dynamic objects linked to process inputs and outputs shall be capable of displaying at least three equipment states, such as on/off/alarm for pumps, or open/close/transition for valves.

- (x) Communications. System software shall support communications among computers, PLCs, and OITs as indicated on the Drawings and as specified herein. System Supplier shall be responsible for any device driver development required to support the communications indicated.

1. Data Retrieval and Transmission. The software shall retrieve and send data from and to all remote field devices indicated on the Drawings. The software shall perform all required error checking to ensure the validity of all data transactions and proper

completion of the scan sequence. All communication system malfunctions, including "no response", shall be reported to the system as alarms. Re-transmission shall be utilized to correct or overcome communication errors.

2. Communications Driver. The software shall be supplied with communications drivers capable of communicating with any existing remote field devices indicated on the Drawings as well as all software input/output drivers required to communicate with all field devices and system hardware that are furnished as part of the control system.

Network communications drivers shall be provided for notification and alarming of SNMP compliant devices, such switches and routers. Drivers shall be OPC to SNMP drivers. Generic OPC drivers shall be provided for the HMI software as required. Drivers shall be Kepware, Matrikon, or equal.

- (xi) Historical Data Storage. SCADA System software shall include modules for historical data gathering, data reduction, and reporting. Real-time analog signal values shall be collected and stored in the historical database based on a user defined time interval of 1 second to 1 day, or on a change of state deadband configured for each database point. Alarms and events shall be collected and stored in the historical database as they occur. The historian shall support the following features.

- The historical database shall be a real-time relational database. The database shall be an extension of Microsoft SQL Server. The historical database shall acquire point information from the graphical user database.
- Access to data shall be by any SQL or ODBC compliant software package such as Crystal Reports, Oracle database applications, Microsoft Excel, or Microsoft Access
- Database shall allow the use of a separate I/O server for data from the programmable logic controller system.

1. Data Reduction Capabilities. Data reduction capabilities shall be provided to average and reduce data to hourly records, and the hourly records to daily records. Entries for all hourly and daily averaged records shall include sample, average, minimum and maximum values as defined by Owner. Both hourly and daily averages for each day shall be stored in the historical database.

2. Retrieval Software. Data retrieval software shall be provided to allow access to historical data files for the following uses:
- Tools shall be provided for remote trending and display of the data on all user workstations. Trend displays shall allow up to eight (8) tags to be graphed in the window. Graphs shall allow stacking or separate display of each tag. Displays shall allow save functions for retrieval from the computer hard drive. Trends shall display real-time data or display data from the history files. The trend display shall show the time frame of stored data.
 - Import/export of data from/to ASCII files
 - Inclusion in user-generated reports.
 - Tools for Microsoft Excel display of data shall be included. Tools shall allow the retrieval and display of real-time data, or historical data.

(xii) Reports. Report logs shall constitute a hard-copy summary of user-selected process data. At least 30 report formats shall be available in the system. Report printing software shall include a user-interactive, on-line report editor to allow the operator to select the following parameters for each report.

- Data consisting of measured variables, calculated variables, and manually entered data.
- Starting and ending time of data to be included in the report.
- Print format for each variable.
- Titles and subtitles to appear on each page of the report, including report name, current time, and date.
- Paper width (from 8 to 14 inches)
- Print pitch (from 5 to 16.5 characters per inch).
- Number of columns on each page
- Number of lines per page and number of pages per report.

1. Database Points. All database points in the system, including all input/output points, manually entered points, and calculated points, shall be available for use in reports. Reports shall include sample, average, minimum, and maximum values for analog variables and the time of occurrence for minimum and maximum values. Information printable for discrete variables shall include running time, state, and transition count.

2. Report Formats. Report logs shall constitute a file or a hard-copy summary of user-selected process data. All historical data for points in the history database shall be available for reporting from an SQL and ODBC compliant database. Reporting software shall have the following features.

Creation and modification of report formats or content shall not require direct modification of system source code.

Reports shall have the ability to be created in third party software packages such as Microsoft Excel and Microsoft Access.

- (xiii) Off-line Storage Software. The software shall include provisions for copying to backup media any or all of the historical data currently stored on the hard drive. The software shall support archival of data to any backup devices specified in the Computer System Hardware section. Archival of data shall be intuitive and the archival software shall guide an operator through the backup process.

1. Backup Data. Once historical data is copied to back-up media, the software shall allow the operator to delete it without negative consequences to free space on the hard drive. Archived historical data shall be re-loadable and usable in all the same ways as historical data that has not been removed from the local hard drive.
2. Logical Disk Drive. If the backup device is on-line and addressable by a logical disk drive letter (e.g., an optical disk drive defined as "D:"), historical data archived to that device shall be accessible directly without restoration to a local hard drive.
3. Internet/Intranet Connectivity. The software shall include provisions for making connections to the process data through the existing corporate Intranet or through a connection made on the Internet only through the DMZ associated with the Task/Information servers. This "thin client" solution shall provide authorized users access to all displays and process information by utilizing any standard Internet browser.

The application software shall include software for development for web browser based interface. Features shall include the following:

- The software shall allow access to the real-time process operations through any web browser without special software on the computer.
- The software shall provide security to prevent unauthorized use
- The software shall allow the user to view alarms through the browser.
- The software shall allow the user to view historical data through the browser.

2.03 SOFTWARE DOCUMENTATION.

- A. System Supplier shall relinquish all documentation supplied with the software furnished, such as user manuals, programmer guides, reference cards or keyboard templates, and related materials. In addition, System Supplier shall generate and submit to Owner and Engineer written documentation of any configuration work, modifications of the system, or setup of software done before or after installation of equipment on the site. Documentation shall be electronic and one hard copy. This includes any and all information on the development of any standard “objects,” “wizards,” or “scripts” created for the use in this project.

2.04 PLC SOFTWARE.

- A. The requirements for PLC software are specified in the Programmable Logic Controller section.

2.05 EXTENDED SUPPORT OR WARRANTY.

- A. The SCADA System software shall include the extended or comprehensive support service of the manufacturer. The service shall include all software updates and phone and personal support when needed. The service shall be for a period of one year after final acceptance and shall cover all software packages supplied under this contract.

2.06 TRAINING SERVICES.

- A. Training requirements are specified in the Instrumentation and Control System section.

PART 3 – EXECUTION

3.01 INSTALLATION REQUIREMENTS.

- A. The System Supplier shall install the process control software on the control system hardware specified in another section.

1. Configuration. System Supplier shall install and properly configure any supplemental programs, modules, and software packages necessary to meet the functional requirements of the project as described in the Instrumentation and Control System and Software Control Block Description sections.

END OF SECTION

TEMPLATE

SECTION 13530 - PROGRAMMABLE LOGIC CONTROLLERS

PART 1 - GENERAL

1.01 SCOPE.

- A. This section covers programmable logic controllers (PLCs), including associated input/output hardware to control process equipment and serve as the interface to field devices.
 - 1. Control System. The Instrumentation and Control System section shall apply to all equipment furnished under this section. Additional PLC software requirements are indicated in Software Control Block Descriptions section.

1.02 GENERAL.

- A. Equipment furnished and installed under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with the Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.
 - 1. General Equipment Stipulations. The General Equipment Stipulations shall apply to all equipment and materials furnished under this section. If requirements in this specification differ from those in the General Equipment Stipulations, the requirements specified herein shall take precedence.
 - 2. Drawings. Supplementing this section, the Drawings indicate the number and types of PLCs, locations of PLCs, and provide diagrams and schematics regarding connection and interaction with other equipment. All hardware, including power supplies, special cables, and other appurtenant equipment, shall be provided to meet the functional requirements described herein and indicated on the Drawings.
 - 3. PLC Listings. Listings of the PLCs and OITs that are part of the project are attached to this section. The North Oak Tank PLC (P847PLC01) is not included in the listing but shall be included in the Project.

1.03 SUBMITTALS.

- A. Submittals shall be as specified in the Instrumentation and Control System section.

1.04 DELIVERY, STORAGE, AND SHIPPING.

- A. Delivery, storage and shipping shall be as specified in the Instrumentation and Control System Section.

1.05 SPARE PARTS.

- A. Spare parts shall be furnished as follows:

<u>Spare Part</u>	<u>Quantity</u>
1. Processor Modules	Qty. 4 of each type used
2. Power Supply Modules	Qty. 4 of each type used
3. Communication Modules	Qty. 8 of each type used

PART 2 – PRODUCTS

2.01 GENERAL.

- A. All equipment furnished under this section shall be expressly selected by System Supplier for its superior quality for the intended purpose and shall comply with the following requirements.
1. Interchangeability. All programmable logic controller systems shall be products of the same manufacturer and of the same series or product line. Processors, local and remote input/output hardware, communications modules, and specialty modules such as coprocessors and ASCII modules shall be interchangeable among all I/O panels and systems. PLC modules and hardware by other manufacturers will be acceptable only if the PLC manufacturer does not offer suitable modules and hardware for the same functions.
 2. Initial, Spare, and Future Memory (RAM). System Supplier shall provide adequate memory for the amount of I/O, control algorithms, and communications in the initial system.

Each programmable logic controller shall include provisions for future expansion and shall have 100 percent spare memory capacity and 100 percent spare data capacity installed. The spare memory capacity shall be documented by submitting to Engineer, during factory testing, a statement indicating the amounts of memory of all types being utilized and the total amount available in each system. The statement shall include an estimate of the total program and data memory necessary, including spare memory, based on the I/O hardware for the system, and previous programming experience.

3. Spare I/O. Each PLC input/output enclosure shall be provided with at least 20 percent spare inputs and outputs of each type. Spare I/O shall be installed, wired, and interfaced properly to the terminal strip. The spare I/O shall be in addition to any I/O installed and reserved for future process signals as may be indicated on the I/O list. In addition, each PLC input/output enclosure shall be capable of accommodating 20 percent of additional input/output capacity of each type as originally assembled, without the need for additional expansion racks, communication adapters, cables, or PLC power supplies.
4. Acceptable Manufacturers. The PLCs shall be Allen-Bradley, without exception.

5. Signal Power Supplies. Regulated dc power supplies shall be provided in each PLC enclosure for analog inputs, digital outputs, digital inputs. Power supplies shall be suitable for an input voltage variation of ± 10 percent, and the supply output shall be fused or protected against short-circuiting. Output voltage regulation shall be as required by the instrumentation equipment supplied under another section. The loop power supply shall be separate from the power supply circuit for the processor and racks. The power source for all digital inputs from field devices shall be separately fused for each digital input module. Unless otherwise noted, all field devices will be provided with dry contacts that close to provide an input to the PLC.
 6. Appurtenances. The PLC processor and I/O hardware shall be provided as complete systems, as shown on the control system block diagram drawings. The PLCs shall include all necessary hardware and software for a complete working system. All special rack or panel mounted power supplies, special interconnecting and programming cables, special grounding hardware, or isolation devices shall be furnished for proper operation of the equipment. Signal converters, signal boosters, amplifiers, special power supplies, special cable, special grounding, intrinsically safe relays and current repeaters, surge suppression devices, and isolation devices shall be furnished and installed for proper operation of the equipment.
 7. PLC Arrangement. The PLCs shall be distributed and arranged as indicated on the Drawings.
 8. Service Conditions. PLCs will be installed in non air conditioned rooms.
- B. LARGE PLC PROCESSOR. The programmable logic controller processor shall be an industrial-type rack-mounted unit that utilizes nonvolatile type memory. Battery-backed memory is not acceptable. Each processor shall include onboard flash memory or CompactFlash card for storage of the user program. The processor shall automatically download the user program from the card upon startup after a power loss. The card shall be programmable by the PLC or PLC software. Large PLC processors shall be Allen Bradley ControlLogix L8XE series, without exception.
1. Hardware Configuration. Processors shall be configured for standard rack mounting. Each programmable logic controller processor shall include integral communications ports for the programming device, remote input/output, HMI device, or remote communications interfaces.
 2. Input/Output Hardware. Input/output hardware shall be arranged as indicated on the Drawings. Programmable logic controller systems shall support the following types of input/output modules.
 - 120 Volt AC Digital Input and Output

- 24 Volt DC Digital Input and Output
- Relay Digital Output
- 4-20 mA DC Analog Input and Output

All digital input/output hardware shall include isolation against surges of at least 1500 volts. All output hardware connected to inductive loads shall be supplied with surge suppression devices and recommended by the PLC manufacturer to prevent damage to output hardware.

Combination input/output modules will be acceptable if they meet the following requirements.

3. Wiring Terminals. All input/output modules shall utilize easily removable plug-in or hinged field wiring terminals to allow removal of modules without disconnecting individual wires.
4. I/O Circuit Power Supply. Outputs for motor driven equipment will typically be powered from the driven equipment. Digital outputs for miscellaneous equipment shall be powered either from the controlled equipment or the PLC enclosure as indicated on the Drawings or as coordinated with the controlled equipment supplier. Outputs that control process equipment specified under other sections or provided under other contracts shall be fully isolated or shall operate either interposing relays or relay-type digital output modules in the PLC cabinet.
5. Digital Input Modules. Digital input modules shall sense voltages between 100 and 130 volts ac or 20 and 28 volts dc and shall have LED indicators for each point to display the status of the field contact. Each input module shall be suitable for being connected to a separate voltage source and return. Return voltage may be common to the entire input module. Digital input modules shall be Allen Bradley 1756-IA16 (120 volt) or 1756-IB16 (24 volt).
6. Digital Output Modules. Digital output modules shall control voltages from 100 and 130 volts ac or 20 and 28 volts dc and shall be rated at least 1 ampere. Outputs shall be individually fused and shall have LED indicators to display output status. Outputs shall withstand a surge of at least 80 amperes for one cycle and shall have an off-state leakage current not to exceed 2.0 mA. Digital output modules shall be Allen Bradley 1756-OA16 (120 volt) or 1756-OB16I (24 volt).
7. Relay Digital Output Modules. Relay digital output modules shall have dry contact relay type outputs suitable to control voltages from 5 to 125 volts dc and 5 to 125 volts ac and shall be rated at least 2 amperes. Outputs have LED indicators to display output status. Digital outputs for motor driven equipment shall be powered by the driven equipment. Outputs shall withstand a surge of at least 80 amperes for 15 milliseconds. Relay digital output modules shall be either 1756-OW16I or 1756-OX8I.

8. Analog Input Modules. Analog input modules shall accept linear 4-20 mA dc signals from field transmitters. Analog to digital conversion accuracy shall be at least 12-bit (0-4095 count) resolution. Analog input modules shall have multiple inputs. Analog input shall be fully isolated from the other inputs and shall be Allen Bradley 1765-IF8I.
9. Analog Output Modules. Analog output modules shall transmit linear 4-20 mA dc signals to field devices. Loop power for all analog outputs shall be provided by regulated power supplies in each input/output enclosure and shall be capable of driving a 0 to 600 ohm load. Digital to analog conversion accuracy shall be at least 12-bit (0-4095 count) resolution. Analog output modules shall be Allen Bradley 1756-OF8.
10. Panel Terminations. All PLC input/output signals for field connections shall be terminated through panel enclosure terminal strips. Direct connection of field wiring to the I/O module terminals is not acceptable.
11. Interposing Relays. Interposing relays shall be incorporated on all I/O circuits as shown on the PLC input/output listing, where required by the application of isolate foreign power sources, where the continuous output rating of the PLC relay digital or output module is not sufficient to power the connected device or equipment, or where otherwise required by the System Supplier's equipment. Interposing relays shall be provided for any digital output module output signal that leaves the PLC enclosure. Interposing relays shall be mounted in the PLC enclosure containing the output module that activates the relays.

2.02 MINI PLC PROCESSOR.

- A. The programmable logic controller processor shall be an industrial type that utilizes nonvolatile memory. Battery-backed memory is not acceptable. Mini PLC processors shall be Allen Bradley CompactLogix, without exception.
 1. Configuration. Processors shall be configured for standard plug-in printed circuit board construction. Each programmable logic controller shall include integral communications ports for the programming device, remote input/output, HMI device, or remote communications interfaces as required.

Programmable logic controller systems shall support the following types of input/output.

- 120 Volt AC Digital Input and Output
- 24 Volt DC Digital Input and Output
- Relay Digital Output
- 4-20 mA DC Analog Input and Output

2. Input/Output Hardware. Input/output hardware shall be supplied in standard modules of 4, 8, 16, or 32 points each for assembly in local and remote input/output enclosures.
All input/output hardware shall be entirely contained within the PLC enclosure.
All digital input/output hardware shall include isolation against surges of at least 1500 volts. All output hardware connected to inductive loads shall be supplied with surge suppression devices as required and recommended by the PLC manufacturer to prevent damage to output hardware. Combination input/output modules will be acceptable if they meet all of the requirements in the following subparagraphs.
3. Wiring Terminals. All input/output modules shall utilize easily removable plug-in or hinged field wiring terminals to allow removal of modules without disconnecting individual wires.
4. I/O Circuit Power Supply. Outputs for motor driven equipment will typically be powered from the driven equipment. Digital outputs for miscellaneous equipment shall be powered either from the controlled equipment or the PLC enclosure as indicated on the Drawings or as coordinated with the controlled equipment supplier. Outputs that control process equipment specified under other sections or provided under other contracts shall be fully isolated or shall operate relay-type digital output modules or interposing relays in the PLC cabinet.
5. Digital Input Modules. Digital input modules shall sense voltages between 100 and 130 volts ac or 20 and 28 volts dc and shall have LED indicators for each point to display the status of the field contact. Each input module shall be suitable for being connected to a separate voltage source and return. Return voltage may be common to the entire input module.
6. Digital Output Modules. Digital output modules shall control voltages from 100 and 130 volts ac or 20 and 28 volts dc and shall be rated at least 1 ampere. Outputs shall be individually fused and shall have LED indicators to display output status. Each digital output shall be provided with an interposing relay. Outputs shall withstand a surge of at least 80 amperes for one cycle and shall have an off-state leakage current not to exceed 2.0 mA.
7. Relay Digital Output Modules. Relay digital output modules shall control voltages from 5 to 125 volts dc and 5 to 125 volts ac and shall be rated at least 2 amperes. Outputs shall be individually fused and shall have LED indicators to display output status. Digital outputs for motor driven equipment shall be powered by the driven equipment. Outputs shall withstand a surge of at least 80 amperes for 15 milliseconds.

8. Analog Input Modules. Analog input modules shall accept linear 4-20 mA dc signals from field transmitters. Input circuitry shall be floating differential type designed to prevent loop grounding. Analog to digital conversion accuracy shall be at least 12 bit (0-4095 count) resolution. Where analog input signals are grounded outside of the PLC enclosure, isolation shall be provided for the associated analog input point either on the analog input module or through an I/I signal isolator provided in the PLC enclosure.
9. Analog Output Modules. output modules shall transmit linear 4-20 mA dc signals to field devices. Loop power for all analog outputs shall be provided by regulated power supplies in each input/output enclosure and shall be capable of driving a 0 to 600 ohm load. Digital to analog conversion accuracy shall be at least 12 bit (0-4095 count) resolution.
10. Panel Terminations. All PLC input/output signals for field connections shall be terminated through panel enclosure terminal strips. Direct connection of field wiring to the I/O module terminals is not acceptable.

2.03 COMMUNICATIONS.

- A. Each programmable controller system shall be furnished complete with communication hardware modules as shown on the Drawings. Communication hardware shall be compatible with the cable, data highway, fiber optic, or radio communication media. Ethernet components and cable are specified in other specification sections.
 1. Addressability. Each programmable logic controller shall be individually addressable so that only the selected controller responds when queried. IP addressing shall be used. Designation of a controller's network address may be either a software or hardware function.
 2. Communications Hardware. System Supplier shall provide all necessary communications hardware. Hardware shall be included for, but not be limited to, remote I/O, data highway, host computer, fiber optics, Ethernet and radio.
 - a. PLC to PLC and Remote I/O Communications Hardware. Each PLC shall communicate to other PLCs and remote I/O over a network as shown on the control system block diagram. System Supplier shall include all rack mounted, enclosure mounted, or desktop mounted communications modules required for a complete working system.
 - b. PLC to Server Communications Hardware. Each PLC shall communicate to the server computer over a network as shown on the control system block diagram. System Supplier shall include all rack mounted, enclosure mounted, or desktop mounted communications modules required for a complete working system. The computer system hardware is covered in another section.

- c. Communications Media. System Supplier shall provide all necessary cabling for the PLC communications network and PLC remote I/O communications network. Communications cables shall meet the requirements of the manufacturers of the PLCs and communications modules. PLC communications media shall be as specified under the Network Systems section.

2.04 MEDIA CONVERTERS. NOT USED.

2.05 TELEPHONE NETWORKS. NOT USED.

2.06 SERIAL NETWORKS. NOT USED.

2.07 PROGRAMMING DEVICE HARDWARE.

- A. The programming device shall be a portable laptop computer as specified in the Computer System Hardware section. System Supplier shall provide two interconnecting cables, each 5 meters long, to connect the computer to the programmable logic controller.

2.08 PROGRAMMING SOFTWARE.

- A. System Supplier shall furnish two licensed copy of PLC programming software for the Owner. The software shall be suitable for running on a laptop computer running Windows 10 operating system software. A full legal set of programming software documentation shall accompany each copy of the software. Each copy of the programming software shall include all necessary device drivers and add-on software packages.
 - 1. Standard Product. The programming software shall be personal computer based and a standard product of the PLC manufacturer. The software shall be Allen Bradley RSLogix Studio 5000 Logix Designer Professional Edition.
 - 2. PLC Simulation. Not used.
 - 3. Programming Software Features. The programming software shall allow off-line development of all PLC-related programming, including user annotation of the program, and creation and printing of application programs and I/O cross- reference lists. Special programming tasks originally provided by System Supplier shall also be included.

On-line features shall include IEC-61131 standards program modification, ladder- logic modification, program language modification, monitoring of real-time ladder- logic execution, monitoring of program execution, monitoring and manipulation of timer and counter preset and present values, monitoring and forcing of physical I/O, and monitoring and manipulation of analog (register) and

bit (binary) data table values. PLC and I/O hardware diagnostic and status information shall be accessible using the software in on-line mode.

2.09 SYSTEM ENCLOSURES.

- A. Programmable logic controllers and input/output hardware shall be housed in existing panels or new panels as indicated on the Drawings.

2.10 OPERATOR INTERFACE TERMINALS.

- A. Operator interface terminals (OIT) shall be microprocessor-based flat panel type. The unit shall have data entry capabilities and shall include a password security function that utilizes the SCADA Active Directory. The unit shall communicate to the PLC and shall display status, alarm, and diagnostic information. The unit shall provide a nominal diagonal display area dimension of 12" with WXGA resolution. The OIT shall be furnished with a minimum of 512 MB of RAM memory and 512 MB flash memory. The operator interface unit shall be provided with an Ethernet port for communications, and two USB ports for programming. The OIT shall be rated NEMA 4X, suitable for panel face.
- B. Terminals shall be powered from 120 volts ac. Terminals shall be suitable for ambient temperatures of +32 to +131°F and a relative humidity of 5 to 95 percent.
- C. Two licensed copies of the OIT software used to create the screens shall be turned over to the Owner upon successful startup and commissioning of the system.
- D. The operator interface unit shall be an Allen-Bradley Model 2711P PanelView Plus 7 Performance 1200W, without exception.
- E. OIT shall provide graphic screens that shall be used by the operators to access all functions and setpoints necessary for comprehensive control. The Manufacturer shall be responsible for developing and configuring the custom graphic displays. Each piece of major process equipment that is monitored and controlled by the control system shall be displayed on the graphic screens.
- F. Graphic screens shall be representations of the equipment and piping. The screens must accurately show all devices and equipment that is part of the control loops. The manufacturer shall use the configuration standards and conventions to be established by direct coordination with the Owner that shall describe and define such items as proposed graphic display process line colors/representations; color standards for "on", "off", "opened", "closed", and "alarm" conditions; alarm handling conventions; how items will be selected for control; methods for navigation between displays; address usage/naming conventions; and security setup. Proposed displays shall be submitted to the Engineer and Owner for approval.

PART 3 – EXECUTION

3.01 INSTALLATION REQUIREMENTS.

- A. PLCs installation requirements are specified in Instrumentation and Control System section except as described herein.
- B. Field check, testing, and training shall be as specified in the Instrumentation and Control System section.

3.02 CONFIGURATION.

- A. PLC Programming and Configuration. Configuration services are specified in the Instrumentation and Control System section.
- B. Communications Configuration. The communications shall be fully configured and installed by System Supplier. Communications shall be configured as shown on the Drawings.

END OF SECTION

SECTION 13540 – RADIO EQUIPMENT

PART 1 – GENERAL

1.01 SCOPE.

- A. This section covers the furnishing of radio communication equipment for the Instrumentation and Control System. Radio equipment shall operate in conjunction with PLCs as described elsewhere in these Specifications and as shown on the Drawings. The radio equipment shall consist of a base radio and remote radios.
 - 1. Control System. The Instrumentation and Control System section shall apply to all equipment furnished under this section.

1.02 GENERAL

- A. Equipment furnished under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with the Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by the Engineer.
 - 1. General Equipment Stipulations. The General Equipment Stipulations shall apply to all equipment provided under this section. If requirements in this specification differ from those in the General Equipment Stipulations, the requirements specified herein shall take precedence.
 - 2. Drawings. Supplementing this section, the Drawings show the configuration of the radio system, a location map of the sites, and antennae types with support and cable and mounting details. All hardware, including power supplies, special cables, and other appurtenant equipment, shall be provided to meet the functional requirements described herein and indicated on the Drawings.
 - 3. Accessories. System Supplier shall provide all necessary equipment such as channel processors, line buffers, communication couplers, and modems, to transmit commands and receive data via communication channels. System Supplier shall also provide all radio transmitters, receivers, antennas, cabling, and mounting hardware for a complete operational radio system.

1.03 SUBMITTALS.

- A. Submittals shall be as specified in the Instrumentation and Control System section.

1.04 DELIVERY, STORAGE, AND SHIPPING.

- A. Delivery, storage and shipping shall be as specified in the Instrumentation and Control System section.

1.05 SPARE PARTS. THE FOLLOWING SPARE PARTS SHALL BE PROVIDED:

A.	<u>Spare Parts</u>	<u>Quantity</u>
	Radio	1

PART 2 – PRODUCTS

2.01 SERVICE CONDITIONS.

- A. Radios and accessories shall be suitable for installation in enclosures and for environmental conditions as follows.

Radio Type	Location	Enclosure	Service Conditions
Remote radios	6nn – Facility Name	Mounted in enclosure with other equipment	Non-air conditioned room

2.02 SPREAD SPECTRUM RADIO – SERIAL COMMUNICATIONS. NOT USED.

2.03 SPREAD SPECTRUM RADIO – ETHERNET COMMUNICATIONS. NOT USED.

2.04 220 MHZ RADIOS.

- A. A 220 MHz radio system shall be provided to transmit SCADA communications between the facilities indicated herein and on the Drawings.

1. Radio General Characteristics. The 220 MHz radio general characteristics shall be as follows:

a. Number of channels (per radio)	1
b. Frequency Selection	220/221 MHz
c. Adaptive Modulation	QPSK to 64-QAM
d. Sensitivity	-104 dBm
e. Antenna Gain (dBd)	9.5
f. Vertical Beamwidth	43 degrees
g. Type of Antenna	Yagi
h. Communications Data Baud Rate	4,800

- B. Communication Channel. Radios indicated on the Drawings or specified herein shall utilize frequency modulated, radio frequency as its communications medium.

1. System transceivers shall operate on a dedicated channel pair in the 220-222 MHz band in conformance with FCC Rules and Regulations, Parts 47 CFR Part 90 and Subpart T. Bandwidth shall be 12.5 kHz.

- C. System Equipment. MAS radio transceivers shall be 4RF – Aprisa + 220-222 MHZ, without exception.

- D. Digital Interface. Interface shall be Ethernet for communications to the PLC by way of a security device.

- E. Radio System Diagnostics. The radios shall include system diagnostics to permit continuous or scheduled automatic monitoring of key operating parameters and alarm conditions.
1. Communication. The diagnostic package shall communicate data from all remote transceiver radios in the system to the base radio and polling remote radio via the radio's RF channel.
 2. Radio Diagnostic Software. Diagnostic software capable of operation on the latest version of MS Windows 10 operating system shall be supplied to enable an IBM compatible personal computer or notebook computer to communicate with the radio via a separate USB or Ethernet diagnostic port. The diagnostic software shall support the data/control functions specified herein and shall be fully loaded and operational on the notebook computer furnished hereunder or in another section as specified.
 - a. Diagnostic Data. Diagnostic data transmitted over the radio frequency channel must use dual tone multi-frequency encoding to eliminate the possibility of diagnostic information being misinterpreted as data being sent from the SCADA system.
 3. Programming Device Hardware. The programming device shall be a notebook computer furnished under another section.
 4. Special Devices. System Supplier shall provide two sets of any special devices (such as null modems, adapter cards, interface converters, etc.) required to establish an operational programming line between the radios and programming device.
 5. Base Radio or Polling Remote Radio Diagnostic Data/Control Functions. The following functions shall be monitored by the diagnostic system.
 - a. The operation and status of redundant transmitter, receivers, and power supplies; including automatic switch over to standby unit upon failure. All modules must be continuously monitored while on line and in standby states.
 - b. Remote switch over to the alternate transmitter or receiver to permit remote troubleshooting of radio hardware and software.
 - c. Remote testing of the hot standby switch over logic and alarm reporting logic.
 - d. Power supply voltage, current, and transmission of power from redundant power supplies and transmitters.
 - e. Received signal strength, frequency offset, and FM deviation levels of redundant base radio, polling remote radio, or a repeater radio.The radio diagnostics shall permit remote adjustment of key parameters in the remote radio transceivers from a personal computer connected to the base radio or polling remote radio. The parameters shall include transmit power, transmit frequency offset, and transmit modulation deviation.

- f. Control and Display Capability. Radio diagnostic software shall include control and display capability of the remote radio transceiver parameters listed below.
 - (i) Frequency (remote display and control).
 - (ii) Deviation (remote display and control).
 - (iii) Transmit Power Output (remote display and control).
 - (iv) Receiver Signal Strength (remote display).
 - (v) Power Supply Voltage (remote display).
 - (vi) Internal Voltage Regulator Voltage (remote display).
 - (vii) Phase Lock Loop Voltage (remote display).
 - (viii) Internal Radio Temperature (remote display).
- 6. Remote Transceiver Radio Diagnostic Data/Control Functions. The remote transceiver radio shall monitor its internal operation and diagnostic parameters from a hand held terminal or personal computer plugged into the remote transceiver. A loop-back decoder board that operates in conjunction with the base radio or polling remote radio microprocessor to provide signal strength, frequency error, and deviation levels shall be supplied for each remote transceiver radio. The following data/diagnostic functions shall be supplied.
 - a. Transmit and Receive Frequencies (display and control).
 - b. Time-out Timer Setting (display and control).
 - c. Soft-Carrier De-key Setting (display and control).
 - d. Loop-Back Code (display and control).
 - e. Squelch Tail Eliminator (display and control).
 - f. Push-To-Talk Delay (display and control).
 - g. Clear-To-Send Delay (display and control).
 - h. Frequency (Remote display and control).
 - i. Deviation (Remote display and control).
 - j. Transmit Power Output (display and control).
 - k. Receiver Signal Strength (display).
 - l. Power Supply Voltage (display).
 - m. Internal Voltage Regulator Voltage (display).
 - n. Phase Lock Loop Voltage (display).
 - o. Internal Radio Temperature (display).
- 7. Remote Transceiver Hand-Held Programmer/Test Set. Not used.

2.05 SURGE SUPPRESSION.

- A. System Supplier shall provide an in-line surge suppressor on antenna cables at each radio site to protect the radio equipment from damage by lightning. Surge suppressors shall be Polyphaser Series IS-B50LN-C2 or equal.
- B. Two lengths of superflexible Heliac cable shall be supplied for each surge suppressor; one for the connection between surge suppressor and radio antenna port, and one for the connection between the coaxial transmission

cable (1/2 inch and larger) and the antenna. The cable shall be terminated with standard N type connectors. The cable shall be Andrew Superflexible Heliac 1/4 inch Type FSS1-50A.

2.06 ANTENNA CABLE.

- A. All cabling between antennas and radio transceivers shall utilize a splice-free foam dielectric coaxial cable cut to length. Foam dielectric coaxial cable shall consist of an inner conductor surrounded by a foam dielectric, a corrugated outer conductor surrounding the dielectric, and a polyethylene jacket. The installation shall use self-flaring connectors specifically designed for use with the cable. The antenna cable shall be grounded as indicated in the Drawings.
- B. All foam dielectric coaxial cable for all remote antenna locations shall be CommScope (Andrew) 1/2 inch Heliac, "Type LDF4-50A."

2.07 ANTENNAS.

- A. Supplier shall furnish the antennas and supporting structures at radio sites as indicated on the Drawings. Antennas shall have an S/N (flat weighing) 15 dBm threshold at antenna port (3 kHz channel) of -104 dBm S/N for FM – digital.

- 1. Directional (Yagi) Antennas. Yagi antennas shall be provided for the Rocky Branch WWTP (Facility 718) and the Fishing River WWTP (Facility 720). Directional Yagi antennas shall be 9.5 dBd with a minimum 17 dB front-to-back ratio shall be provided for each remote transceiver radio site and polling base radio site as indicated on the Drawings. Each antenna shall be of heavy-duty design for permanent installation, with gold anodized aluminum support boom and elements and mounting hardware supplied by the antenna manufacturer.

The radiating element of the antenna shall be radome protected. Yagi antennas shall be Sinclair SY206-SF11SNM(U) or equal.

- 2. Wooden Poles. Wooden poles for mounting antennas shall be furnished in the lengths indicated at the locations indicated on the Drawings. The wooden poles shall be burn-branded on the face and the butt. The markings on the face shall be 6 feet above ground line, assuming standard setting depths. The markings shall be as designated in ANSI 05.1, Paragraph 6.25. Each pole shall have a 15 degree one-way roof. Wooden poles shall be 30 foot.

The poles shall meet the applicable requirements of ANSI 05.1 and AWPA C4.

- 3. Radio Towers. Not used.
 - 4. Radio Masts. Not used.

5. Grounding Conductors. All ground conductors shall be soft drawn copper cable or bar, not smaller than 12 AWG, bare or green insulated in accordance with the National Electrical Code.
6. Ground Rods. Ground rods not described elsewhere shall be 5/8 inch diameter by 8 feet long, with a copper jacket bonded to a steel core.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS.

- A. General installation requirements are described in the Instrumentation and Controls System section.
 1. Radio Equipment. The radio equipment shall be mounted in field device enclosures or in a separate enclosure as specified herein. Separate enclosures shall be furnished with the same NEMA rating and color as the field device enclosure.
 2. Radio Signal Strength Testing. A physical radio path study has been performed for system configuration parameters, locations for repeaters, and for the sites indicated on the Drawings. The results of that study are included as an appendix to these Specifications.
 3. Functional Testing. As a minimum, the following functional tests shall be performed on the communications equipment.
 - a. Antenna Alignment. After each antenna is permanently installed, a power monitor shall be used to properly adjust the antenna for maximum signal strength. A written report on the monitoring results shall be submitted to the Engineer for review before the radios are placed into permanent operation.
 - b. Radio Frequency Check. After each radio has been installed but before it is placed into permanent operation, a frequency check shall be conducted to verify conformance with the specified tolerances. The frequency check shall be performed by a radio technician either employed or under subcontract to System Supplier. A written report on the results of this check shall be submitted to the Engineer for acceptance.
 4. Surge Suppressor Installation. Surge suppressors shall be bulkhead mounted on the radio enclosures and shall be suitable for the sizes of cable inside and outside the enclosures.
 5. Installation of Grounding Materials. Electrical system grounding and equipment grounding shall be in compliance with the National Electrical Code.
 6. Antenna Installation. System Supplier shall provide and supervise the installation of antenna equipment at radio sites as indicated on the Drawings. Damage to tanks or reservoirs caused by the Contractor shall be repaired to the Owner's satisfaction at Contractor's expense.

3.02 FCC LICENSE.

- A. One or more frequency licenses has been granted to the Owner by a third-party provider. The licensed frequencies and their effective dates will coincide with the Contractor's schedule for making the radio system operational.

END OF SECTION

SECTION 13550 - SOFTWARE CONTROL BLOCK DESCRIPTIONS

PART 1 – GENERAL

1.01 SCOPE.

- A. This section provides functional descriptions of the SCADA System, including servers, PLCs, and computer software requirements.
 - 1. Control System. The Instrumentation and Control System section shall apply to all systems described in this section.

PART 2 – PRODUCTS

2.01 GENERAL.

- A. The descriptions are applicable to the software specified in the Computer System Software section and Programmable Logic Controller section.

PART 3 – EXECUTION

3.01 PLC PROGRAMMING FUNCTIONAL REQUIREMENTS.

- A. The following paragraphs describe general configuration tasks that are required for both new and reused existing SCADA System PLCs. Each PLC may have multiple instances of each of these tasks or may have no instances of some or all of these tasks. The input/output lists (located in these documents as specified in the Instrumentation and Control System section) and existing programs shall be referenced to determine the requirements for each PLC.

The following paragraphs cover functional requirements of the software, which are generic and may or may not be related to any specific control loop.

1. Available Process Values. All PLC-generated process alarm, equipment status, and process variable values shall be available at any operator workstation.
2. Flow Values. Flow values shall be integrated, totaled, and stored in the PLC registers so the values displayed on the HMI computers, OITs, and PLC will be identical.
3. System Failure. Failure of a PLC shall result in safe shutdown of associated process equipment. Failure of any PLC or its communication shall be alarmed on the HMI computer.
4. HMI Computers. The HMI computers shall function as a monitoring system, not as a controller, for the process equipment. The computer shall download set points and other information to the PLCs, and the PLCs shall perform all control algorithms, so a temporary failure of the any HMI computer will not disrupt facility control.
5. Rack/Module Configuration. The rack and module definitions for each PLC, as well as the PLC communications configuration shall be

completely configured to allow proper addressing of all field connected I/O points. This shall include configuration of any remote input/output (RIO) racks.

6. PLC Database Definition. The PLC database will include both field I/O points and internally generated points required for programming. All field I/O points and internal programming points shall be fully defined according to database naming conventions approved by Owner. As a minimum, each database point shall be provided with a tag name, engineering unit, alarm parameters, and description. PLC tags shall be updated in each reused PLC to conform to the database standard and PlantPAx objects.
7. Analog Scaling. Each analog input and output will be appropriately scaled for use in internal PLC programming, monitoring by the HMI computers, or transmission to other PLCs and OITs. Requirements for raw count values shall be coordinated with the PlantPAx objects to ensure compatibility.
8. Equipment Runtimes. For each equipment item whose "run" status is monitored by a PLC, an internal equipment runtime shall be accumulated by the respective PLC in the PlantPAx object.
9. Change-of-State Alarms. While equipment is controllable from the PLC ("in remote"), discrete output commands shall be compared to their respective process feedback status signal (where available) to verify proper execution. If the feedback status does not match the most recent output command (after an adjustable 2 to 300 second time delay), an alarm message shall be displayed on the HMI computer and the condition shall be logged as an alarm, requiring operator acknowledgment. The alarm shall remain energized until the proper discrete condition is sensed or until the operator resets the alarm through the HMI computer.
10. Equipment Availability. In general, equipment with PLC control has been provided with a local selector switch that transfers control to the PLC. The PLC shall monitor the position of this switch to determine if the equipment is available for PLC control. If the equipment is not available, the PLC program shall not attempt to implement remote manual or automatic status changes for the equipment. The PLC program may, however, need to implement special routines if equipment unavailability affects a sequence (as described in the detailed equipment descriptions).
11. Maintained/Momentary Outputs. The need for maintained or momentary control outputs shall match existing programming requirements and shall be applied as dictated by the PlantPAx object.
12. Equipment Mode Changes. Unless otherwise indicated in the equipment control descriptions, equipment in automatic mode shall be transitioned

to manual mode (and stopped) if the equipment fails or becomes unavailable or if the PLC processor resets.

13. Manual/Auto Bumpless Transfer. Unless otherwise indicated in the equipment control descriptions, equipment changes from automatic to manual control shall be bumpless. Equipment running or stopped in automatic mode shall remain running or stopped when manual mode is selected.
14. Repeater Front-End Processing. The Repeater Site PLC shall be built and programmed to act as a front-end processor for providing project information to the SCADA backbone. A minimum of 200 variables (words) for each plant shall be assumed to be required to be bi-directionally transmitted between the fiber backbone and the radio network.

3.02 HMI FUNCTIONAL REQUIREMENTS.

- A. The following paragraphs describe general configuration tasks that are required for the HMI and related software. Appendix A of this section includes process flow diagrams for each of the wastewater treatment plants and the overview of the wastewater pumping stations. The System Supplier shall use these diagrams and existing SCADA HMI screens for PlantPax HMI graphic screen development. Graphic screens vectoring and organization into differing levels of detail shall match existing Owner standards and standards developed by the System Supplier as part of the Project.
 1. Database. The system database, including field I/O and internal points shall be established according to the database point naming conventions approved by Owner. Database generation for field I/O shall include all required coordination with PLC level addresses and PlantPax objects and user defined data types (UDTs).
 2. Trend Displays. Trend displays shall be developed to present real-time and historical process data in an X-Y graph format. Real-time trends shall utilize current process values to generate temporary graphs that do not retain data values. Historical trends shall utilize historically collected data and shall access the data files directly for use in the trend display. Historical trends shall allow paging forward and back to the limits of the collected data. The trending package shall be configured to automatically retrieve historical data from the proper data file to accommodate the paging functions. Content of the trends will be determined after meeting with Owner. Insert quantity real-time trend displays and Insert quantity historical trend displays shall be provided.
 3. Alarms. Complete system alarming shall be configured. This shall include configuration of graphical alarm displays, and configuration of audible alarms through the HMI speakers. All process or system alarms

shall appear on an alarm summary screen and the alarm banner of each process graphic.

Alarms and events shall be color coded on the alarm summary screen, with initial colors based on Owner conventions or the default colors associated with the graphics package. The colors may be adjusted after meeting with Owner. Alarm prioritizing and area assignments (if any) shall be coordinated with Owner at the first configuration meeting. Alarms shall be capable of being shelved in the event that a piece of equipment or process area is undergoing maintenance or construction.

For LOW or LOW-LOW analog or discrete alarms which do not apply if associated equipment is not operating, provisions shall be made to prevent/Lock generation of the alarm unless the associated equipment is operating. This shall include alarms such as low amperage alarms for pumps that are not running.

This may also include low flows or pressures when associated pumps are not operating (this will only apply if periodic operation of the equipment is considered normal).

All alarms/events shall be time stamped when displayed or printed. Unacknowledged alarms shall not automatically clear from the alarm summary if they return to normal before being acknowledged.

4. Reporting. System reporting shall be accomplished using the standard operator interface software-reporting package. All necessary report development, including macro development in spreadsheets, shall be supplied to access real-time and historical data for reporting. Insert quantity historical, monthly facility reports shall be provided.
5. Historical Data Collection. System data shall be collected for historical archiving and for use in trending and reporting functions. Requirements for data collection shall be as needed to support the trends and reports developed.
6. Manual Entry of Data. The human machine interface (HMI) computers shall allow manual entry of laboratory data and other variables, which shall then be available for display and use in reports. Operator entered commands from any of the HMI computers shall be logged at all HMI computers.
7. Log-In/Security. System Supplier shall coordinate with Owner on log-in security requirements. Operator workstations shall each be provided with a badge scanner to allow Owner staff to swipe their badges in order to log on to the SCADA System. Manual log-in shall be provided as an alternate to the badge log-in in the event that the badge scanner is

inoperable. System Supplier shall provide an Excel or Access form in order for the Owner to enter in the badge and employee information. OITs shall use the same log-in database but shall be manually entered. Each OIT at the wastewater treatment plants shall require validation against the same database as the operator workstations.

3.03 EQUIPMENT CONTROL AND CONTROL MODE OVERVIEW.

- A. The following paragraphs explain the general format and control modes to be used in programming.
1. General. Equipment controls shall be programmed to use the selected PlantPAx objects. Controls from the HMI and OIT interfaces shall follow the PlantPAx objects used in the PLC.
 2. Control Modes. There are two general control modes available for the process equipment: 1) remote manual, and 2) remote auto. Remote manual control provides a means for operators to adjust equipment status or setpoint, through the HMI, using manually initiated commands. Remote automatic control provides a means for automatically changing equipment status or setpoint based on measured process parameters, calculated values, or operator setpoints. Some equipment may have more than one remote auto mode.

Descriptions for local control are included in the detailed equipment control descriptions. They are provided primarily for documentation purposes and for information. These controls are hardwired and require no programming effort.

3. PlantPAx Programming. PlantPAx programming shall be implemented for all monitoring and equipment control on both the HMI software and the PLC software. As a minimum, System Supplier shall plan to use the following PlantPAx objects:

Object Name	Description
P_Ain	Object for processing analog inputs
P_Motor	Object for monitoring and controlling constant speed pumps and motors
P_VSD	Object for monitoring and controlling variable speed drives (VSDs), otherwise referred to as variable frequency drives (VFDs) or adjustable frequency drives (AFDs)
P_ValveMO	Object for monitoring and controlling motor actuated/operated open/close valves
P_ValveC	Object for monitoring and controlling motor actuated/operated modulating valves

3.04 NETWORK CONFIGURATION.

- A. The System Supplier shall be responsible for configuration network communications to allow all SCADA System communications to occur. Network configuration shall meet the requirements of the following.
1. IP Addressing Scheme. The IP addressing scheme shall follow the rules established by the Owner. Rules are not published for security reasons. System Supplier shall request a copy of the IP addressing scheme from the Owner after project notice to proceed has been executed.
 2. VLAN Networks. Network switches shall be configured to support virtual local area networks (VLAN) to segregate network traffic into the following general categories:

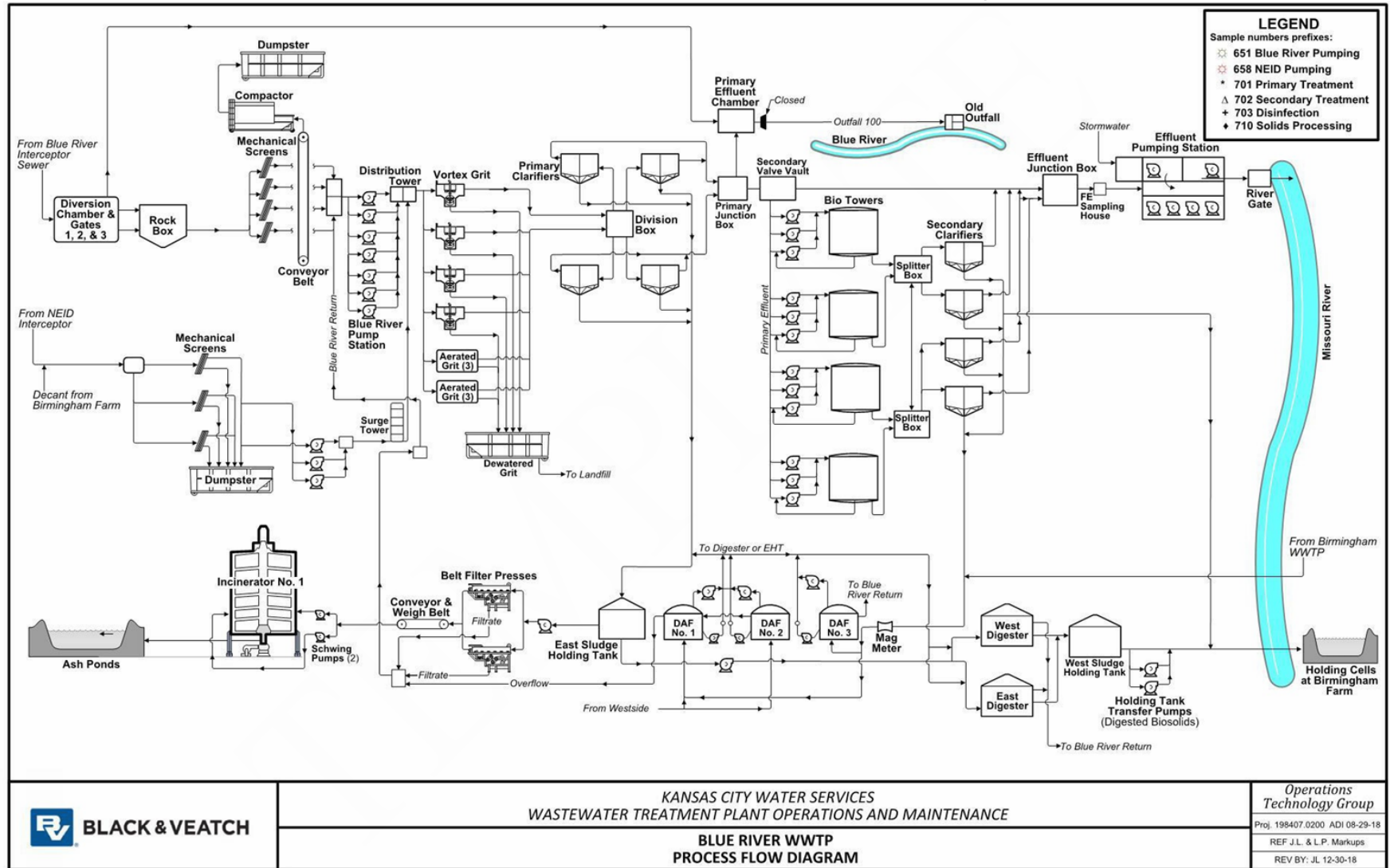
VLAN	Devices on VLAN
VLAN10	Servers, thin clients, engineering workstations/thick clients
VLAN11	PLCs
VLAN12	Operator interface terminals (OITs)
VLAN13	Device level Ethernet/IP and Modbus TCP networks including MCCs, UPSs, variable frequency drives (VFDs)

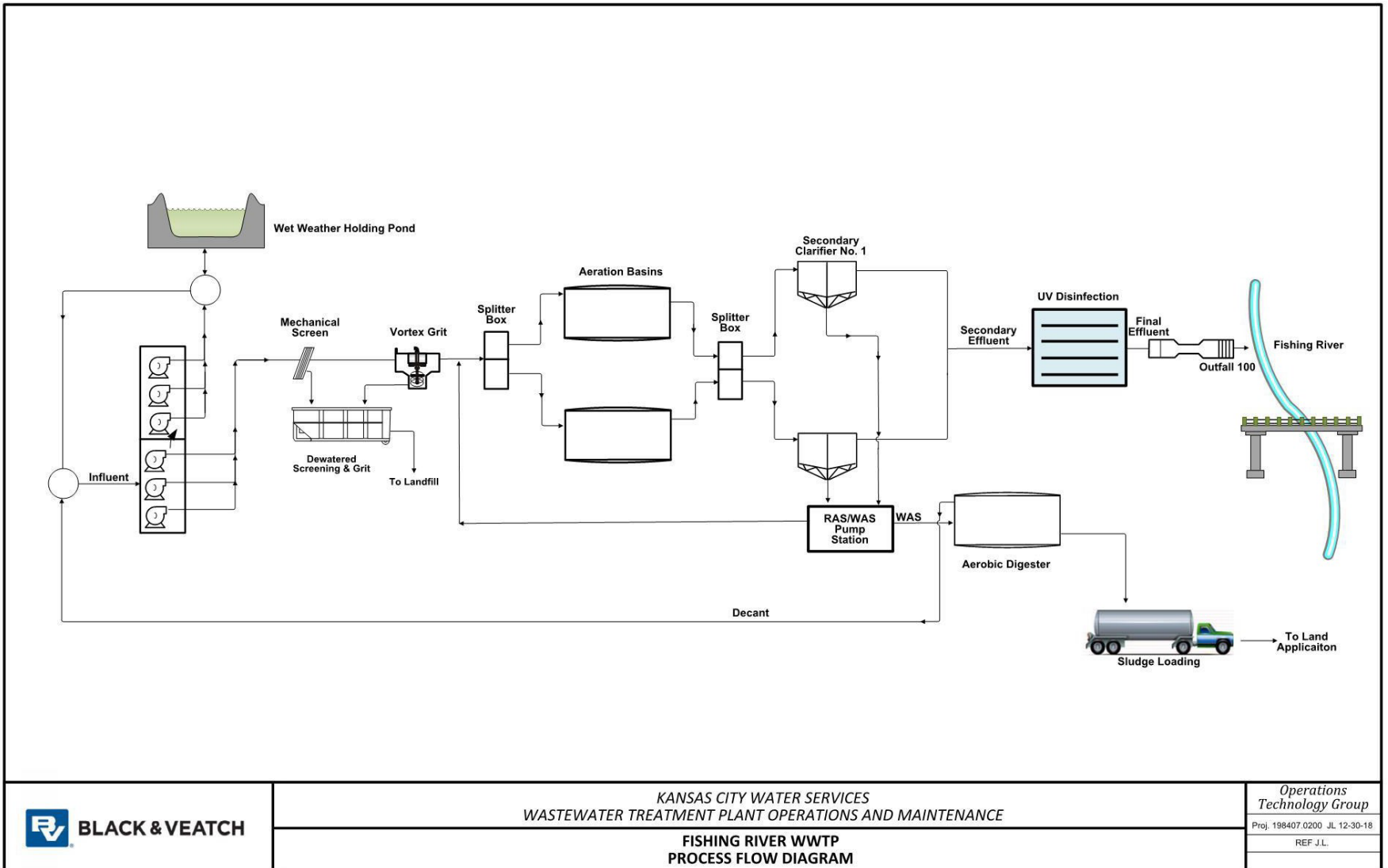
3.05 EQUIPMENT CONTROL REQUIREMENTS.

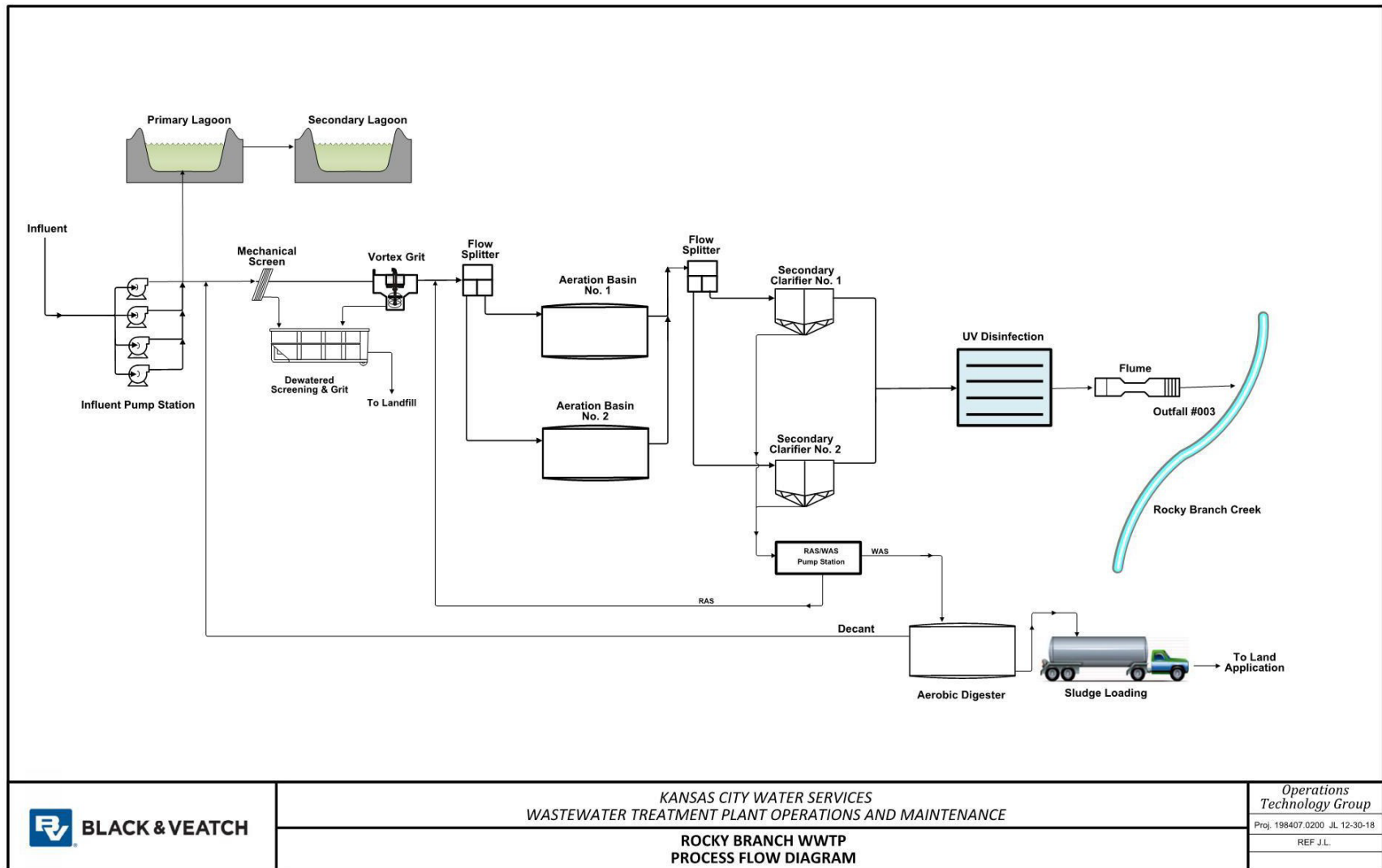
- A. The following paragraphs describe functional requirements for various software control blocks in the control system. These descriptions are intended to provide an overview of the programming requirements, rather than describing in detail every operating feature or interlock. Existing PLC program files will be made available to the System Supplier within 20 working days of the notice to proceed.
1. Reverse Engineering for PLC Replacements. *(as required by the specific project)* System Supplier shall convert existing programs from their present form into an RS Logix 5000 format using PlantPAx objects. Existing process logic concepts shall be preserved, but PlantPAx objects shall be applied to all equipment controls. System Supplier shall document the reverse engineering process as part of the Stage 2 submittals before programming is finalized.
 2. PlantPAx Implementation for Reused PLCs. *(as required by the specific project)* All existing PLCs to be reused shall be updated to include PlantPAx objects for all equipment controls. Equipment shall be controlled by the process logic already in place.

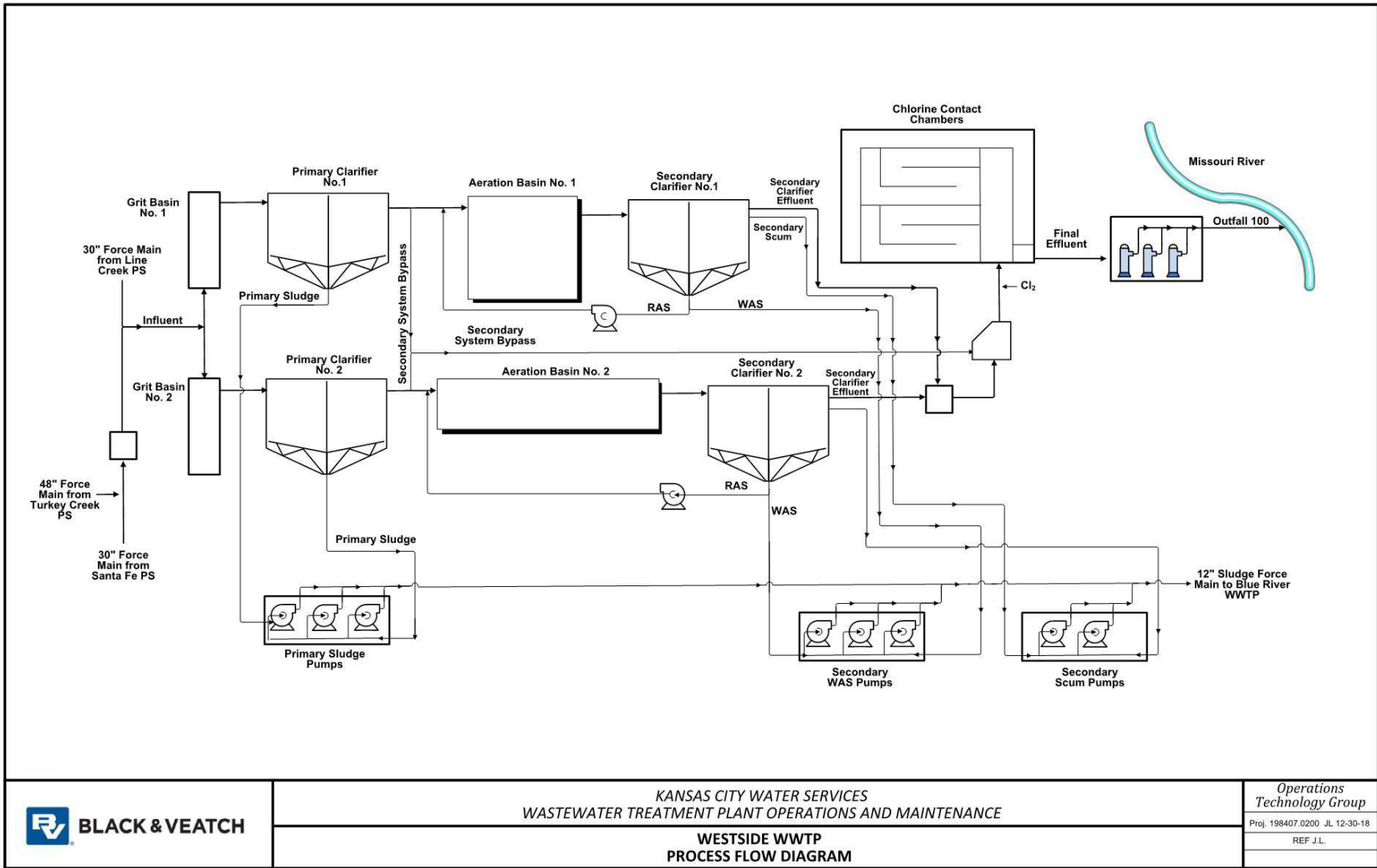
END OF SECTION

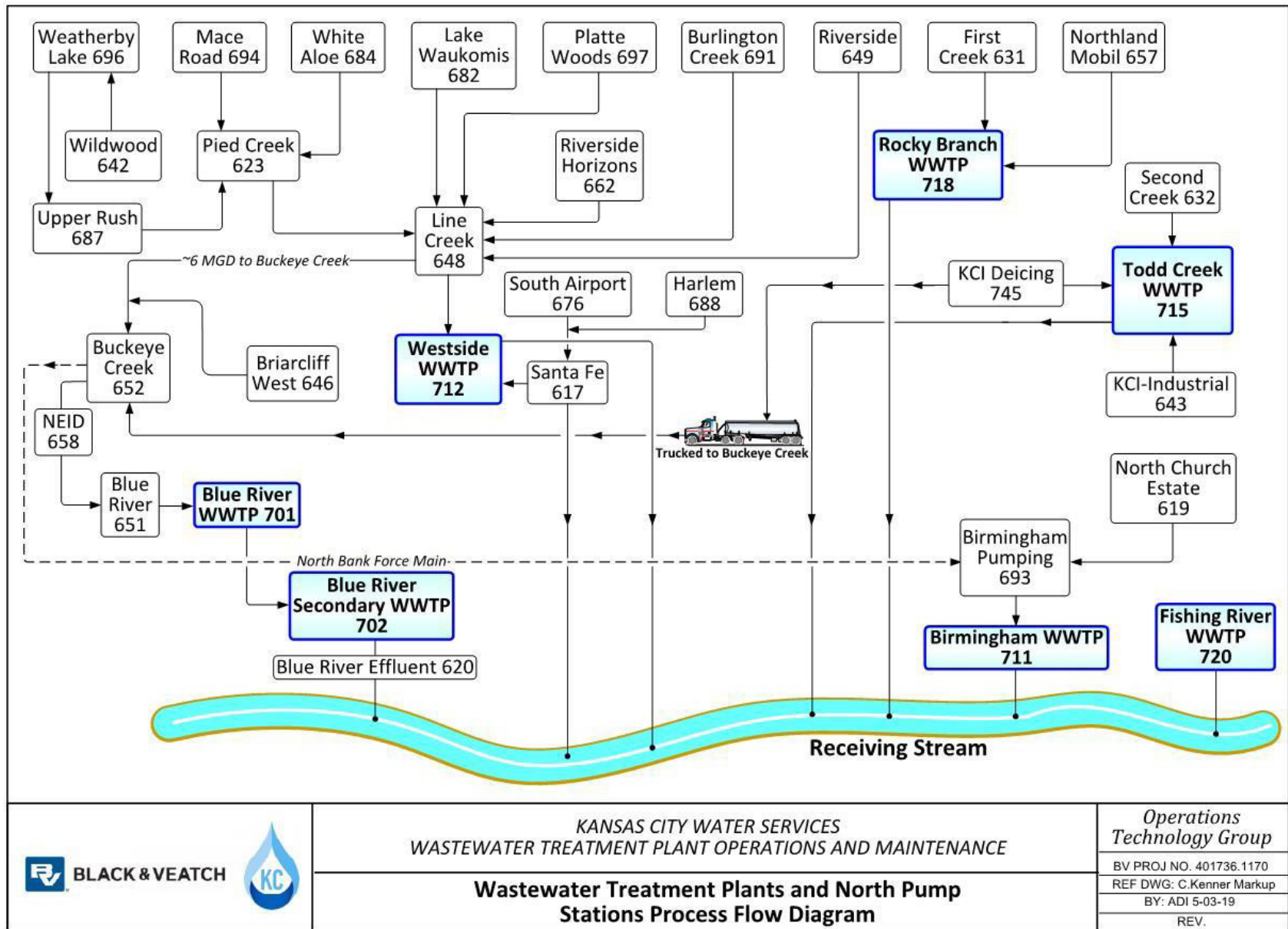
SECTION 13550.A – PROCESS FLOW DIAGRAMS – REFERENCE

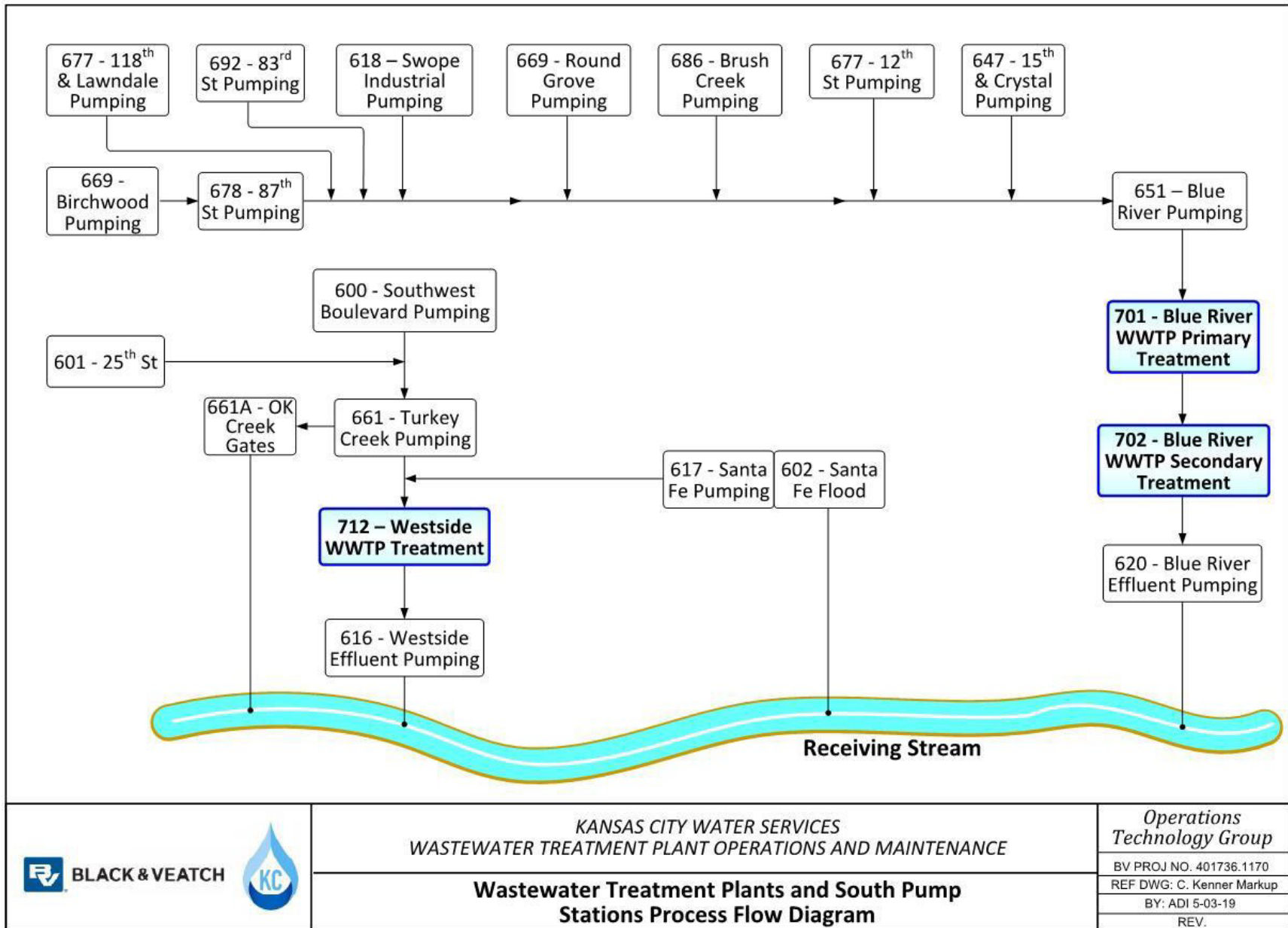












SECTION 13561 – PANEL-MOUNTED INSTRUMENTS

PART 1 – GENERAL

1.01 SCOPE.

- A. The Panel Mounted Instruments section covers the furnishing of all panel mounted instruments and accessories required for the Instrumentation and Control System as specified herein or as indicated on the Drawings.
- B. Equipment and services provided under this section shall be subject to the Instrumentation and Control System section. This section shall be used and referenced only in conjunction with the Instrumentation and Control System section. Supplementing the Instrumentation and Control System section, instrument data, special requirements, and options are indicated on the Drawings.
- C. When multiple instruments of a particular type are specified, and each requires different features, the required features are described on the Drawings.

1.02 DESIGN CRITERIA.

- A. The instruments shall be installed to measure, monitor, or display the specified process at the ranges and service conditions indicated on the Drawings. The instruments shall be installed at the locations indicated on the Drawings.
- B. Where possible, each instrument shall be factory calibrated to the calibration ranges indicated on the Drawings or in the Instrument Device Schedule.
- C. Transmitters or similar measurement instruments shall be calibrated using National Institute of Standards and Technology (NIST) approved bench calibration procedures, when such procedures exist for the instrument type. For "smart" devices, calibration data shall be stored digitally in each device, including the instrument tag designation indicated on the Drawings.

1.03 SUBMITTALS.

- A. Submittals shall be as specified in the Instrumentation and Control System section.

PART 2 – PRODUCTS

2.01 GENERAL.

- A. The following paragraphs describe minimum device stipulations. The Drawings shall be used to determine any additional instrument options, requirements, or service conditions.

1. Programming Device. For systems that require a dedicated programming device for calibration, maintenance, or troubleshooting, one such programming device shall be provided for each Owner facility (quantity required shall be as indicated in the Instrumentation and Control System section). The programming device shall include appropriate operation manuals and shall be included in the training stipulations. For systems that allow the programming device functions to be implemented in software, running on a laptop computer, the software shall be provided instead of the programming device.
2. Configuration Software/Serial Interface. Devices indicated as requiring a serial interface shall be provided with all accessories to properly communicate over the serial link. An appropriate cable shall be provided to allow the transmitter serial interface to be connected to a laptop computer. One licensed copy of the diagnostic/interface software shall be provided for each Owner facility (quantity required shall be as indicated in the Instrumentation and Control System section). Software shall be capable of running under the Windows 10 operating system. If the software furnished performs the same functions as the programming device, specified elsewhere, then the programming device need not be furnished.

2.02 PANEL FRONT MOUNTED DEVICES.

A. Switches, Lights, and Push Buttons.

1. Selector Switches. Selector switches shall be 30.5-mm, heavy-duty, oil-tight type with gloved-hand or wing lever operators. Position legends shall be engraved on the switch faceplate. Switches for electric circuits shall have silver butting or sliding contacts, rated 10 amperes continuous at 120 V ac. Contact configuration shall be as indicated on the Drawings or for the application. Switches used in electronic signal circuits shall have contacts suitable for that duty. Switches shall be Eaton/Cutler-Hammer "10250T", General Electric "CR104P", or Allen Bradley "800T".
2. Indicating Lights. Lights shall be 30.5-mm, heavy-duty, oil-tight type, with full voltage LED lamps. Legends shall be engraved on the lens or on a legend faceplate. Lights shall be push-to-test type. Indicating lights shall be Eaton/Cutler Hammer "10250T", General Electric "CR104P", or Allen Bradley "800T".
3. Push Buttons. Push buttons shall be 30.5-mm, heavy-duty, oil-tight type. Legends shall be engraved on the push-button faceplate. Contacts shall be rated 10 amperes continuous at 120 V ac. Push buttons shall be Eaton/Cutler-Hammer "10250T", General Electric "CR104P", or Allen Bradley "800T".

2.03 PANEL INTERIOR MOUNTED DEVICES.

- A. Power Supplies. Regulated dc power supplies for instrument loops shall be designed and arranged so that loss of one supply does not affect more than one instrument loop or system. Power supplies shall be suitable for an input voltage variation of ± 10 percent, and the supply output shall be fused or short circuit protected. Output voltage regulation shall be by the instrumentation equipment supplied. Multiloop or multisystem power supplies will be acceptable if backup power supply units are provided which will automatically supply the load upon failure of the primary supply. The backup supply systems shall be designed so either the primary or the backup supply can be removed, repaired, and returned to service without disrupting the instrument system operation.

Multiloop power supply connections shall be individually fused so a fault in one instrument loop will be isolated from the other loops being fed from the same supply. Fuses shall be clearly labeled and shall be located for easy access.

Multiloop supply systems shall be oversized for an additional 10 percent future load. Failure of a multiloop supply shall be indicated on the respective instrument panel or enclosure.

Power supplies shall be Allen Bradley, Phoenix Contact, PULS, or equal.

Filter control systems may be designed so one power supply feeds all instrument loops common to one individual filter.

- B. Relays. Relays indicated to be provided in panels, enclosures, or systems furnished under this section shall be of the plug-in socket base type with dustproof plastic enclosures unless noted otherwise. Relays shall be UL recognized and shall have not less than double-pole, double-throw contacts. Control circuit relays shall have silver cadmium oxide contacts rated 10 amperes at 120 V ac. Electronic switching-duty relays shall have gold-plated or gold alloy contacts suitable for use with low-level signals. Relays used for computer input, alarm input, or indicating light service shall have contacts rated at least 3 amperes. Time delay relays shall have dials or switch settings engraved in seconds and shall have timing repeatability of ± 2 percent of setting. Latching and special purpose relays shall be for the specific application. Unless otherwise indicated, all relays shall have an integral pilot light that illuminates to indicate an energized condition. Relays shall be

IDEC "Series RR"; Potter & Brumfield "Series KRP, CB"; or Struthers-Dunn "Series 219, 246".

- C. Strip Heaters. Electric strip heaters shall be provided as indicated on the Drawings, as specified, and for the application. Strip heaters shall be sized to prevent condensation within the enclosure and to maintain the equipment above its minimum operating temperature. Strip heaters shall be located to avoid overheating electronic hardware or producing large temperature fluctuations. Strip heaters shall be controlled by adjustable thermostats with adjustment ranges of 30° to 90°F [-1° to +32°C]. A circuit disconnect switch shall be provided within the enclosure.

PART 3 – EXECUTION

3.01 FIELD SERVICES.

- A. Manufacturer's field services shall be provided for installation, field calibration, startup, and training as specified in the Instrumentation and Control System section. Instruments shall not be shipped to the Work Site until two weeks prior to the scheduled installation. System Supplier shall be responsible for coordinating the installation schedule with the Installation Contractor. Each shipment shall contain a listing of protective measures required to maintain sensor operation, including a listing of any common construction or cleaning chemicals that may affect instrument operation.

END OF SECTION

SECTION 13566 - MISCELLANEOUS INSTRUMENTS

PART 1 – GENERAL

1.01 SCOPE.

- A. This section covers the furnishing of all miscellaneous instruments and accessories required for the Instrumentation and Control System as specified herein or as indicated on the Drawings.
- B. Equipment and services provided under this section shall be subject to the Instrumentation and Control System section. This section shall be used and referenced only in conjunction with the Instrumentation and Control System section. Supplementing the Instrumentation and Control System section, instrument data, special requirements, and options are indicated on the Drawings or the Instrument Device Schedule.
- C. When multiple miscellaneous instruments of a particular type are indicated, and each requires different selectable features, the required features are described on the Drawings.

1.02 DESIGN CRITERIA.

- A. Each device shall be a pre-assembled, packaged unit. Upon delivery to the work site, each device or system shall be ready for installation with only minor piping and electrical connections required by System Supplier.
- B. Primary elements shall derive any required power from the transmitter, unless otherwise indicated.
- C. The instruments shall be installed to measure, monitor, or display the specified process at the ranges and service conditions indicated on the Drawings. The instruments shall be installed at the locations indicated on the Drawings.
- D. Where possible, each instrument shall be factory calibrated to the calibration ranges indicated on the Drawings. Transmitters or similar measurement instruments shall be calibrated using National Institute of Standards and Technology (NIST) approved bench calibration procedures, when such procedures exist for the instrument type. Calibration data shall be stored digitally in each device, including the instrument tag designation indicated on the Instrument Device Schedule.

1.03 SUBMITTALS.

- A. Submittals shall be made as specified in Instrumentation and Control System section.

1.04 SHIPMENT, PROTECTION, AND STORAGE.

- A. Equipment provided under this section shall be shipped, protected, and stored as specified in the Instrumentation and Control System section.

Identification of packaging shall be as described in the Instrumentation and Control System section.

PART 2 – PRODUCTS

2.01 GENERAL.

- A. The following paragraphs provide minimum device stipulations. The Instrument Device Schedule shall be used to determine any additional instrument options, requirements, or service conditions.
1. Interconnecting Cable. For systems where the primary element and transmitter are physically separated, interconnecting cable from the element to the transmitter shall be provided. The cable shall be the type approved by the instrument manufacturer for the intended purpose of interfacing the element to the transmitter. Length of cable shall be a minimum of three meters or as indicated in the Instrument Device Schedule.
 2. Programming Device. For instruments that require a dedicated programming device for calibration, maintenance, or troubleshooting, one such programming device shall be provided for each Owner facility (quantity required shall be as indicated in the Instrumentation and Control System section). The programming device shall include appropriate operation manuals and shall be included in the training requirements. For systems that allow the programming device functions to be implemented in software, running on a laptop computer, the software shall be provided instead of the programming device.
 3. Configuration Software/Serial Interface. Devices indicated as requiring a serial interface shall be provided with all accessories required to properly communicate over the serial link. An appropriate cable shall be provided to allow the transmitter serial interface to be connected to a personal computer. One licensed copy of the diagnostic/interface software shall be provided for each Owner facility (quantity required shall be as indicated in the Instrumentation and Control System section). Software shall be capable of running under Microsoft's Windows 10 operating system. If the software furnished performs the same functions as the programming device, specified elsewhere, then the programming device shall not be furnished.

2.02 MISCELLANEOUS INSTRUMENTS.

- A. (Design Engineer will refine this section based on actual applications. List qualified products by manufacturer. At least three manufacturers is preferred if possible. Also provide general performance specifications based on the particular application.)

1. Milliamp Calibrator. Calibrator shall be a portable battery powered unit capable of reading and generating the following signals:
 - a. Read 0 to 50 mA DC
 - b. Power and read 2-wire transmitters at 24 V DC Supply, 4-20 mA DC
 - c. Simulate 2-wire transmitters with external V DC Supply, 4-20 mA
 - d. Read 0-99 V DC
 - e. Output a 0 to 24 mA DC signal into a 0 to 1200 Ohm Load

The calibrator shall have a 4 digit LCD display with an accuracy of 0.05 percent, and shall have a "4" and "20" mA quick check output feature. The calibrator shall be provided with a carrying case, test leads, a set of batteries, and an ac power adapter. The calibrator shall be Beta/Hathaway Model 444, or Altek Model 334A.

2. Proximity (Door) Switches. Proximity switches shall be magnetic proximity type, consisting of two sensors. One sensor shall be fixed to the door and the other to the door frame. The sensor mounted to the door shall have no electrical connections. Switches shall be provided with DPDT contacts rated 5 amperes at 120 V ac. All necessary mounting hardware shall be provided to allow both the sensors to be installed at the locations indicated on the Drawings.
3. Magnetic Flow Meter. Provide instrument according to Owner's preferred product list and suitable for the intended application.
4. Flow Convertor/Transmitter. Provide instrument according to Owner's preferred product list and suitable for the intended application.
5. Ultrasonic Level. Provide instrument according to Owner's preferred product list and suitable for the intended application.
6. Float Level Switch. Provide instrument according to Owner's preferred product list and suitable for the intended application.
7. Gauge Pressure or Pressure Sensing Level Transmitters. Provide instrument according to Owner's preferred product list and suitable for the intended application.
8. Combustible Gas Detector. Provide instrument according to Owner's preferred product list and suitable for the intended application.
9. Temperature Instruments. Provide instrument according to Owner's preferred product list and suitable for the intended application.

PART 3 – EXECUTION

3.01 FIELD SERVICES.

- A. Manufacturer's field services shall be provided for installation, field calibration, startup, and training as specified in the Instrumentation and Control System section.

- B. Instruments shall not be shipped to the Work Site until two weeks prior to the scheduled installation. The System Supplier shall be responsible for coordinating the installation schedule with the Installation Contractor. Each shipment shall contain a listing of protective measures required to maintain sensor operation, including a listing of any common construction or cleaning chemicals that may affect instrument operation.

END OF SECTION

SECTION 13570 - PANELS, CONSOLES, AND APPURTENANCES

PART 1 – GENERAL

1.01 SCOPE.

- A. The Panels, Consoles and Appurtenances section covers the furnishing of panels, consoles, and appurtenances as indicated on the Drawings and listed in the attached Equipment Schedules 13570-S01 and 13570-S02.
- B. This section also describes requirements for panels furnished under other sections whose respective specification refers to this section. Panels furnished under other sections are not listed in the attached Equipment Schedules.
 - 1. Control System. The Instrumentation and Control System section shall apply to all equipment furnished under the Panels, Consoles and Appurtenances section.

1.02 GENERAL.

- A. Equipment furnished and installed under this section shall be fabricated and assembled in full conformity with the Drawings, specifications, schedules, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.
 - 1. General Equipment Stipulations. The General Equipment Stipulations shall apply to all equipment and materials provided under this section. If requirements in this specification differ from those in the General Equipment Stipulations, the requirements specified herein shall take precedence.
 - 2. Seismic Design Requirements. Seismic design requirements for products specified herein shall be as indicated in the Meteorological and Seismic Design Criteria section.
 - 3. Drawings. General dimensions and arrangements are indicated on the Drawings and on the attached equipment schedules. System Supplier shall be responsible for coordinating the console and enclosure sizes and arrangements to accommodate the equipment provided.

1.03 SUBMITTALS.

- A. Submittals shall be made as specified in the Instrumentation and Control System section.
- B. Submit confirmation of compliance with the requirements of the Meteorological and Seismic Design Criteria section.

1.04 DELIVERY, STORAGE, AND SHIPPING.

- A. Delivery, storage and shipping shall be as per The Instrumentation and Control System section.

PART 2 – PRODUCTS.

2.01 PANEL DESIGN AND FABRICATION FEATURES.

- A. All panels furnished shall conform to the stipulations of NEMA ICS-6-1993 (R2001, R2006). Unless indicated otherwise on the Drawings, the following paragraphs describe general fabrication specifications for the PLC cabinets, instrument panels, consoles, enclosures, and subpanels.
1. Power Entrance. The power entrance to each panel shall be provided with a surge protection device. Refer to the Instrumentation and Controls section for surge suppression requirements.
 2. Power Wiring. Power distribution wiring on the line side of panel fuses shall be minimum 12 AWG. Secondary power distribution wiring shall be minimum 14 AWG. Wiring for ac power distribution, dc power distribution, intrinsically safe, and control circuits shall have different colors and shall agree with the color-coding legend on System Supplier's panel wiring diagrams. With the exception of electronic circuits, all interconnecting wiring and wiring to terminals for external connection shall be stranded copper, insulated for not less than 600 volts, with a moisture resistant and flame retardant covering rated for not less than 90°C.
 3. Instrument and Control Wiring. All internal panel wiring shall be type MTW stranded copper wiring rated not less than 600 volts. Electronic analog circuits shall be twisted and shielded pairs rated not less than 300 volts. Analog circuits shall be separated from ac power circuits. Intrinsically safe circuits shall be physically separated from other circuits in accordance with applicable codes. Wires within the panel shall conform to the minimum size as shown in the table below.

TYPE OF WIRING	COLOR	MINIMUM WIRE SIZE
L1 (hot)	Black	12 AWG
L2 (neutral)	White	12 AWG
AC control circuits	Red	16 AWG
DC power source	Blue	16 AWG
DC power common	White/Blue	12 AWG
24-volts AC Source	Brown	12 AWG
24-volts AC Common	Brown w/White	12 AWG
Temporary	Purple	14 AWG
Control Foreign Voltages	Orange	14 AWG
Isolated DC Ground	Green w/Yellow	14 AWG
Equipment ground	Green	12 AWG
Analog Circuits	White/Black	18 AWG Twisted Pair

All wiring shall be grouped or cabled and firmly supported inside the panel. Each individual wire in power, control, and instrumentation circuits shall be provided with identification markers at each point of termination. The wire markers shall be positioned to be readily visible for inspection and the identification numbers shall match the identification on the supplier's panel wiring drawings. Wiring shall be bundled in groups and bound with nylon cable ties or routed in Panduit or similar nonmetallic slotted ducts. Ducts shall be readily accessible within the panel, with removable covers, and with space equal to at least 40 percent of the depth of the duct remaining available for future use after completion of installation and field wiring. Sufficient space shall be provided between cable groups or ducts and terminal blocks for easy installation or removal of cables.

4. Terminal Blocks. Terminal blocks for external connections shall be suitable for 12 AWG wire and shall be rated 30 amperes at not less than 300 volts. Terminal blocks shall be fabricated complete with marking strip, covers, and pressure connectors. Terminals shall be labeled to agree with identification shown on the supplier's submittal drawings. A terminal shall be provided for each conductor of external circuits, plus one ground for each shielded cable. Not less than 8 inches of clearance shall be provided between the terminal strips and the base of vertical panels for conduit and wiring space. Not less than 25 percent spare terminals shall be provided. Each control loop or system shall be individually fused, and all fuses or circuit breakers shall be clearly labeled and located for easy maintenance.
5. Backup Power. Power supply to the panels shall be from electrical sources shown on the Drawings, which may be backed by redundant utility feeds, engine generators, or externally mounted uninterruptible power supplies (UPSs) specified in other sections.

Where indicated in the attached equipment schedules, on the Drawings or in the referring equipment specifications, free-standing vertical panels and wall cabinets shall each be provided with an interior-mounted UPS to provide backup power to critical loads upon loss of power supply to the panel. Panels housing a UPS shall contain a dedicated space for the UPS so that the UPS does not block access to other panel components. A single dedicated outlet shall be provided specifically for the UPS. UPS-backed power shall be provided to the programmable logic controller CPU, instrument loops, I/O modules (operating and wetting voltages), all network communications devices, and any other load essential to preventing loss of control system function. Backup power for panel interior lights, heaters, and convenience receptacles is not required. UPSs for free-standing vertical panels and wall cabinets shall meet the requirements specified below.

6. Required within the respective enclosure specification or shown on the Drawings, Freestanding EIA 19-Inch Rack Enclosures and Data Server Enclosures shall each be furnished with an interior, rack-mounted UPS. UPSs for rack-type enclosures shall meet the requirements specified below.

Panel P847NETCP01 shall be provided with a 24 volt dc backup power supply system consisting of redundant 24 volt power supplies to provide power to all control system components, a diode system to keep batteries from back-feeding the power supplies, and batteries sized to provide 60 minutes of backup power.

(i) UPS for Free-Standing Vertical Panels and Wall Cabinets.

1. Each UPS shall accept incoming 120 volts ac, 60Hz, single-phase utility power, apply surge protection, and supply power to the connected loads. The UPS shall be a double-conversion (“on-line”) type to provide a breakless transfer to backup power. In the event of incoming power failure, the UPS shall provide 120 volts ac, 60 Hz, single-phase power to its connected loads by inverting power stored within integral storage batteries. The UPS shall be contained inside the enclosure and supported by a dedicated shelf attached to the backplane or sidewall. The shelf shall be between 12 and 18 inches from the bottom of the enclosure and shall not be directly above any electronic or electromechanical devices.
2. The UPS shall have at least two integral NEMA 5-15R receptacles for connection of battery-backed loads. Upon restoration of incoming power, the UPS shall recharge the batteries and return its connected loads to the incoming power source. The factory-installed line cord and plug shall not be altered. The UPS output shall be connected by plug and line cord to terminal blocks as necessary to distribute power to loads not having a power cord and plug; all other loads shall be connected directly to the UPS’s integral receptacles or to permanently installed receptacles fed from the UPS output. A schematic showing the integration of the UPS within the enclosure is shown on the Drawings.
3. The UPS shall maintain a temperature-compensated, float charge voltage on the batteries when utility power is available. Overcurrent protection when utility power is available shall be from a circuit breaker internal to the UPS. The UPS shall be intrinsically current-limiting when the unit is on battery.
4. The UPS shall meet the following requirements.
Capacity, minimum 1000 VA / 700 watts

Filtering and surge	Meets IEEE/ANSI C62.41 Category B Protection (IEEE 587)
	(on utility power)
Voltage, output	120 volts $\pm$ 3% (on battery)
Voltage, output	Nominal $\pm$ 3% (on-line)
Frequency and waveform, output (on battery)	60 $\pm$ 0.3 Hz, true sine-wave
Efficiency, minimum (on-line)	90%
Operating environment humidity, non-condensing	0 to 40°C; 0 to 95% relative
Backup time, minimum at	10 min. at ½ rated load
Recharge time, maximum charge	12 hours to 90% of full

The UPS shall have spare capacity of at least 30 percent based on actual connected loads. The System Supplier shall advise the Engineer if the UPS capacity needs to be higher than specified above to meet this requirement.

The UPS shall have a visual status indicator for low (or faulty) battery and incoming ac power failure. The UPS shall emit an audible signal when the UPS is operating on battery power. A relay shall be installed within the panel and its coil connected across the UPS input power as a means of providing a contact for remote indication of a power failure condition.

The UPS shall be furnished with an Ethernet network card with RJ-45 connector for communicating status and alarm conditions to the Instrumentation and Control System HMI. Communication shall be via 10/100-BaseT Ethernet and shall use HTTP, SMTP, SNMP, Modbus TCP, or other protocol as necessary to transfer the information into the HMI database for display and alarming. Special software or drivers necessary to complete the communications link shall be furnished with the UPS systems. One copy of any special software or drivers

necessary to allow monitoring over the network shall be provided for all UPSs furnished under this section.

Batteries shall be sealed maintenance-free, gelled electrolyte lead-acid, or valve-regulated, maintenance-free, lead-acid. Flooded-electrolyte type batteries will not be acceptable.

The UPS shall be APC "Smart-UPS", Vertiv/Liebert "GXT4", Toshiba "1000 Series", or equal.

- (ii) Rack-Mounted Uninterruptible Power Supply (UPS). The UPS shall accept incoming 120 volts ac, 60 Hz, single-phase utility power, apply surge protection, and supply power to the connected loads. The UPS shall be a double-conversion ("on-line") type. In the event of incoming power failure, the UPS shall provide 120 volts ac, 60 Hz, single phase power to its connected loads by inverting power stored within integral storage batteries. UPS output shall be true sine-wave under both utility and battery operation.

The UPS shall be EIA 19-inch, rackmount-type and shall be furnished with all mounting accessories necessary to install it within the enclosure. The UPS shall have at least four integral NEMA 5-15R receptacles for connection of battery-backed loads. Upon restoration of incoming power, the UPS shall recharge the batteries and return its connected loads to the incoming power source. The factory-installed line cord and plug for input connection shall not be altered.

The UPS shall maintain a temperature-compensated, float charge voltage on the batteries when utility power is available. Overcurrent protection when utility power is available shall be from a circuit breaker internal to the UPS. The UPS shall be intrinsically current-limiting when the unit is on battery.

The UPS shall meet the following requirements.

Capacity, minimum	2000 VA / 1400W
Voltage, output	120V $\pm$ 2% (on battery)
Frequency, output	60 $\pm$ 0.5 Hz (on battery)
Efficiency, minimum (on-line)	90%
Operating environment	0 to 40°C; 0% to 95% relative humidity, non-condensing

Backup time, minimum	20 minutes half of rated load
Recharge time, maximum	8 hrs. to 90% of full charge

The UPS shall have a visual status indicator for low (or faulty) battery, on bypass, UPS fault, and incoming ac power failure.

The UPS shall be furnished with an Ethernet network card with RJ-45 jack for communicating status and alarm conditions to the Instrumentation and Control System HMI. Communication shall be via 10/100-BaseT Ethernet and shall use HTTP, SMTP, SNMP, or other protocol as necessary to transfer the information into the HMI database for display and alarming. One copy of any special software or drivers necessary to allow monitoring over the network shall be provided for all UPSs furnished under this section.

Batteries shall be sealed maintenance-free, gelled electrolyte lead-acid, or valve-regulated, maintenance-free, lead-acid. Flooded-electrolyte type batteries will not be acceptable. Additional rack-mounted battery modules shall be supplied to meet runtime requirements.

The UPS shall be APC "Smart-UPS RT", Vertiv/Liebert "GXT4 Rack Mount", Toshiba "1000 Rack Mount", or equal.

7. Device Tag Numbering System. All devices shall be provided with permanent identification tags. The tag numbers shall agree with the Instrument Device Schedule and with the supplier's equipment drawings. All field-mounted transmitters and devices shall have stamped stainless steel identification tags. Panel, subpanel, and rack-mounted devices shall have laminated phenolic identification tags securely fastened to the device. Hand-lettered labels or tape labels will not be permitted.
8. Nameplates. Nameplates shall be provided on the face of the panel or on the individual device. Panel nameplates shall have legends and approximate dimensions as indicated on the Drawings and shall be made of laminated phenolic material having engraved letters approximately 3/16 inch [5 mm] high extending through the black face into the white layer. Nameplates shall be secured firmly to the panel. Panel face nameplates do not replace the requirement for device identification tags as specified under the Device Tag Numbering System paragraph.
 - a. Painting. Interior and exterior surfaces of all carbon-steel panels shall be thoroughly cleaned and painted with rust inhibitive (universal) primer.

The panel interior shall be painted white with the manufacturer's standard coating. All pits and blemishes in the exterior surface shall be filled. Exterior surfaces shall be painted with one or more finish coats of the manufacturer's standard coating. Finish coats shall have a dry film thickness of at least 4 mils [100 mm]. Color shall be ANSI 61 Gray. Samples shall be submitted to Engineer for color selection. One quart [1 liter] of touch-up paint shall be furnished with the panels.

9. Panel-Mounted Instruments. Instruments, power supplies, pilot devices, and appurtenances mounted within or on the face of the panel shall meet the requirements specified in Panel Mounted Instruments, for those items unless noted otherwise herein, on the Drawings or, if applicable, within the referring equipment specification section.
10. Factory Test. Panels shall be factory tested electrically by the panel fabricator before shipment.

2.02 FREESTANDING VERTICAL PANELS. NOT USED.

2.03 WALL-MOUNTED CABINETS.

- A. Cabinets, which contain the system components indicated on the Drawings, shall be suitable for wall mounting and shall meet the NEMA enclosure rating as indicated on the Drawings or, if applicable, in the attached equipment schedules or the referring equipment specification section. The enclosures shall be fabricated from USS 14 gage [1.9 mm thick], or heavier, carbon steel, stainless steel, or fiberglass. Cabinets shall be equipped with full size gasketed doors with hinges and a chromium-plated or stainless steel three-point latch. The door shall be lockable with a key. The cabinet shall have a hasp for accommodating a padlock.

Panel stands shall be provided to support cabinets not fastened to a wall or other support. Floor stands shall be full-depth and shall have a minimum height of 12 inches. Floor stand material and finish shall match the cabinet.

All wall-mounted cabinets shall meet the requirements of the panel fabrication paragraph of this section.

Outdoor cabinets shall be provided with sunshades as indicated on the Drawings or, if applicable, in the attached equipment schedules or the referring equipment specification section.

2.04 FIBER OPTIC PATCH PANELS.

- A. Fiber optic patch panels shall be furnished to terminate fibers in locations indicated on the Drawings. The cabinets shall meet the following requirements:
 - 1. The patch panels shall be the wall rack mounted type, having provisions for terminating multiple fiber optic cables. Splice trays, strain relief cable attachment points, fiber organizers and bend radius.
 - 2. Panel size shall be suited to the number of fibers to be terminate within the cabinet. Bayonet/flanged couplings shall be furnished and mounted for each fiber to be terminated.
 - 3. Fiber terminations shall be spliced to pigtail cables (specified below) having LC connectors. The pigtails shall be terminated in an orderly method.
- B. Fiber optic patch panels shall be OFS Technologies "LGX", Corning Cable Systems "WCH Series", or equal.
- C. Fiber optic patch panels required to be mounted in existing panels shall be specifically designed for DIN-rail mounting. Interior panel fiber optic patch panels shall be as manufactured by Black Box, RLH Industries, Hubbell, Corning, or equal.

2.05 FREESTANDING EIA 19-INCH RACK ENCLOSURES.

- A. Open frame equipment distribution rack shall be provided for mounting network equipment provided as rack-mounted, including switches, firewalls, routers, and patch panels. The rack shall be black painted steel or painted aluminum construction with fully tapped, standard 18.3 inch hole-to-hole centers and shall include all hardware and accessories including frame, shelves, and raceways as specified and as shown on Drawings. Rack enclosures shall be as manufactured by Belkin, Hoffman, or equal.
- B. Each rack enclosure shall be furnished with a rack-mounted uninterruptible power supply (UPS) to provide backup power to all enclosed loads. Rack-mounted UPSs are specified elsewhere in this section.

2.06 DATA SERVER ENCLOSURES.

- A. An enclosed equipment distribution rack shall be provided for mounting network equipment provided as rack-mounted, including switches, firewalls, routers, and patch panels. The rack shall be black painted steel or painted aluminum construction with fully tapped, standard 18.3 inch hole-to-hole centers and shall include all hardware and accessories including frame, shelves, and raceways as specified and as shown on Drawings. Rack enclosures shall be as manufactured by Amco Engineering, Hoffman, or equal.
- B. The data server enclosure shall be furnished with a rack-mounted uninterruptible power supply (UPS) to provide backup power to all enclosed loads. Rack-mounted UPSs are specified elsewhere in this section.

2.07 CONTROL SYSTEM FURNITURE. NOT USED

PART 3 – EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS.

- A. Installation requirements are specified in the Instrumentation and Control System section. In addition, equipment furnished under this section shall conform to the following manufacturing stipulations.
 - 1. Wiring. All wiring shall be grouped or cabled and firmly supported inside the panel. Wiring shall be bundled in groups and routed in Panduit or similar nonmetallic slotted ducts. Ducts shall be readily accessible within the panel with removable covers and shall have a space of at least 40 percent of the depth of the duct available for future use after installation is complete and all field wiring installed. Sufficient space shall be provided between cable groups or ducts and terminal blocks for easy installation or removal of cables.

END OF SECTION

13570.S01 – EQUIPMENT SCHEDULE: WALL-MOUNTED CABINETS AND FIBER OPTIC PATCH PANELS

1.000	General			
1.010	Specification Section 13570			
2.000	Wall Mounted Cabinets and Fiber Optic Patch Panels			
2.010	Tag Number/Panel ID	<i>PnnnFPP01 example</i>	<i>PnnnPRIFPP01 PnnnUVFPP01e examples</i>	<i>PnnnNETCP01 example</i>
2.020	NEMA Enclosure Rating			
	12	X		X
	3R			
	4			
	4X			
2.030	Materials of construction			
	Painted carbon steel	X		X
	316 Stainless steel			
	Fiberglass polyester		X	
2.040	Environmental provisions			
	Sun shade			
	Cooling fan			X
	Air conditioner			
2.050	Dimensions (min. L x W x H)			
3.000	Exceptions, Clarifications, and Comments			
3.010	Additional Requirements and Clarifications	Wall-mounted FPP	DIN-rail mounted FPP	Wall-mounted; 24VDC battery backup

13570.S01 – EQUIPMENT SCHEDULE: NETWORK RACKS

1.000	General		
1.010	Specification Section 40 67 11		
2.000	Network Racks		
2.010	Tag Number/Panel ID	<i>PnnnNETCP01</i>	<i>PnnnNETCP01</i>
2.020	Rack Features		
	Open Frame		
	Enclosed		
	Wall Mounted		X
	Floor Mounted	X	
	Doors with Screens and lock	X	X - front only
2.030	Materials		
	Carbon steel	X	X
	Stainless steel		
	Fiberglass polyester		
2.040	Optional Accessories		
	Internal UPS	X	
	Vertical Cable Management	X	X
	Horizontal Cable Management	X	X
	Cooling fan	X	X
	Power Distribution Unit	X	X
3.000	Exceptions, Clarifications, and Comments		
	Exterior dimensions (H x W x D), minimum	78"x24"x40"	36"x24"x34"
	Additional Requirements and Clarifications		Back to wall construction, racks slide out for access to rear of components

SECTION 13590 - NETWORK SYSTEMS

PART 1 - GENERAL

1.01 SCOPE.

- A. The Network Systems section covers the furnishing of all hardware and software for network systems for the SCADA System. Principal components of the network systems shall be as indicated on the block diagram Drawings and as described below.
- B. System Supplier shall furnish all necessary equipment, interconnecting cables, accessories, and appurtenances for proper network operation and to meet the functional requirements indicated on the Drawings and specified herein.
- C. Configuration, installation, and testing of all new and existing SCADA System hardware shall be provided by the System Supplier.
- D. Equipment and services provided under the Network section shall be subject to the general requirements specified in the Instrumentation and Control System section. Supplementing this section, network data, special requirements, and options may be indicated on the Drawings
 - 1. Control System. The Instrumentation and Control System section shall apply to all systems described herein. All applicable requirements specified in the Instrumentation and Control System section shall apply to equipment and services provided herein.
 - 2. Network Functional Description. The network system shall provide communications between the operator workstations, servers, and PLCs.

1.02 GENERAL.

- A. System Supplier shall select the equipment for its superior quality and the intended performance. The System Supplier shall install all equipment in accordance with the manufacturer's instructions. Equipment and materials used shall be subject to review and shall comply with the following requirements.
 - 1. General Equipment Stipulations. The General Equipment Stipulations shall apply to all equipment and materials provided under this section. If requirements in this specification differ from those in the General Equipment Stipulations, the requirements specified herein shall take precedence.
 - 2. Drawings. Supplementing this section, the Drawings indicate locations and arrangement of hardware and enclosures, provide mounting details, and may show other information regarding the connection and interaction with other equipment.
 - 3. Governing Standards. Governing Standards for network systems shall be as specified in the Instrumentation and Control System section.
 - 4. Power and Instrument Signals. Unless otherwise specified, electric power supply to the network equipment will be unregulated 24 volts dc or 120 volts ac.

5. Appurtenances. Special power supplies, special cable, special grounding, and isolation devices shall be furnished for proper performance of the equipment.
6. Interchangeability and Appearance. To the extent possible, components used for similar types of functions and services shall be the same brand and model line. Similar components of different network hardware shall be the products of the same manufacturer to facilitate maintenance and stocking of repair parts. Whenever possible, identical units shall be furnished.

1.03 SUBMITTALS.

- A. Submittals shall be made in accordance with the requirements of the Instrumentation and Control System section and as listed below.
- B. The submittals shall include the following items for the Network Design submittal (to be provided with the First Stage Submittals):
 1. A complete network topology diagram, detailing all hardware, cabling and the interconnections between all connected equipment. Interconnections to existing installed equipment and Owner-furnished equipment shall be included in the diagram.
 2. A complete listing of IP addresses to be assigned to all equipment furnished under this contract shall be provided. The assignment of IP addresses shall be coordinated with the Owner. IP addressing scheme shall be a separate submittal stamped with "CONFIDENTIAL".
 3. Network engineer qualifications
 4. Network testing procedures and test forms.
 5. Reports on any testing done on existing networks.
- C. All above documentation shall also be provided in the O&M manuals.

1.04 DELIVERY, SHIPMENT, PROTECTION, AND STORAGE.

- A. Equipment provided under this section shall be shipped, protected, and stored as specified in the Instrumentation and Control System section. Identification of packaging shall be as described in the Instrumentation and Control System section.

1.05 CONNECTION TO OWNER NETWORKS.

- A. Network hardware and software provided shall be compatible with the Owner's existing network systems wherever a system interconnection is provided. System Supplier shall verify existing systems to ensure compatibility by undergoing formal network testing prior to making any modifications. Reports of testing shall be included in the submittals.
- B. A dedicated information technology (IT) professional shall be provided by the Contractor to lead and assist the Owner's IT group with the project. At the completion of the project, a third party company shall be provided by the

Contractor that certifies the system has been installed per NIST standards. This certification may require involvement along the way.

- C. All connections to the Owner's existing network shall be fully coordinated between the Owner and the System Supplier. Prior to connecting to the existing network, the System Supplier shall provide a written request to the Owner for an Owner's representative to be available when existing systems are disconnected and at the time of any new connections.

1.06 COORDINATION WITH OWNER.

- A. The System Supplier shall coordinate all demolitions, installations and rework on the existing networks with the Owner and the Engineer. No work shall be performed without the written consent of the Owner. The System Supplier shall submit a written request to perform work on the existing network, including date, time, scope of work, length of time, and any Owner's support that may be required.

PART 2 – PRODUCTS

2.01 GENERAL.

- A. The following paragraphs provide minimum Ethernet network device stipulations.

2.02 NETWORK CABLING SPECIFICATIONS.

- A. All network equipment and related devices shall be coordinated with items provided in the following sections:
 - 1. Metallic and Fiber Optic Communications Cable and Connectors

2.03 ETHERNET NETWORK HARDWARE.

- A. Ethernet network hardware shall be provided as specified and/or as shown on the Drawings. All specified functionality of provided Ethernet network equipment shall adhere to the IEEE 802 standards. Ethernet Hubs will not be accepted for network systems.
- B. Ethernet switches shall be provided to connect multiple network segments together, selectively forwarding traffic between the segments.
 - 1. Layer 3 Ethernet Switches. Each switch shall include the following functionality:
 - a. Switch shall support the quantity of 10/100/1000BaseTX ports and 10BaseFL/100BaseFX/1000BaseLX Fiber ports to meet the functionality indicated in this specification and as shown on the Drawings. Switches shall have a minimum of 10/100/1000Base-T, RJ-45 ports. A minimum of 20% spare ports shall be provided for the installed system.
 - b. Switches shall include Layer 3 routing functionality.

- c. Each switch connection shall automatically sense the network speed of the devices to which it is connected.
 - d. Path Redundancy: IEEE 802.1w Rapid Spanning Tree Protocol.
 - e. Prioritization: IEEE 802.1p QoS Support.
 - f. Support for Optional Redundant Power Supply as required on Drawings.
 - g. Management: Fully Managed Switch with support for SNMP v.3., and port mirroring.
 - h. All necessary memory upgrades, software feature sets, and cables needed for proper operation of these switches shall be furnished with each switch.
 - i. Environmental: Suitable for installation in industrial environments. Operating Temperature Range: 0degC to 40degC
 - j. Layer 3 Ethernet switches connecting to the fiber backbone shall include a single mode bidirectional SFP capable of 1000Mbps over 10km, Cisco Model GLC-BX-U.
2. Switches shall be Allen Bradley 5410 Industrial Distribution Switches suitable for 19-inch rack mounting, without exception.
 3. Layer 2 Ethernet Switches. Each Layer 2 switch shall include the following functionality:
 - a. Ports: Switch shall support the quantity of 10/100BaseTX ports and 100BaseFX fiber ports to meet the functionality indicated on the Drawings, with a minimum of 20% spare auto-negotiating 10/100Base-T, RJ-45 ports, and two multimode fiber uplink ports. A minimum of four UTP ports shall be provided.
 - b. Switches shall have Layer 2 functionality and shall automatically sense the network speed of the devices to which it is connected.
 - c. Capable of ring-based media redundancy with 30 ms recovery time.
 - d. Path Redundancy: IEEE 802.1w Rapid Spanning Tree Protocol
 - e. Prioritization: IEEE 802.1 QoS Support.
 - f. Network Segregation: Port VLAN
 - g. Management: SNMPv3 and Browser-based management shall be supported.
 - h. IGMP snooping supported.
 - i. LED indication of the link activity for each port
 - j. Environmental: Suitable for installation in industrial environments. Operating Temperature Range: 0degC to 60degC
 - (i) Optional -40degC to 60degC rating availability.
 - k. Redundant 24 VDC power supply inputs
 - l. Conformal coating option for use in hazardous environments
 - m. Mounting: DIN-rail mounted suitable for panel installation.

- n. All necessary memory upgrades, software feature sets, and cables needed for proper operation of these switches shall be furnished with each switch.
- 4. Switches shall be Allen Bradles Stratix 5700 series models, without exception.
- 5. Network Firewall. Network firewall hardware shall be a dedicated hardware device and provide security and isolation between networks. Firewalls shall have the following functionality:
 - a. Stateful Packet Inspection and Filtering.
 - b. DHCP and Network Address Translation Services.
 - c. Virtual private networking (VPN) support.
 - d. A minimum of three (3) dedicated or configurable DMZ port.
 - e. A minimum of five (5) integrated 10/100 Base-T ports.
 - f. Management: Browser based, and SNMP v2 or v3.
 - g. Logging of all access through the firewall.
 - h. Rack mounting, where required for proper installation.
- 6. Firewalls shall be Cisco ASA 5505 series, or equal. Firewall capability can be provided with a router, provided the above functionality is provided.
- 7. Ethernet Connectors. Ethernet wiring connectors shall be RJ-45 male modular plug connectors.
 - a. Standard RJ45 Connectors. Standard connectors shall be polycarbonate, clear connectors. Connectors shall conform to RJ-45 and ISO 8877 standards. Contacts shall be gold plated with a 0.5A current rating and a - 25° to 60° C temperature rating. Connectors shall accept unshielded Cat-5e or Cat-6, AWG 24, solid conductor cable.
 - b. Industrial RJ45 Connectors. Industrial connectors shall be an eight position industrial connector for use in manufacturing environments. Connectors shall meet the TIA/EIA-568-B.2 standard for Cat-6 requirements. The connector shall incorporate an IP67 rated seal and shall provide protection from dust and temporary immersion in water. A tethered protective cap shall be provided. The connector shall accept a non-shielded Cat-5e or Cat-6 solid twisted pair cable.
- 8. Connectors shall be Panduit Industrial TX5e, or equal.
- 9. Media Converters. System Supplier shall supply fiber optic media converters for all systems requiring conversion from copper media to fiber optic media. All converters shall be mounted in the network panels. The System Supplier shall coordinate the media converter and termination requirements with the fiber optic cable and network protocols.
 - a. Fiber to Copper Converters. Fiber optic to copper media converters for all computer networks shall convert twisted pair 10/100BaseT cable transmissions to 10/100BaseFX fiber optic cable transmissions. Converters shall provide auto-sensing detection of network speed and full duplex or half duplex signaling. Converters shall have diagnostic

LEDs for network speed and network traffic. Converter copper port shall be 100BaseTX (RJ-45). Converter fiber port shall be compatible with connectors provided with fiber cable jumpers and compatible with fiber cable type and light wavelength. Transmission Speed shall be 100Mbps on both ports. The converter shall be powered from 120 volts ac, or shall be provided with a plug-in transformer to provide the required voltage to the device. Converters shall be as manufactured by Transition Networks, D-Link, Black Box, or equal.

2.04 ETHERNET NETWORK SOFTWARE.

- A. Ethernet switches and routers shall be managed from a graphical user interface on a Microsoft Windows operating system computer. Network management software and all network equipment provided by the System Supplier shall be compatible with each other, allowing management of each device from the provided software. Network management software shall be the latest version of Cisco net Manager IP Infrastructure.

2.05 SPARE PARTS.

- A. Spare parts shall be provided as specified below:

<u>Spare parts</u>	<u>Quantity</u>
Layer 3 Switches	1 of each type
Layer 2 Switches	1 of each type
Firewalls	1 of each type

PART 3 – EXECUTION

3.01 NETWORK INSTALLATION REQUIREMENTS.

- A. Additional network installation requirements are specified in the Instrumentation and Control System section. Networks shall be installed and tested in accordance with the following requirements.
- B. The System Supplier shall utilize the services of a trained and certified Network Engineer that is regularly involved in troubleshooting network problems, in the event that operational or reliability problems exist. Acceptable certifications include Cisco CCNP, Cisco CCIE, or Network Professional Association Certified Network Professional (CNP).

3.02 NETWORK CONFIGURATION.

- A. The System Supplier shall fully configure all new and existing network devices to ensure the intended operation is provided. All device selections

shall be fully coordinated with the Owner to ensure compatibility with existing systems and standards.

1. Ethernet Switches. System Supplier shall fully configure all Ethernet switches. The following shall be configured:
 - a. Unused ports shall be disabled for security purposes.
 - b. Device Level Ring (DLR) or other appropriate redundancy scheme shall be configured for all links. Turnkey or other bandwidth sharing redundancy schemes shall be utilized where available to minimize switching times, and increase available bandwidth
 - c. Management Password Security
 - d. Quality of Service, with any traffic to/from PLCs getting priority over all other traffic.
2. Firewalls. The System Supplier shall fully configure all network firewalls. The firewall shall be configured for all network connections provided under this contract, and shall be configured to exclude devices not part of the control system network unless otherwise specified. The firewall shall be configured to deny all traffic, except for traffic specifically allowed in the ruleset.
3. Network Configuration Report. The System Supplier shall provide a configuration report to the Owner detailing all connections, addresses, and port assignments. Reports shall be provided as part of the second stage submittal. Final results shall also be provided for the O&M Manuals.
4. Management Software. Management software shall be fully configured for all network devices provided. Management software shall be Cisco Prime Infrastructure. Two licensed copies of management software shall be provided.

3.03 NETWORK TESTING.

- A. After each network has been installed, a technical representative of System Supplier shall test the network and shall provide a written report for each test.
 1. Field Testing. After each network has been installed, a technical representative of System Supplier shall test the network and shall provide a written report for each test. Specific testing requirements are described in the individual network specification sections.
 2. Systems Check. A technical representative of System Supplier shall participate in the checkout of network systems. Systems check requirements shall be as specified in the Instrumentation and Control System section.
 3. Test Equipment. Unless specified otherwise, all test equipment for the calibration and checking of system components shall be provided by System Supplier for the duration of the testing work and this test equipment will remain the property of System Supplier.

4. Ethernet Network Minimum Test Requirements. The following minimum tests are to be performed by the System Supplier:
 - a. Verify Link Integrity Status LED is lit on both sides of each link.
 - b. Verify proper operation and failover of each redundant component and redundant link.
 - c. Verify alarming of each link failure.
 - d. Verify bandwidth usage, collisions, and errors.
 - e. Verify redundancy and ring continued operation on loss of one link.
 - f. Ethernet Network Test Reports. Upon completion and testing of the installed Ethernet network, the System Supplier shall submit test reports to the Engineer in printed form. Test reports are to show all test results performed by the System Supplier for each port and piece of equipment. Date of calibration of the test equipment is also to be provided.

3.04 NETWORK TROUBLESHOOTING.

- A. It is the System Supplier's responsibility to provide trouble-free and reliable networks. The System Supplier shall employ any means necessary to ensure operational networks. The System Supplier shall obtain any needed test equipment, including but not limited to time-domain reflectometers, protocol analyzers and network sniffers, to troubleshoot any problems.

3.05 CUSTOMER TRAINING.

- A. Training for networks is covered under Network Training in the Instrumentation and Control System section.

END OF SECTION



Form F-1. Project Design Criteria
Project Number 81001018/1715
Project Title WW Backup Generators

Criterion	Fixed (F) / Indicative (I) / Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Generator Design Parameters					
Run time		8	hrs		
Attenuation (if residential)		75	dB		
Natural Gas Piping Materials of Construction	I	Section 15200.150CS - Carbon Steel	-		
Fuel Gas elevation (above grade)		2'-6" to 4'-0"	ft-in		
Tank Material of Construction		Carbon Steel	-		
Warranty Length	I	2	years		
Electrical Feed Location		Bottom Feed	-		
Enclosure Type		NEMA 4X	-		
Oil spill Containment					
Fuel tank Size					
How to fuel					
Safety					
Maintenance					
Site #600 (Southwest Boulevard Flood Pumping Station)					
Facility Location		39°04'37.2"N 94°36'07.6"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #601 (25th Street Flood Pumping Station)					
Facility Location		39°04'59.7"N 94°36'08.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #603 (Broadway Flood Pumping Station)					
Facility Location		39°06'39.5"N 94°35'18.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #604 (N. Downtown Airport Flood Pumping Station)					
Facility Location		39°08'06.1"N 94°32'18.7"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		

Criterion	Fixed (F)/ Indicative (I) / Indicative Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Generator - Fuel Source	IP	Natural Gas			
Site #606 (Gillis Flood Pumping Station)					
Facility Location		39°07'02.5"N 94°34'23.5"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out		Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #607 (Lydia Flood Pumping Station)					
Facility Location		39°07'10.3"N 94°34'05.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #608 (Prospect Flood Pumping Station)					
Facility Location		39°07'36.9"N 94°33'00.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #609 (Milwaukee Flood Pumping Station)					
Facility Location		39°08'28.5"N 94°31'48.3"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #610 (Trumam Flood Pumping Station)					
Facility Location		39°08'28.5"N 94°31'48.3"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #612 (Blue Banks Flood Pumping Station)					
Facility Location		39°07'09.8"N 94°29'22.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #616 (Westside Effluent Pumping Station)					
Facility Location		39°06'32.9"N 94°36'14.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #619 (North Church Estates Pumping Station)					
Facility Location		39°06'32.9"N 94°30'14.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #632 (New Second Creek Pumping Station)					
Facility Location		39°18'38.9"N 94°38'44.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #637 (South Airport Relief Wells)					
Facility Location		39°06'50.2"N 94°35'49.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #642 (Wildwood West Pumping Station)					
Facility Location		39°15'11.8"N 94°42'18.2"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #643 (KCI Industrial Pumping Station)					
Facility Location		39°16'30.8"N 94°41'06.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #652 (Buckeye Creek Pumping Station)					
Facility Location		39°09'10.8"N 94°31'00.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #661 (Turkey Creek Pumping Station)					
Facility Location		39°09'07.8"N 94°36'24.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #676 (South Airport Pumping Station)					
Facility Location		39°06'50.7"N 94°35'48.3"W			

Criterion	Fixed (F)/ Indicative (I) / Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #677 (Lawndale Pumping Station)					
Facility Location		38°54'38.6"W 94°31'30.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #682 (Lake Waukomis Pumping Station)					
Facility Location		39°14'00.5"N 94°38'43.2"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #684 (White Aloe Pumping Station)					
Facility Location		39°12'39.9"N 94°40'18.6"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #686 (Brush Creek and Prospect Pumping Station)					
Facility Location		39°02'30.6"N 94°33'17.5"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #688 (Harlem Pumping Station)					
Facility Location		39°02'02.1"N 94°34'58.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #692 (3rd Street Pumping Station)					
Facility Location		38°58'47.8"N 94°32'15.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #694 (Mace Road Pumping Station)					
Facility Location		39 2308 -94.6776			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #697 (Platte Woods Pumping Station)					
Facility Location		39°12'39.5"N 94°38'39.6"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #699 (Kemper Flood Pumping Station)					
Facility Location		39.090471, -94.606719			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #693 (Birmingham Pumping Station)					
Facility Location		39°10'26.0"N 94°20'42.7"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #718 (Rocky Branch Pumping Station)					
Facility Location		39°20'11.4"N 94°34'28.9"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	1			
Existing Generation On-Site	F	500kW			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #720 (Fishing River Pumping Station)					
Facility Location		39°18'34.6"N 94°26'44.2"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #745 (KCI Deicing Treatment)					
Facility Location		39°18'34.6"N 94°26'44.2"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #856 (4800 KC Water HQ)					
Facility Location		39 119617° N, 94.4966° W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	1			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		

[illegible]

Bidder: _____

CITY OF FOUNTAINS
HEART OF THE NATION



KANSAS CITY
MISSOURI

Form G-1. DESIGN-BUILD BID FORM – PRICE SUBMITTAL

Project Number 81001018/1715

Project Title Waste Water Backup Generator

1. The undersigned Bidder, having examined the Bidding Documents, related documents and the Site of the Work, and being familiar with all the conditions affecting the proposed Work, including Laws and Regulations and the availability of materials and supplies, agrees, if this Bid is selected by CITY, to enter into a Contract with CITY in the form included in the Contract Documents to furnish all labor and materials, equipment and services necessary for the proper completion of the Work in accordance with the Contract Documents, including design services and general construction work at the price(s) stated below, which stated sums include fees and all other charges applicable to materials, appliances, labor and all things subject to and upon which other charges may be levied.
2. Bidder agrees the Contract Documents will comprise the entire agreement between CITY and Bidder. The Contract Documents are identified in the General Conditions and are incorporated into and made part hereof this Bid Form/Contract by reference.
3. The Bid Price(s) shall be shown in numeric figures only.

TOTAL BASE BID PRICE IN NUMERIC FIGURES \$ _____

4. The undersigned Bidder has given City's Project Manager written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by the Project Manager or by the Program Manager is acceptable to Bidder.
5. The undersigned Bidder agrees that this Price Submittal Bid shall remain subject to selection by CITY, and may not be withdrawn for ninety (90) days after the day Price Submittal Bids are opened.
6. The undersigned Bidder certifies that this Price Submittal Bid contains no modifications, deviations, riders or qualifications.
7. Form 01290.02 Schedule of Values contains prices included in the Base Bid, and are incorporated into this Bid. Form must be completed and returned with this Bid.
8. The undersigned Bidder acknowledges receipt of the following addenda listed by number and date appearing on each addendum:

Addendum Number	Dated	Addendum Number	Dated
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)

() () () ()

() () () ()

Bidder: _____

Subcontract amount _____

- b. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- c. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- d. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- e. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- f. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____

(List additional MBE/WBEs, if any, on additional pages and attach to this form)

14. By submitting its bid, Bidder is agreeing it will identify and timely submit within 48 Hours after Bid opening those MBE/WBE subcontractors with dollar amounts and scopes of work, which apply to or exceed the MBE/WBE goals for the Project on the **00450 HRD 08 Contractor Utilization Plan/Request for Waiver**.
15. Bidder agrees that failure to meet or exceed the MBE/WBE Goals for the above project will require the Director of Human Relations to recommend disapproval of the bid unless the Director of Human Relations finds the Bidder established good faith efforts towards meeting the goals as set forth in the HRD Forms and Instructions for Construction Projects and the City's MBE/WBE Ordinance.

Bidder: _____

Business Entity Type:

- ☐ Missouri Corporation
☐ Foreign Corporation
☐ Fictitious Name Registration
☐ Sole Proprietor
☐ Limited Liability Company
☐ Partnership
☐ Joint Venture
☐ Other: (Specify) _____

BIDDER

Legal name & address of Bidder, person
firm, partnership, corporation, or
association submitting Bid:

Phone No: _____

Cell No: _____

Facsimile No: _____

Bidder's E-Mail: _____

Federal ID. No. _____

I hereby certify that I have authority to execute this document on
behalf of Bidder, person, firm, partnership, corporation or association
submitting Bid.

By: _____

(Signature)

(Print Name)

Title: _____

Date: _____

(Attach corporate seal if applicable)

NOTARY

Subscribed and sworn to before me this _____ day of _____, 20__.

My Commission Expires: _____



Form G-2. 00430 Bid Bond

Project Number 81001018/ 1715

Project Title Waste Water Backup Generator

Bond Number _____

KNOW ALL MEN BY THESE PRESENTS: That _____ of _____, as Principal, and _____ as Surety, hereby bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents unto KANSAS CITY, MISSOURI, a constitutionally chartered municipal corporation, as Obligee, in the sum of _____ Dollars (\$ _____), lawful money of the United States.

WHEREAS, Principal is herewith submitting its Bid to enter into a contract with Kansas City for the above referenced project,

NOW, THEREFORE the condition of this obligation is such that if the Principal is awarded the contract the Principal will, within the time required, enter into a contract and give a good and sufficient surety bonds to secure the performance of the terms and conditions of the contract and for the prompt payment of all labor and material furnished in the prosecution thereof as required by the contract documents, then this obligation shall be void; otherwise the Principal and Surety will immediately pay unto the Obligee the full amount of this bond as liquidated damages for failure to fulfill the conditions of this obligation, but in no event shall the Surety's liability exceed the penal sum hereof.

Signed, sealed and delivered this _____ day of _____.

BIDDER AND PRINCIPAL

Name, address and facsimile number of Bidder and Principal

I hereby certify that I have authority to execute this document on behalf of Bidder and Principal.

By: _____

Title: _____

(Attach corporate seal if applicable)

SURETY

Name, address and facsimile number of Surety:

I hereby certify that (1) I have authority to execute this document on behalf of Surety; (2) Surety has an A.M. Best rating of A- or better; (3) Surety is named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (most current revision) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury; and (4) Surety is duly licensed to issue bonds in the State of Missouri and in the jurisdiction in which the Project is located.

By: _____

Title: _____

Date: _____

(Attach seal and Power of Attorney)



DB 00435 – ALTERNATIVE TECHNICAL CONCEPTS (ATCS)

Project/Contract Numbers: 81001018/ 1715

Project Title: Waste Water Backup Generator

PART 1 - GENERAL

1.01 SUMMARY

- A. This project includes design criteria for Design-Build Shortlisted Respondents to adhere to, follow, and may also be indicative of the design intent of the City and City's preferences. The City would like to promote innovation and encourage best value; therefore, the City will consider technical alternatives that are better than or equal to the Indicative Design Criteria or Indicative Preferred Design Criteria. Proposed variances from Indicative Design Criteria must be included and submitted as part of the Interim Deliverable and Additional ATC Requests.

1.02 DEFINITIONS

- A. Refer to Section 01420 – Definitions and Acronyms for additional definitions.
- a. Alternative Technical Concept (ATC)– Proposed variances from the Respondent that have been approved by the City and will be considered proprietary and will be kept Confidential.
 - b. Fixed Design Criteria – Must be adhered to and followed by the Respondent; changes to Fixed Criteria will be declared by addendum.
 - c. Indicative Design Criteria – City's Design intent
 - d. Indicative Preferred Design Criteria – Indicative Design Criteria with strong City preference.
 - e. Proposed Variances – Any criteria different from design criteria and has not been approved by City.

1.03 DELIVERABLES

- A. ATC Request
- a. Overview - The ATC request will communicate the Respondent's design concepts and technical approach for their design. The goal of the ATC presentations is for the respondent to solicit early technical feedback from the City in order to improve the quality of Proposals received by the City.

The deliverable is intended to facilitate conversation and evaluation of design ideas between the Respondent and the City. The deliverable should be broad enough to provide the City with a general understanding of the Respondent's potential approaches and should also specifically focus on any concepts that may constitute a deviation from the Project Technical Requirements or other Contract Documents and provide justification for such variance.

The material does not need to be complete or finalized; however, all proposed variances to the Indicative Design Criteria must be included. It is understood that the material will be conceptual and preliminary, subject to replacement or modification before being included in the final proposal.

- b. Submittal



DB 00435 – ALTERNATIVE TECHNICAL CONCEPTS (ATCS)

Project/Contract Numbers: 81001018/ 1715

Project Title: Waste Water Backup Generator

1. Requirements – Submitted Electronically to City Contacts and includes the following.
 - a. Abbreviated business case analysis
 - i. Any reductions in Operating Costs
 - ii. Lower net Present value (in comparison to Representative Projects Design Criteria)
 - iii. Assumptions
 - iv. Calculations
 - b. Supporting Documentation which may include
 - i. Conceptual design drawings
 - ii. Figures
 - iii. Equipment Data Sheets
 - iv. Performance Information
 - c. It is recommended to also include the following if not part of the business case analysis.
 - i. Summary of concepts under consideration, including process flow diagram(s).
 - ii. Advantages and disadvantages of the concepts presented including capital and operational cost implications.
 - iii. Potential variances from the Project Technical Requirements or other Contract Documents associated with the concepts under consideration.
 - iv. Any additional information that the Respondent believes will be helpful to the City in evaluating the concepts.
2. Date: (As specified in the Procurement Schedule)
3. Format:
 - a. Proposed Variance List listed herein. Additional pages, outside of the table, can be utilized to further discuss major deviations.
 - b. Support Documentation
 - i. Page Format: 8-1/2" x 11" Sheets with Minimum 11-point font.
 - ii. Maximum page count: 20 pages (a front-and-back printed page shall count as two pages)

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION

3.01 Confidential Meetings

A. Confidential Meeting #2

- a. During this meeting, the Respondent may present its ATC request and discuss all proposed variances. As part of the variance discussion, Respondent shall provide an abbreviated business case analysis and supporting design documentation
- b. During the presentation of the Alternative Technical Concept, the City will ask clarifying questions to gain an understanding of the Respondent's concept(s), Respondents may submit more than one technical approach still under consideration by the Respondent at the time of the ATC request. Following each individual Respondent's presentations, the City will discuss



DB 00435 – ALTERNATIVE TECHNICAL CONCEPTS (ATCS)

Project/Contract Numbers: 81001018/ 1715

Project Title: Waste Water Backup Generator

KANSAS
MISSOURI

and evaluate the Respondent's contemplated approach(es) and deviations from the Contract requirements and will provide feedback within one week from Confidential Meeting #2. The

- c. City may issue addenda modifying any portions of this RFP or the contract Documents if it is determined that there are errors, conflicts, or if additional clarity is deemed to be needed for all Respondents.

END OF SECTION



DB 00435 – ALTERNATIVE TECHNICAL CONCEPTS (ATCS)

Project/Contract Numbers: 81001018/ 1715

Project Title: Waste Water Backup Generator

Proposed Variance List by Respondent			
Item/Issue	Item/Issue Description	Proposed Variances from Indicative Design Criteria	Benefit to the City

DESIGN PROFESSIONAL SERVICES AGREEMENT
FOR PROJECT NUMBER: 81001018 CONTRACT NUMBER: 1715
Wastewater Backup Generators
WATER SERVICES DEPARTMENT
CITY OF KANSAS CITY, MISSOURI

This design professional services agreement is between KANSAS CITY, MISSOURI, a constitutionally chartered municipal corporation (“City”), and _____ (“Design Professional”). City and Design Professional agree as follows:

PART I
SPECIAL TERMS AND CONDITIONS

***Note:** Describe the general scope of project. Be certain to delete this note and the non-applicable section before your final Agreement document is printed.*

Sec. 1. Project description.

- A. The services to be provided under this Agreement are for the following project (Project) and purpose:

The project includes installation

Sec. 2. Services to be performed by Design Professional. Design Professional shall perform the following Scope of Services:

- A. Design Professional shall perform Scope of Services listed on **Attachment ____**.
- B. Submit all documents, including plans, design drawings, specifications, reports, maps, models and renderings in the form requested by City. A list with the specific requirements is included in **Attachment ____**.
- C. City shall have the right to inspect and review the work being done and to consult with Design Professional at any reasonable time. Conferences will be held at the request of City or Design Professional.
- D. If it is determined to be in the best interest of the work, Design Professional shall replace the project manager or any other employee of the Design Professional, Subcontractors, Suppliers or other persons or organizations performing or furnishing any of the work on the project upon written request by the City.
- E. City’s General Conditions shall be furnished to Design Professional prior to signing this Agreement. If the General Conditions are modified, City will notify Design Professional. If the Scope of Services performed by Design Professional under this Agreement includes construction phase services, then Design Professional shall perform such additional tasks set forth in the General Conditions, including approval of Change Orders, and shall comply with the limitations set forth in the General Conditions, except as otherwise amended.

Sec. 3. Term. Unless sooner terminated as provided herein, and unless specific dates for providing services are identified in this Agreement, this Agreement shall remain in force for a period which may reasonably be required for the completion of the services to be provided by Design Professional under the Scope of Services. Work under this agreement shall begin upon written Notice to Proceed.

Sec. 4. Compensation and Reimbursables.

A. The maximum amount that City shall pay Design Professional under this Agreement is \$ _____, as follows:

1. \$ _____ for the services performed by Design Professional under this Agreement.
2. For Design Professional services described in the Scope of Services, City shall pay Design Professional compensation amounting to actual salary of personnel for time charges directly to the project, times an Approved Multiplier. The multiplier to be used shall not exceed 3.04. The Approved Multiplier shall also apply to the Design Professional subcontractors listed in the "Sub-contractor List Non-Construction" found in Attachment _____. A schedule of position classifications and the salary range for each position is included as a part of **Attachment** _____.

A schedule of expenses and position classifications with the billing rate for each position is included as a part of Attachment C. Design Professional and approved subcontractors may negotiate to revise their Schedules of Hourly Rates and Expenses annually and will submit the revised Schedule of Hourly Rates and Expenses to the City each year that this Agreement is in effect. Revisions will only be made after 12 months have passed from the contract execution date or the most recent rate revision. Subject to City approval, the revised Schedule of Hourly Rates and Expenses shall become effective with regard to this Agreement and the Services performed under any particular Contract Amendments on the date the City approves the revised Schedule. *Note: List reimbursable expenses, if any, allowed under this Agreement. Be certain to delete this note before your final Agreement document is printed.*

- a. Actual reasonable expenses incurred by Design Professional directly related to Design Professional's performance under this Agreement, to include only the following, in an amount not to exceed \$ _____. The following are the reimbursable expenses that City has approved: \$ _____.
3. Design Professionals' maximum amount shown in Sec. 4, Compensation and Reimbursables, includes a total allowance amount of \$ _____ for Optional Services not yet authorized by the City that may be required throughout the course of work. This allowance amount will not be utilized by Design Professional unless specifically authorized in writing by the City to perform Optional Services. Optional Services will not be performed, nor is the Design Professional approved to utilize any allowance monies unless the City provides written authorization to Design Professional that includes the scope of work for each optional task to be performed and

a maximum billing limit for compensation that has been mutually agreed upon.

4. Compensation for all Optional Services will be based on the actual salary of office personnel for time charges directly to the project, times an approved multiplier. The multiplier to be used shall not exceed 3.04. Engineering Fee Summary and schedule of position classifications and the salary range for each position is included as a part of Attachment C. The amount billed for each Optional Service shall not exceed the amount established for it without further written authorization. Additional amounts for Optional Services may be authorized, if deemed by CITY to be necessary, as the work progresses.
5. City is not liable for any obligation incurred by Design Professional except as approved under the provisions of this Agreement.

6. Method of Payment.

- B. Design Professional shall invoice City Monthly setting forth the total effort expended on an hourly basis and all actual reasonable expenses incurred and allowed under this Agreement. City, upon approving the invoice, shall remit payment.
- C. Condition Precedent to Payment.
- D. It shall be a condition precedent to payment of any invoice from Design Professional that Design Professional is in compliance with, and not in breach or default of, all terms, covenants and conditions of this Agreement. If damages are sustained by City as a result of breach or default by Design Professional, City may withhold payment(s) to Design Professional for the purpose of set off until such time as the exact amount of damages due City from Design Professional may be determined, and
- E. No request for payment will be processed unless the request is in proper form, correctly computed, and is approved as payable under Agreement. City is not liable for any obligation incurred by Design Professional except as approved under the provisions of this Agreement.
- F. No request for payment will be processed unless it is accompanied by a copy of the most recent 00485.01 M/WBE Monthly Utilization Report submitted to the City's Human Relations Department.

Sec. 5. Notices. All notices required by this Agreement shall be in writing and sent to the following:

City:

_____ Department

_____, Director:

Address: _____,

Kansas City, MO _____

Phone: (____) ____ - _____ Facsimile: (____) ____ - _____

E-mail address: _____

Design Professional:

Contact: _____

Address: _____

Phone: (____) ____ - ____ Facsimile: (____) ____ - ____

E-mail address: _____

All notices are effective (a) when delivered in person, (b) upon confirmation of receipt when transmitted by facsimile transmission or by electronic mail, (c) upon receipt after dispatch by registered or certified mail, postage prepaid, (d) on the next business day if transmitted by overnight courier (with confirmation of delivery), or (e) three (3) business days after the date of mailing, whichever is earlier.

Sec. 6. Merger. This Agreement consists of Part I, Special Terms and Conditions and any Attachments and any documents incorporated by reference; and Part II, Standard Terms and Conditions. This Agreement, including any Attachments and incorporated documents, constitutes the entire agreement between City and Design Professional with respect to this subject matter.

Sec. 7. Conflict Between Agreement Parts. In the event of any conflict or ambiguity between the Special Terms and Conditions of Part I and the Standard Terms and Conditions of Part II of this Agreement, Part I will be controlling.

Sec. 8. Responsibilities of City. City shall:

- A. Make available to Design Professional all existing records, maps, plans, and other data possessed by City when such are necessary, advisable, or helpful to Design Professional in the completion of the work under this Agreement.
- B. If required or upon recommendation of Design Professional, retains the services of a soils/geotechnical consultant.
- C. Designate in writing a person to act as City representative with respect to the work to be performed under this Agreement; with such person having complete authority to transmit instructions, receive information, interpret and define City's policies and decisions with respect to the materials, equipment elements and systems pertinent to the work covered by this Agreement, and the responsibility to be available to inspect and review the work and to consult with Design Professional at any reasonable time.
- D. Provide standard City forms as required.
- E. Provide City – Licensed Geographical Information System Data set forth in **Attachment ____**, incorporated into this Agreement.

Sec. 9. Attachments to Part I. The following documents are attachments to Part I of this Agreement and are attached hereto and incorporated herein by this reference:

Attachment A –

Sec. 10. Subcontracting. Design Professional agrees that it will only subcontract with the

subcontractor(s) it has listed on the “Subcontractor List Non-Construction.”

Sec. 11. Contract Information Management System. Design Professional shall comply with City’s Contract Information Management System requirements. Design Professional shall use City’s Internet web based Contract Information Management System/Project Management Communications Tool provided by City and protocols included in that software during the term of this Contract. Design Professional shall maintain user applications to City’s provided system for all personnel, subcontractors or suppliers as applicable.

***Note:** If the Agreement does not require Design Professional to meet any MBE/WBE goals, delete this section. If the Design Professional is required to meet an MBE/WBE goal you need to incorporate the contractor utilization plan which can be obtained in the HRD forms and instructions in Contract Central.*

Sec. 12. Minority and Women’s Business Enterprises. City is committed to ensuring that minority and women’s business enterprises (M/WBE) participate to the maximum extent possible in the performance of City contracts. If M/WBE participation goals have been set for this Agreement, Design Professional agrees to comply with all requirements of City’s M/WBE Program as enacted in City’s Code Sections 3-421 through 3-469 and as hereinafter amended. Design Professional shall make its good faith efforts in carrying out this policy by implementing its contractor utilization plan, which is attached as **Attachment _____**. If Design Professional fails to achieve the M/WBE goals stated in its contractor utilization plan, as amended, the City will sustain damages, the exact extent of which would be difficult or impossible to ascertain or estimate at the time of execution of this contract. Therefore, in order to liquidate those damages, the monetary difference between the amount of the M/WBE goals set forth in this contractor utilization plan, as amended, and the amount actually paid to qualified MBEs and WBEs for performing a commercially useful function will be deducted from the Design Professional’s payments as liquidated damages. In determining the amount actually paid to qualified MBEs and WBEs, no credit will be given for the portion of participation that was not approved by the Director of City’s Human Relations Division, unless the Director determines that the Design Professional acted in good faith. No deduction for liquidated damages will be made when, for reasons beyond the control of the Design Professional, the M/WBE participation stated in the Contractor Utilization Plan, as amended and approved by the Director, is not met.

***Note:** The following section relates to programs funded in whole or in part by federal or state funds. List all requirements that apply to this Agreement and fill in the attachment number. If this Agreement is not funded by federal/state grant funds or this section does not apply to your contract, “delete this section”. Be certain to delete this note and the non-applicable section before your final agreement document is printed.*

Sec. 13. Incorporation of Federal/State Laws and Regulation. Design Professional shall administer and use the funds provided hereunder in conformance with all federal/state laws and regulations applicable to the use of those funds including, but not limited to, those laws and regulations which may be set forth in **Attachment ____** to this Agreement. The federal/state laws and regulations applicable to the use of funds provided under this Agreement including, but not limited to, those included in **Attachment _____** are incorporated and made a part of this Agreement by reference. Design Professional agrees that it is its responsibility to obtain and familiarize itself with those laws and regulations. All laws and regulations incorporated into this Agreement shall include all subsequent amendments.

***Note:** If the contract is for the professional services of an architect, engineer, or other professional, the following language should be inserted into the contract.*

Sec. 14. Professional services certification. Code Section 2-83, prohibiting Agreements with certain attorneys, architects, engineers and other professionals thereunder, shall apply to this Agreement. Design Professional certifies that it is not an architect, engineer, or other professional, exclusive of medical doctors or appraisers, who at the time of the issuance of the Agreement, serves as an expert witness for any litigation against City, and that it will not serve as an expert witness for any litigation against City during the term of this Agreement.

OR

***Note:** If this Agreement is funded by federal or state programs, you must obtain certification from Design Professional that they are not debarred. Obtain the Certification form from Contract Central Section “Grant”. See “Contract Suspension and Debarment Clearance Instructions” in Contract Central Section “Grant”. Contact the Law Department if you have any questions regarding this attachment. Be certain to delete this note and the non-applicable section before your final Agreement document is printed.*

***Note:** Please read and delete the following Notes before finishing this Agreement.*

***Note:** Bold Attachments. Be sure that any reference to an attachment is in bold print. This will help us easily locate references to attachments in this Part I.*

***Note:** Paragraph Numbers. Be sure to check the numbering of your paragraphs. The optional paragraphs do not contain a number so you must insert the proper paragraph number.*

***Note:** Attachment Numbers. Be sure to check the numbering of your attachments. If you have not used some attachments, your numbering may be incorrect.*

***Note PART II:** STANDARD TERMS AND CONDITIONS: Print and Attach the Standard Terms and Conditions to this Document after you print this document. Each copy of the Agreement needs this document, the Standard Terms and Conditions and any Attachments.*

***Note:** Approval to Waive/Modify Other Sections. Some provisions of Part II may be waived or modified, but you must first contact the Law Department and obtain the proper approvals.*

***Note:** Deletions/Replacements. If you have waived or modified any provisions in Part II, make sure you have listed those in the “Deletions to Part II” or “Replacements to Part II” Sections Part I*

***Note:** Do Not Attach the following documents to the Agreement: certificate of compliance with affirmative action; taxpayer clearance letter; Certification on Design Professional debarment. Place these documents in the Agreement file.*

***Note:** Do not delete this warning on indemnification.*

Sec. 15. Effectiveness; Date. This Agreement will become effective when the City’s Director of Finance has signed it. The date this Agreement is signed by the City’s Director of Finance will be deemed the date of this Agreement.

Each party is signing this Agreement on the date stated opposite that party’s signature.

THIS AGREEMENT CONTAINS INDEMNIFICATION PROVISIONS

DESIGN PROFESSIONAL

I hereby certify that I have authority to execute
this document on behalf of Design Professional

Date: _____

By: _____

Name: _____

Title: _____

KANSAS CITY, MISSOURI

Date: _____

By: _____

Name: _____

Title: _____

Assistant City Attorney

I hereby certify that there is a balance, otherwise unencumbered, to the credit of the appropriation to which the foregoing expenditure is to be charged, and a cash balance, otherwise unencumbered, in the Treasury, to the credit of the fund from which payment is to be made, each sufficient to meet the obligation hereby incurred.

Director of Finance

Date

ATTACHMENT ____

CITY – LICENSED GEOGRAPHICAL INFORMATION SYSTEM DATA

CITY will provide licensed materials for Geographical Information Systems to be used for the project as follows:

Grant of License. CITY grants to DESIGN PROFESSIONAL and DESIGN PROFESSIONAL hereby accepts, upon the express terms and conditions contained in this Agreement, a non-exclusive License to use the information described herein in the form produced and maintained by the Geographical Information System produced and maintained by City.

License Materials. The materials licensed for use by DESIGN PROFESSIONAL under this Agreement are the forms which can be read or manipulated by computer of the geographical and physical characteristic information collected and assimilated in the records of City (“Licensed Materials”).

Use of Licensed Materials. Subject to the terms, conditions and prohibitions of this Agreement, DESIGN PROFESSIONAL shall be entitled to use the information contained in the Licensed Materials to accomplish the scope of services provided by DESIGN PROFESSIONAL. At the completion of the Agreement, DESIGN PROFESSIONAL shall return all materials to the CITY, and shall permanently remove the Licensed Materials from any media used by DESIGN PROFESSIONAL. At the end of the Agreement, DESIGN PROFESSIONAL shall provide a written certification that all materials are returned and that all Licensed Materials, including copies, have been removed from the equipment or media of DESIGN PROFESSIONAL.

Transfer of Licensed Materials. This license is expressly nontransferable and DESIGN PROFESSIONAL shall not transfer any interest, entitlement or obligation under this Agreement to any other person or entity.

Data. The data and information contained in the Licensed Materials shall be those files and systems as recorded and existing as of the time DESIGN PROFESSIONAL requests the information.

Title. The custody and title and all other rights and interests in the Licensed Materials are and shall at all times remain with the CITY and with the Offices or officials of the CITY having official custody of the Licensed Materials.

Not Public Records. The database in the form of the Licensed Materials is proprietary, intellectual property of the CITY and shall not be considered or deemed as open, public records, except as provided in §256.670, RSMo. DESIGN PROFESSIONAL shall and hereby expressly agrees that it will, recognize the property interests of CITY and CITY agrees that it is not, pursuant to this License, a custodian of any open, public records, except as may exist pursuant to §256.670 RSMo.

Access to Materials. Pursuant to the terms and conditions of this agreement, DESIGN PROFESSIONAL shall be provided access to obtain the Licensed Materials in a periodic basis for the term of this Agreement. As provided in this Agreement, DESIGN PROFESSIONAL, shall be entitled to any Modifications, updates, renewals or additional data or information under the License granted by this Agreement.

Updated Material and Modifications. CITY shall in accordance with this Agreement and upon request of the DESIGN PROFESSIONAL provide to DESIGN PROFESSIONAL updates to or modifications of all or any specific parts of the data or information in the Licensed Materials. Any such updates or modifications provided by CITY shall be covered by and subject to each and all of the terms and conditions of this Agreement. Furthermore, upon completion or termination of this Agreement, DESIGN PROFESSIONAL, will provide to CITY in a compatible form, updated information developed during the execution of the Scope of Services provided by DESIGN PROFESSIONAL.

Data Contents. The data contained in the materials licensed by CITY to DESIGN PROFESSIONAL under this Agreement shall include that information necessary to allow DESIGN PROFESSIONAL to perform scope of services outlined in the Agreement.

Waiver. The waiver of any breach of any provision of this license shall not constitute a waiver of any subsequent breach of the same or other provisions of the Agreement.

Modifications. Any modification to the rights provided herein for licensed materials shall be in writing executed by each party.

ATTACHMENT B

ELECTRONIC DATA REQUIREMENTS

A. Kansas City Plan Room - Electronic Format Requirements and Naming Conventions

1. In addition to other deliverables included in this Contract, items listed below are requirements to accommodate posting bids documents, plans and specifications on the Kansas City Plan Room.
2. Prime Design Professional/Consultant and Sub-Consultants shall adhere to the following electronic format requirements and use the naming conventions as set out below:
 - a. **Drawings/plans**
 - (1) Drawings/plans should be rendered as 200-300 dpi **PDF Format** images. No files may be larger than 5 megabytes in size. Plans/Drawings numbering should follow Form 00015 List of Drawings.
 - (2) File names may not include any symbols such as < > : . “ / \ | ? ‘ & # % ^ * () [] { } +
 - (3) FILE NAMES: Plans/Drawings numbering should follow Form 00015 List of Drawings. All plans should be named in the following manner: three digit sequential number-brief descriptor. For example: 001-(DrawingNumber)-Cover.**pdf** or 002-(DrawingNumber)-A-01.**pdf**
 - b. **CSI specification sections (project manuals)**
 - (1) CSI specification sections should be named by division, using DIV as a prefix. For example:
 - (a) DIV01.PDF (Technical, Project Specific)
 - (b) DIV02.PDF
 - (c) DIV03.PDF
 - c. **Summary:**
 - (1) Division 00 and 01 in Microsoft Word or Excel
 - (2) Division 2-16 in PDF Format
 - (3) Completed document originals of Plans and Diagrams of project must be submitted as 200-300 dpi **PDF Format** images.

B. Contract Information Management System - Project Web Requirements

1. The City will utilize a web based contract information management system/project management tool in the administration of this Contract. This web based application database is a collaboration tool selected and provided by City, which will allow all project team members continuous access through the Internet to important contract/project data as well as up to the minute decision and approval status information.
2. Design Professional shall provide and shall require its sub-consultants to provide its management personnel assigned to this Contract with access to personal computers and the Internet on a daily basis.
3. Design Professional shall conduct Project controls, outlined by the City utilizing the web based application database selected and provided by City. **This designated web based application database will be provided by the** Design Professional to its sub-consultants. No additional software will be required. City will assist Design Professional in providing training of sub-Consultant's personnel.
4. Design Professional shall have and shall require its sub-consultants the responsibility for visiting the Project web site on a daily basis, and as necessary to be kept fully apprised of

Contract/Project developments, for correspondence, assigned tasks and other matters that transpire on the site.

- a. These may include but are not limited to: Contracts, Contract Exhibits, Contract Amendments, Drawing Issuances, Addenda, Bulletins, Permits, Insurance & Bonds, Safety Program Procedures, Safety Notices, Accident Reports, Personnel Injury Reports, Schedules, Site Logistics, Progress Reports, Daily Logs, Non-Conformance Notices, Quality Control Notices, Punch Lists, Meeting Minutes, Requests for Information, Submittal Packages, Substitution Requests, Monthly Payment Request Applications, Supplemental Instructions, Owner Variation Directives, Potential Variation Orders, Variation Order Requests, Variation Orders, and the like.
- b. All supporting data including but not limited to shop drawings, product data sheets, manufacturer data sheets and instructions, method statements, safety MSDS sheets, Substitution Requests and required documentation will be submitted in digital format via the web based application database selected and provided by City.

C. Electronic File Requirements – Closeout

1. All documents (including as-built drawings) shall be converted or scanned into the Adobe Acrobat (.PDF) file format and uploaded to the web based application database selected and provided by City.
2. In addition to the standard closeout submittal requirements detailed elsewhere in the Contract Documents, the Prime Design Professional/Consultant and Sub-Consultants shall also submit all closeout documents including but not limited to all “As-Built Drawings”, catalog cuts and Owner’s Operation and Maintenance manuals in digital format.

D. Project Management Communications - Construction

1. The Contractor shall use the Internet web based contract information management system/project management communications tool selected and provided by City, and protocols included in that software during the term of this Contract. The use of project management communications as herein described does not replace or change any contractual responsibilities of the participants.
2. The project communications database is on-line and fully functional. User registration, electronic and computer equipment, and Internet connections are the responsibility of each project participant. The sharing of user accounts is prohibited.
3. Training: City’s software service provider will provide a group training sessions scheduled by City, the cost of which is included in the initial user’s fee. Users are required to attend the scheduled training sessions they are assigned. Requests for specific scheduled classes will be on a first come first served basis for available spaces. Companies may also obtain group training from City’s software service provider at their own expense.
4. Support: City’s software service provider will provide on-going support through on-line help files.
5. Project Archive: The archive shall be available to each team member at a nominal cost. The archive set will contain only documents that the firm has security access to during construction. All legal rights in any discovery process are retained. Archive material shall be ordered from City’s software service provider.
6. Copyrights and Ownership: Nothing in this specification or the subsequent communications supersedes the parties’ obligations and rights for copyright or document ownership as established by the Contract Documents. The use of CAD files, processes or design information distributed in this system is intended only for the project specified herein.

7. Purpose: The intent of using a project management communication tool is to improve project work efforts by promoting timely initial communications and responses. Secondly, to reduce the number of paper documents while providing improved record keeping by creation of electronic document files.
8. Authorized Users: Access to the web site will be by individuals who are licensed users.
 - a. Individuals may use the User Application included in these specifications or may request the User Application.
 - b. Authorized users will be contacted directly by the web site provider, who will assign the temporary user password.
 - c. Individuals shall be responsible for the proper use of their passwords and access to data as agents of the company in which they are employed.
9. Administrative Users: Administrative users have access and control of user licenses and all posted items. **DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE!** Improper or abusive language toward any party or repeated posting of items intended to deceive or disrupt the work of the project will not be tolerated and will result in deletion of the offensive items and revocation of user license at the sole discretion of the Administrative User(s).

E. KC Water Digital Data Submittal Standard

Purpose

In an effort to streamline the process of updating KC Water's Geographic Information System (GIS), KC Water is requiring digital copies of the "Approved for Construction" drawings and "Construction Record Drawings".

Information is to be provided in a format that adheres to the requirements outlined below.

1. Required Submittals Types

a. Approved for Construction Drawings

Prior to the release of the project for construction (Notice to Proceed), digital copies of the Approved for Construction Drawings must be provided to the KC Water project manager. CAD and PDF files shall be provided along with a hard copy of the record drawings. If a change in the hard copy prints is requested then the digital files shall be revised and resubmitted to ensure that all changes are reflected in both the hard copy and digital versions of the files.

- (1) KC Water projects require a digital copy of the CAD file used to generate the Approved for Construction Drawings.
- (2) The delivered CAD files must follow the KC Water CAD file standards. A CAD template file will be provided by KC Water's project manager at the start of the project along with a description of the CAD layers and object data elements that are required to be in the CAD file.

2. Submittal Specifications

- a. All submitted CAD files must be spatially referenced to the North American Datum (NAD) 1983 State Plane Missouri West FIPS 2403 US Feet coordinate system. All CAD files shall

be submitted in AutoCAD .dwg format with information drawn on the approved CAD layers.

- b. All CAD files shall be submitted with the object data tables included in the CAD template populated.
- c. eTransmit shall be used when packaging CAD files for submission. eTransmit is a command within the CAD software that automatically includes all related dependent files such as xrefs and pentables.
- d. CAD files shall be transmitted as both .dwg and .sdf formats.
- e. In the case of an incomplete submission the digital copies may be returned for correction with comments.

3. CAD Layers and Object Data Tables:

The general layout CAD file must have the required object data elements populated. All object data elements per asset type shall be populated.

For a list of the required CAD layers, object data tables, and attribute codes, please reference the current version at the time of contract award of the Kansas City Water Services Department (KCWSD) CAD Design Standards and Specifications.

4. Questions/Technical Support

- a. In the instance of a technical error, question, or discrepancy in the process please contact:

GIS Manager
Water.GIS@kcmo.org

PART II

STANDARD TERMS AND CONDITIONS

Sec. 1. General Indemnification.

A. For purposes of this Section 1 only, the following terms shall have the meanings listed:

1. **Claims** means all claims, damages, liability, losses, costs and expenses, court costs and reasonable attorneys' fees, including attorneys' fees incurred by the City in the enforcement of this indemnity obligation.

2. **Design Professional's Agents** means Design Professional's officers, employees, subcontractors, subconsultants, successors, assigns, invitees, and other agents.

3. **City** means City, its Program Manager/Construction Advisor and any of their agents, officials, officers and employees.

B. Design Professional's obligations under this Section with respect to indemnification for acts or omissions, including negligence, of City shall be limited to the coverage and limits of General (not Professional) Liability insurance that Design Professional is required to procure and maintain under this Agreement. Design Professional affirms that it has had the opportunity to recover the costs of the liability insurance required in this Agreement in its contract price.

C. Design Professional shall defend, indemnify and hold harmless City from and against all Claims arising out of or resulting from all acts or omissions in connection with this Agreement caused in whole or in part by Design Professional or Design Professional's Agents, regardless of whether or not caused in part by an act or omission, including negligence, of City. Design Professional is not obligated under this Section to indemnify City for the sole negligence of City.

D. Nothing in this section shall apply to indemnification for professional negligence which is specified in a separate provision of this Agreement.

E. In no event shall the language in this section constitute or be construed as a waiver or limitation of the City's rights or defenses with regard to sovereign immunity, governmental immunity, or other official immunities and protections as provided by the federal and state constitutions or by law.

Sec. 2. Indemnification for Professional Negligence.

Design Professional shall indemnify, and hold harmless City and any of its agencies, officials, officers, or employees from and against all claims, damages, liability, losses, costs, and expenses, including court costs and reasonable attorneys' fees, to the extent caused by any negligent acts, errors, or omissions of the Design Professional, its officers, employees, subconsultants, subcontractors, successors, assigns, invitees and other agents, in the performance of professional services under this Agreement. Design Professional is not obligated under this Section to indemnify City for the negligent acts of City or any of its agencies, officials, officers, or employees.

Sec 3. Insurance.

A. Design Professional shall procure and maintain in effect throughout the duration of this Agreement, and for a period of two (2) years thereafter, insurance coverage not less than the types and amounts specified below. In the event that additional insurance, not specified herein, is required during the term of this Agreement, Design Professional shall supply such insurance at City's cost. Policies containing a Self-Insured Retention are unacceptable to City unless City approves in writing the Design Professional Self-Insured Retention.

1. Commercial General Liability Insurance: with limits of \$1,000,000 per occurrence and \$2,000,000 aggregate, written on an "occurrence" basis. The policy shall be written or endorsed to include the following provisions:

a. Severability of Interests Coverage applying to Additional Insureds

b. Contractual Liability

c. Per Project Aggregate Liability Limit or, where not available, the aggregate limit shall be \$2,000,000

d. No Contractual Liability Limitation Endorsement

e. Additional Insured Endorsement, ISO form CG20 10, current edition or its equivalent

2. Worker's Compensation Insurance: as required by statute, including Employers Liability with limits of:

Workers Compensation Statutory
Employers Liability

\$1,000,000 accident with limits of:
\$1,000,000 disease-policy limit
\$1,000,000 disease-each employee

3. Commercial Automobile Liability Insurance: with a limit of \$1,000,000 written on an "occurrence" basis, covering owned, hired, and non-owned automobiles. If the Design Professional owns vehicles, coverage shall be provided on an "any auto" basis. If the Design Professional does not own any vehicles, coverage shall be provided on a "hired autos" and "nonowned autos" basis. The insurance will be written on a Commercial Business Auto form, or an acceptable equivalent, and will protect against claims arising out of the operation of motor vehicles, as to acts done in connection with the Agreement, by Design Professional.

4. Professional Liability Insurance with limits Per Claim/Annual Aggregate of \$1,000,000.

5. If applicable, Cyber Liability Insurance, with limits not less than \$2,000,000 per occurrence or claim, \$2,000,000 aggregate. Coverage shall be sufficiently broad to respond to the duties and obligations as is undertaken by Design Professional in this agreement and shall include, but not be limited to, claims involving security breach, system failure, data recovery, business interruption, cyber extortion, social engineering, infringement of intellectual property, including but not limited to infringement of copyright, trademark, trade dress, invasion of privacy violations, information theft, damage to or destruction of electronic information, release of private information, and alteration of electronic information. The policy shall provide coverage for breach response costs, regulatory fines and penalties as well as credit monitoring expenses.

6. If applicable, Technology Professional Liability Errors and Omissions Insurance appropriate to the Consultant's profession and work hereunder, with limits not less than \$2,000,000 per occurrence. Coverage shall be sufficiently broad to respond to the duties and obligations as is undertaken by the Design Professional in this agreement and shall include, but not be limited to, claims involving security breach, system failure, data recovery, business interruption, cyber extortion, social engineering, infringement of intellectual property, including but not limited to infringement of copyright, trademark, trade dress, invasion of privacy violations, information theft, damage to or destruction of electronic information, release of private information, and alteration of electronic information. The policy shall provide coverage for breach response costs, regulatory fines and penalties as well as credit monitoring expenses.

The Policy shall include, or be endorsed to include, property damage liability coverage for damage to, alteration of, loss of, or destruction of electronic data and/or information "property" of the Agency in the

care, custody, or control of the Design Professional. If not covered under the Design Professional's liability policy, such "property" coverage of the Agency may be endorsed onto the Design Professional's Cyber Liability Policy as covered property.

If the Design Professional maintains broader coverage and/or higher limits than the minimums shown above, the Entity requires and shall be entitled to the broader coverage and/or the higher limits maintained by the Design Professional. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the Entity.

B. The Commercial General Liability Insurance specified above shall provide that City and its agencies, officials, officers, and employees, while acting within the scope of their authority, will be named as additional insureds for the services performed under this Agreement. Design Professional shall provide to City at execution of this Agreement a certificate of insurance showing all required endorsements and additional insureds. The certificates of insurance will contain a provision stating that should any of the policies described in the certificate be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.

C. The Commercial General Liability and Commercial Automobile Liability insurance specified above shall contain a cross-liability or severability of interest clause or endorsement and shall contain a provision or endorsement that the costs of providing the insureds a defense and appeal, including attorneys' fees, as insureds, shall be supplementary and shall not be included as part of the policy limits but shall remain the insurer's responsibility. Insurance covering the specified additional insureds shall be primary insurance, and all other insurance carried by the additional insureds shall be excess insurance. With respect to Commercial Automobile Liability, Commercial General Liability, and any Umbrella Liability

Insurance, Design Professional shall require its insurance carrier(s) to waive all rights of subrogation against City and its agencies, officials, officers, and employees.

D. All insurance coverage must be written by companies that have an A.M. Best's rating of "A-V" or better, and are licensed or approved by the State of Missouri to do business in Missouri.

E. Design Professional's failure to maintain the required insurance coverage will not relieve Design Professional of its contractual obligation to indemnify the City pursuant to Sections 1 and 2. If the coverage afforded is cancelled or changed or its renewal is refused, Design Professional shall give at least 30 days prior written notice to City. In the event of Design Professional's failure to maintain the required insurance in effect, City may order Design Professional to immediately stop work, and upon ten (10) days notice and an opportunity to cure, may pursue its remedies for breach of this Agreement as provided for herein and by law.

F. In no event shall the language in this Section constitute or be construed as a waiver or limitation of the City's rights or defenses with regard to sovereign immunity, governmental immunity, or other official immunities and protections as provided by the federal and state constitutions or by law.

Sec. 4. Design Standards and Endorsement.

A. Except as otherwise directed in writing by City, in the performance of services under this Agreement, Design Professional shall comply with all design standards required by federal, state, local laws or codes including but not limited to all applicable provisions of:

1. Title II of the 2010 ADA Standards for Accessible Design as amended from time to time;
2. the Clean Air Act (42 U.S.C. 7401 *et seq.* and the Clean Water Act (33 U.S.C. 1251 *et seq.*

3. the Missouri Clean Water Law (Chapter 644 RSMo) together with any accompanying regulation(s) contained in the Missouri Code of State Regulations (CSR Title 10), as well as any implementing permits; and
4. Kansas City Code Sec. 3-71. LEED gold standard.

Design Professional shall notify and explain to City any applicable exceptions under these acts.

B. Design Professional shall use all design standards recognized and used in the industry in the performance of services under this agreement. Design Professional shall endorse all plans and specifications, or estimates, and engineering data furnished under this Agreement if prepared by Design Professional. All subcontractors as appropriate shall endorse their respective plans and specifications, or estimates, and engineering data furnished for the Plan or Project.

C. Design Professional shall monitor quality assurance for their design services and shall revise the design and plans at their own expense in case of error or oversight in design by Design Professional or any subcontractor to Design Professional.

Sec. 5. Copyright and Ownership of Documents.

A. Design Professional shall on its behalf and on behalf of its employees and agents, promptly communicate and disclose to City all computer programs, documentation, software and other copyrightable works and all discoveries, improvements and inventions conceived, reduced to practice or made by Design Professionals or its agents, whether solely or jointly with others, during the term of this Agreement resulting from or related to any work Design Professional or its agents may do on behalf of City or at its request. All inventions and copyrightable works that Design Professional is obligated to disclose

shall be and remain entirely the property of City. It is agreed that all inventions and copyrightable works are works made for hire and shall be the exclusive property of City. Design Professional hereby assigns to City any rights it may have in such copyrightable works. Design Professional shall cooperate with City in obtaining any copyrights or patents.

B. Original documents, including plans, specifications, reports, maps, models and renderings, including electronic media, prepared or obtained under the terms of this Agreement shall be delivered to and become the property of City and basic survey notes, diaries, sketches, charts, computations and other data shall be made available upon request by City without restriction or limitation of their use. There shall be no legal limitations upon City in the subsequent use of the documents or ideas developed in the documents. In the event that any of the documents are reused by City, the nameplates or other identification to the Design Professional will be removed and the Design Professional will be released of subsequent liabilities. In the event that any of the design drawings are reused or modified by City, the name plates or other identification to the Design Professional will be removed.

Sec. 6. Governing Law.

This Contract shall be construed and governed in accordance with the laws of the State of Missouri without giving effect to Missouri's choice of law provisions. The City and Design Professional: (1) submit to the jurisdiction of the state and federal courts located in Jackson County, Missouri; (2) waive any and all objections to jurisdiction and venue; and (3) will not raise forum non conveniens as an objection to the location of any litigation.

Sec. 7. Compliance with Laws.

Design Professional shall comply with all federal, state and local laws, ordinances and

regulations applicable to the work and this Agreement. Design Professional shall maintain in effect all the licenses, permissions, authorizations, consents and permits that it needs to carry out its obligations under this Agreement.

Sec. 8. Termination for Convenience.

A. City may, at any time upon ten (10) days notice to Design Professional specifying the effective date of termination, terminate this Agreement, in whole or in part. If this Agreement is terminated by City, City shall be liable only for payment for services rendered before the effective date of termination. Design Professional shall prepare an accounting of the services performed and money spent by Design Professional up to the effective date of termination and shall return to City any remaining sums within thirty (30) days of such date.

B. If this Agreement is terminated prior to Design Professional's completion of services, all work or materials prepared or obtained by Design Professional pursuant to this Agreement shall become City's property.

C. If this Agreement is terminated prior to Design Professional's completion of the services to be performed hereunder, Design Professional shall return to City and sums paid in advance by City for services that would otherwise have had to be rendered between the effective date of termination and the original ending date of the Agreement. Design Professional shall prepare an accounting of the services performed and money spent by Design Professional up to the effective date of termination and shall return to City any remaining sums within thirty (30) days of such date.

Sec. 9. Default and Remedies.

If Design Professional shall be in default or breach of any provision of this Agreement, City may terminate this Agreement, suspend City's performance, withhold payment or

invoke any other legal or equitable remedy after giving Design Professional notice and opportunity to correct such default or breach.

Sec. 10. Waiver.

Waiver by City of any term, covenant, or condition hereof shall not operate as a waiver of any subsequent breach of the same or of any term, covenant or condition. No term, covenant, or condition of this Agreement can be waived except by written consent of City, and forbearance or indulgence by City in any regard whatsoever shall not constitute a waiver of same to be performed by Design Professional to which the same may apply and, until complete performance by Design Professional of the term, covenant or condition, City shall be entitled to invoke any remedy available to it under this Agreement or by law despite any such forbearance or indulgence.

Sec. 11. Acceptance.

No payment made under this Agreement shall be proof of satisfactory performance of the Agreement, either wholly or in part, and no payment shall be construed as acceptance of deficient or unsatisfactory work.

Sec. 12. Modification.

Unless stated otherwise in this Agreement, no provision of this Agreement may be waived, modified or amended except in writing signed by City.

Sec. 13. Headings; Construction of Agreement.

The headings of each section of this Agreement are for reference only. Unless the context of this Agreement clearly requires otherwise, all terms and words used herein, regardless of the number and gender in which used, shall be construed to include any other number, singular or plural, or any other gender, masculine, feminine or neuter, the

same as if such words had been fully and properly written in that number or gender.

Sec. 14. Severability of Provisions.

Except as specifically provided in this Agreement, all of the provisions of this Agreement shall be severable. In the event that any provision of this Agreement is found by a court of competent jurisdiction to be unconstitutional or unlawful, the remaining provisions of this Agreement shall be valid unless the court finds that the valid provisions of this Agreement are so essentially and inseparably connected with and so dependent upon the invalid provision(s) that it cannot be presumed that the parties to this Agreement could have included the valid provisions without the invalid provision(s); or unless the court finds that the valid provisions, standing alone, are incapable of being performed in accordance with the intentions of the parties.

Sec. 15. Records.

A. For purposes of this section:

1. "City" shall mean the City Auditor, the City's Internal Auditor, the City's Director of Civil Rights and Equal Opportunity Department, the City Manager, the City department administering this Contract and their delegates and agents.

2. "Record" shall mean any document, book, paper, photograph, map, sound recordings or other material, regardless of physical form or characteristics, made or received in connection with this Contract and all Contract amendments and renewals.

B. Design Professional shall maintain and retain all Record for a term of five (5) years that shall begin after the expiration or termination of this Contract and all Contract amendments. City shall have a right to examine or audit all Records and Design Professional shall provide access to City of all Records upon ten (10) days written notice from the City.

C. The books, documents and records of Design Professional in connection with this Agreement shall be made available to the City Auditor, the City's Internal Auditor, the City's Director of Civil Rights and Equal Opportunity Department and the City department administering this Agreement within ten (10) days after the written request is made.

Sec. 16. Tax Compliance.

Design Professional shall provide proof of compliance with the City's tax ordinances administered by the City's commissioner of revenue as a precondition to the City making the first payment under this Agreement or any Agreement renewal when the total Agreement amount exceeds \$160,000.00. If Design Professional performs work on an Agreement that is for a term longer than one year, the Design Professional also shall submit to the city proof of compliance with the City's tax ordinances administered by the City's commissioner of revenue as a condition precedent to the city making final payment under the Agreement.

Sec. 17. Assignability and Subcontracting.

(a) Assignability. Design Professional shall not assign or transfer any part or all of Design Professional's obligation or interest in this Contract without prior written approval of City. If Design Professional shall assign or transfer any of its obligations or interests under this Contract without the City's prior written approval, it shall constitute a material breach of this Contract. This provision shall not prohibit Design Professional from subcontracting as otherwise provided for herein.

(b) Subcontracting. Design Professional shall not subcontract any part or all of Design Professional's obligations or interests in this Contract unless the subcontractor has been identified in a format required by City. If

Design Professional shall subcontract any part of Design Professional's obligations or interests under this Contract without having identified the subcontractor, it shall constitute a material breach of this Contract. The utilization of subcontractors shall not relieve Design Professional of any of its responsibilities under the Contract, and Design Professional shall remain responsible to City for the negligent acts, errors, omissions or neglect of any subcontractor and of such subcontractor's officers, agents and employees. City shall have the right to reject, at any point during the term of this Contract, any subcontractor identified by Design Professional, and to require that any subcontractor cease working under this Contract. City's right shall be exercisable in its sole and subjective discretion. City shall not be obligated to pay or be liable for payment of any monies which may be due to any subcontractor. Design Professional shall include in any subcontract a requirement that the subcontractor comply with all requirements of this Contract in performing Design Professional's services hereunder.

Sec. 18. Conflicts of Interest.

Design Professional certifies that no officer or employee of City has, or will have, a direct or indirect financial or personal interest in this Agreement, and that no officer or employee of City, or member of such officer's or employee's immediate family, either has negotiated, or has or will have an arrangement, concerning employment to perform services on behalf of Design Professional in this Agreement.

Sec. 19. Conflict of Interest - Certification.

Design Professional certifies that Design Professional is not an expert witness for any party in litigation against the City at the time of the issuance of this Contract.

Sec. 20. Buy American Preference.

It is the policy of the city that any manufactured goods or commodities used or supplied in the performance of any city Agreement or any subcontract hereto shall be manufactured or produced in the United States whenever possible.

Sec. 21. Independent Contractor.

Design Professional is an independent contractor and is not City's agent. Design Professional has no authority to take any action or execute any documents on behalf of City.

Section 22. Employee Eligibility Verification.

If this Contract exceeds five thousand dollars(\$5,000.00), Design Professional shall execute and submit an affidavit, in a form prescribed by City, affirming that Design Professional does not knowingly employ any person in connection with the contracted services who does not have the legal right or authorization under federal law to work in the United States as defined in 8 U.S. C. § 1324a(h)(3). Design Professional shall attach to the affidavit documentation sufficient to establish Design Professional's enrollment and participation in an electronic verification of work program operated by the United States Department of Homeland Security (E-Verify) or an equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, under the Immigration Reform and Control Act of 1986. Design Professional may obtain additional information about E-Verify and enroll at www.dhs.gov/xprevprot/program/gc_1185221678150.shtm . For those Design Professionals enrolled in E-Verify, the first and last pages of the E-Verify Memorandum of Understanding that Design Professional will obtain upon successfully enrolling in the program shall constitute sufficient documentation for purposes of complying with this Section. Design Professional shall submit affidavit and attachments to City prior

to execution of the contract, or at any point during the term of the Contract if requested by City.

Sec. 23. Quality Services Assurance Act.

If this Contract exceeds \$160,000.00, Design Professional certifies Design Professional will pay all employees who will work on this Contract in the city limits of Kansas City, Missouri at least \$15.00 per hour in compliance with the City's Quality Services Assurance Act, Section 3-66, Code of Ordinances or City has granted Design Professional an exemption.

Sec. 24. Anti-Discrimination Against Israel.

If this Contract exceeds \$100,000.00 and Design Professional employs at least ten employees, pursuant to Section 34.600, RSMo., by executing this Contract, Design Professional certifies it is not currently engaged in and shall not, for the duration of this contract, engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel.

Sec. 25. Title VI of the Civil Rights Act of 1964.

Title VI of the Civil Rights Act of 1964 requires that no person in the United States shall, on the grounds of race, color, or national or origin (including limited English proficient individuals), be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. The City of Kansas City, Missouri requires compliance with the requirements of Title VI in all of its programs and activities regardless of the funding source. Design Professional shall not discriminate on the grounds of race, color, or national or origin (including limited English proficient individuals).

Sec. 26. Non-Discrimination in

Employment. Design Professional shall not discriminate against any employee or candidate for employment on the basis of an individual's race, hair texture or hair style associated with an individual's race, color, sex, religion, national origin, or ancestry, disability, sexual orientation, gender identity, age, or in any other manner prohibited by Chapter 38 of the City Code. Design Professional shall not engage in any discrimination as prohibited by Chapter 3 of the City Code.

Sec. 27. Ban the Box in Hiring and Promotion.

Pursuant to Section 38-104, City Code Ordinances, Design Professional shall not base a hiring or promotional decision on an applicant's criminal history or sentence related thereto, unless the employer can demonstrate that the employment-related decision was based on all information available including consideration of the frequency, recentness and severity of a criminal record and that the record was reasonably related to the duties and responsibilities of the position.

Notwithstanding, Design Professional may inquire about an applicant's criminal history after it has been determined that the individual is otherwise qualified for the position, and only after the applicant has been interviewed for the position. Any such inquiry may be made of all applicants who are within the final selection pool of candidates from which a job will be filled.

This provision shall not apply to positions where employers are required to exclude applicants with certain criminal convictions from employment due to local, state or federal law or regulation.

Sec. 28. Affirmative Action.

If this Contract exceeds \$300,000.00 and Design Professional employs fifty (50) or more people, Design Professional shall comply with City's Affirmative Action requirements in accordance with the provisions of Chapter 38 of City's Code, the rules and regulations relating to those sections, and any additions or amendments thereto; in executing any Contract subject to said provisions, Design Professional warrants that it has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the Contract. Design Professional shall not discriminate against any employee or applicant for employment because of race, color, sex, religion, national origin or ancestry, disability, sexual orientation, gender identity or age in a manner prohibited by Chapter 38 of City's Code. CONTRACTOR shall:

a. Execute and submit the City of Kansas City, Missouri CREO Affirmative Action Program Affidavit warranting that the Design Professional has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the Contract.

b. Submit, in print or electronic format, a copy of Design Professional's current certificate of compliance to the City's Civil Rights and Equal Opportunity Department (CREO) prior to receiving the first payment under the Contract, unless a copy has already been submitted to CREO at any point within the previous two (2) calendar years. If, and only if, Design Professional does not possess a current certification of compliance, Design Professional shall submit, in print or electronic format, a copy of its affirmative action program to CREO prior to receiving the first payment under the Contract, unless a copy has already been submitted to CREO at any point within the previous two (2) calendar years.

c. Require any Subcontractor awarded a subcontract exceeding \$300,000.00 to affirm that Subcontractor has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the subcontract.

d. Obtain from any Subcontractor awarded a subcontract exceeding \$300,000.00 a copy of the Subcontractor's current certificate of compliance and tender a copy of the same, in print or electronic format, to CREO within thirty (30) days from the date the subcontract is executed. If, and only if, Subcontractor does not possess a current certificate of compliance, Design Professional shall obtain a copy of the Subcontractor's affirmative action program and tender a copy of the same, in print or electronic format, to CREO within thirty (30) days from the date the subcontract is executed. This is a material term of this Contract.

The City has the right to take action as directed by City's Civil Rights and Equal Opportunity Department to enforce this provision. If Design Professional fails, refuses or neglects to comply with the provisions of Chapter 38 of City's Code, then such failure shall be deemed a total breach of this Contract and this Contract may be terminated, cancelled or suspended, in whole or in part, and Design Professional may be declared ineligible for any further contracts funded by City for a period of one (1) year. This is a material term of the Contract.

Sec. 29. Prevailing Wage. If the Agreement exceeds \$75,000.00 and any of the Services performed by Design Professional includes construction, reconstruction, improvement, enlargement, alteration, painting and decorating, or major repair, that is subject to the Missouri Prevailing Wage Law

(Section 290.210, RSMo – 290.340, RSMo), Design Professional shall immediately notify the City prior to performing Services so the parties can execute an agreement that incorporates, the appropriate Wage Order. Design Professional shall comply with all requirements of Section 290.210, RSMo – 290.340, RSMo even if Design Professional fails to notify the City.

**CREO KC INSTRUCTIONS
FOR REQUESTS FOR QUALIFICATIONS/PROPOSALS**

PART A. ECONOMIC EQUITY & INCLUSION GOALS--MBE/WBE PROGRAM

I. City's Economic Equity & Inclusion Goals--MBE/WBE Program.

- A. The City has adopted an Economic Equity & Inclusion Goals--Minority/Women Business Enterprise ("MBE/WBE") Program (Sections 4-421 through 3-469, Code of Ordinances) (the "Program") to implement the City's policy of supporting the fullest possible participation in City contracts and change orders of firms owned and controlled by minorities and women. Each construction project may have an MBE and/or WBE goal for participation. An MBE or WBE goal is a numerical objective the City has set for the contract. Goals are stated as a percentage of contract dollars. For example, if an MBE goal for a contract is 10% and a Proposer submits a proposal of \$100,000, the goal for MBE participation would equal \$10,000. The specific MBE/WBE goals on this project are set forth elsewhere in the proposal specifications.
- B. By submitting a proposal, the Proposer agrees, as a material term of the contract, to carry out the Economic Equity & Inclusion Goals--MBE/WBE Program by making good faith efforts to include certified MBE/WBEs in the project work to the extent of the goals listed for the project and to the fullest extent consistent with submitting the best proposal to the City. Proposer agrees that the Program is incorporated into this document and agrees to follow the Program. Although it is not a requirement that a Proposer in fact meet or exceed both the MBE and WBE Goals, it is a requirement for approval of the proposal that a Proposer objectively demonstrate to the City that good faith efforts have been made to meet the Goals.
- C. The following CREO KC Forms are attached and must be used for MBE/WBE submittals:
 - 1. Affidavit of Intended Utilization (CREO KC Form 13); and
 - 2. Contractor Utilization Plan/Request for Waiver (CREO KC Form 8A); and
 - 3. Letter of Intent to Subcontract (CREO KC Form 00450.01); and
 - 4. Timetable for MBE/WBE Utilization (CREO KC Form 10); and
 - 5. Request for Modification or Substitution (CREO KC Form 11); and
 - 6. Contractor Affidavit for Final Payment (Form 01290.14); and
 - 7. Subcontractor Affidavit for Final Payment (Form 01290.15).

Warning: The City only gives MBE/WBE credit for a Proposer's use of City certified MBE/WBEs. A certified MBE/WBE firm is a firm that has been certified by the City's Civil Rights & Equal Opportunity Department as such. An MBE/WBE firm must be certified before the date on which the contractor utilization plan is due. Certified MBEs and WBEs are listed in the M/W/DBE Kansas City Mo. Online Directory, which is available on the City's website at www.kcmo.gov. Before a Proposer submits a proposal, Proposer should contact CREO KC and consult the directory to make sure any firm

proposed for use for MBE/WBE participation has been certified.

II. Required Submissions with Proposal.

A. Proposer must submit the following document with its proposal:

1. **Affidavit of Intended Utilization (CREO KC Form 13).** This form states a Proposer's intent to use certified MBE/WBEs in the performance of the contract.

III. Required Submissions Prior to Contract Award.

A. Proposer must submit the following documents prior to contract award.

1. **Contractor Utilization Plan/Request for Waiver (CREO KC Form 8).** This form states a Proposer's plan to use specific certified MBE/WBEs in the performance of the contract and includes the following:
 - a. The work to be performed by each MBE/WBE and the amounts each is to be paid for the work; and
 - b. The name, address, race or ethnic origin, gender and employer identification number or social security number of each MBE/WBE that will perform the work.
 - c. An automatic request for waiver in the event Proposer has not met or exceeded the MBE and/or WBE goals for the contract but believes that it has made good faith efforts to meet or exceed the goals and desires a waiver of the goals. If a waiver is requested, CREO KC will examine the Proposer's documentation of good faith efforts and make a recommendation to grant or deny the waiver. CREO KC will recommend a waiver be granted only if the Proposer has made good faith efforts to obtain MBE/WBE participation.
2. **Letter(s) of Intent to Subcontract (CREO KC Form 00450.01).** A letter must be provided from each MBE/WBE listed on the Contractor Utilization Plan. These letters verify that the MBE/WBE has agreed to execute a formal agreement for the work and indicate the scope of work to be performed and the price agreed upon for the work.

IV. Additional Required Submissions when Requested by City.

A. Proposer must submit the following documents when requested by City:

1. **Timetable for MBE/WBE Utilization (CREO KC Form 10).**
2. **Documentation of good faith efforts.**

V. Required Monthly Submissions during term of Contract.

A. Proposers must submit the following document on a monthly basis if awarded the contract:

1. **M/WBE Monthly Utilization Report.** This report must be submitted to the Director by the 15th of each month using the B2GNow Diversity Management System. Failure to submit timely reports may result in delays in processing of current and future contract approvals and payment applications.

VI. Required Submittals for Final Contract Payment.

- A. Proposer must submit the following documents with its request for final payment under the contract:
 - 1. **Contractor Affidavit for Final Payment (Form 01290.14)**
 - 2. **Subcontractor Affidavit(s) for Final Payment (Form 01290.15)**

VII. Additional Submittals.

- A. Proposer may be required to make additional submittals during the term of the Contract, including **Request for Modification or Substitution (CREO KC Form 11)**. Refer to Section X, Modification of the Contractor Utilization Plan or Substitution of an MBE/WBE, for additional instructions on when this form must be submitted.

VIII. MBE/WBE Participation Credit.

- A. The following shall be credited towards achieving the goals:
 - 1. The total contract dollar amount that a prime contractor has paid or is obligated to pay to a subcontractor that is a certified MBE or WBE, except as otherwise expressly provided for herein.
 - 2. The total contract dollar amount that a prime contractor that is a certified MBE or WBE performed itself.
 - 3. Sixty percent (60%) of the total dollar amount paid or to be paid by a prime contractor to obtain supplies or goods from a supplier who is a certified MBE or WBE.
 - 4. Ten percent (10%) of the total dollar amount paid or to be paid by a prime contractor to obtain supplies or goods from a supply broker who is a certified MBE or WBE.
 - 5. One hundred percent (100%) of the total dollar amount paid or to be paid by a prime contractor to a manufacturer of construction supplies who is a certified MBE or WBE.
 - 6. Subcontractor participation with a lower tier MBE/WBE subcontractor using one of the above methods of participation.
- B. **NO CREDIT**, however, will be given for the following:
 - 1. Participation in a contract by a MBE or WBE that does not perform a commercially useful function as defined by the Program; and
 - 2. Any portion of the value of the contract that an MBE or WBE subcontractor subcontracts back to the prime contractor or any other contractor who is not a qualified MBE/WBE; and
 - 3. Materials and supplies used on the contract unless the MBE/WBE is responsible for negotiating the price, determining quality and quantity, ordering the materials and installing (where applicable) and paying for material itself; and
 - 4. Work performed by an MBE or WBE in a scope of work other than that in which the MBE or WBE is currently certified.

IX. Methods for Securing Participation of MBE/WBEs and Good Faith Efforts.

- A. A Proposer is required to make good faith efforts to achieve the MBE/WBE goals. Good faith efforts are efforts that, given all relevant circumstances, a Proposer actively and aggressively seeking to meet the goals can reasonably be expected to make. Good faith efforts must be made before the Proposer submits a Contractor Utilization Plan/Request for Waiver (CREO KC Form 8). However, efforts made to increase participation of MBEs and WBEs following submission of the CUP can be considered as evidence of good faith efforts to meet the goals.
- B. In evaluating good faith efforts, the Director of CREO KC will consider whether the Proposer has performed the following, along with any other relevant factors:
1. 1. Advertised for at least 15 calendar days prior to the bid or proposal due date opportunities to participate in the contract in general circulation media, trade and professional association publications, small and minority business media, and publications of minority and women's business organizations which are included in a list along with their current contact information identified on the directory as the list of publications available to publish such advertisements, which list shall be updated by CREO KC no less than every three (3) months.
 2. Sent written notices at least fifteen (15) calendar days prior to the bid or proposal due date containing the information required in section (9) below, by certified mail, e-mail, or facsimile, to at least 80% of MBEs and WBEs which are included in a list along with their contact information identified on the directory as the list of organizations available to receive such notices, which list shall be updated by CREO KC no less than every three (3) months.
 3. Sent written notices, containing the information required by section (9) below, by certified mail, e-mail or facsimile, to at least 80% of MBEs and WBEs listed on the directory certified in the applicable scopes of work for the particular bid soliciting their participation in the contract at least 15 calendar days prior to the bid or proposal due date.
 4. Attempted to identify portions of the work for qualified MBE and/or WBE participation in order to increase the likelihood of meeting the goals, including breaking down contracts into economically feasible units that take into consideration the capacity of available MBEs/WBEs appearing on the CREO KC directory.
 5. At any time prior to submission of the CUP or submittal of a request for modification of a CUP, requested assistance in achieving the goals from the Director and acted on the Director's recommendations.
 6. Conferred with certified MBEs and WBEs which inquired about or responded to the bid solicitation and explained to such MBEs and WBEs the scope and requirements of the work for which their bids or proposals were solicited, and if not all certified MBEs and WBEs in the particular scopes listed on the directory have inquired about or responded to the bid solicitation for each scope of work, then contact by certified mail, e-mail or telephone the greater of ten (10) or 80% of additional certified MBEs and WBEs in the particular scopes of work listed on the directory and offer to confer with such MBEs and WBEs for such particular scope of work and request such MBEs

and WBEs to submit a proposal.

7. Attempted to negotiate in good faith with certified MBEs and WBEs which responded to the bid solicitation or those certified MBEs and WBEs that were conferred with as contemplated in section (6) above, and other qualified MBEs and WBEs, at the option of the bidder, proposer, or contractor, as applicable, to perform specific subcontracts; not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities by the bidder, proposer, or contractor; in the event an MBE or WBE is the low bid, but rejected as unqualified, the bidder, proposer, or contractor and the director or board, as applicable, shall provide sound reasons for rejecting such MBE or WBE.
 8. Attended pre-bid meeting when such meetings were indicated in the solicitation of bids or otherwise by the bidder, proposer, or contractor, as applicable or by the director provided the director provides written direction to the bidder, proposer, or contractor at the time the goals are recommended.
 9. Written notices and advertisements to be provided pursuant to sections (1), (2) and (3) above shall include the following information:
 - a. The bid due date;
 - b. The name of the project;
 - c. The address or general location of the project;
 - d. The location of plans and specifications for viewing;
 - e. Contact information of the prime contractor;
 - f. A general description of the scopes of work that are the subject of the solicitation;
 - g. The goals established for the applicable contract, and if the goals are still subject to board approval, then a statement that the goals as stated are preliminary and are subject to board approval;
 - h. If the project or any portion of the project is subject to prevailing wage then a statement that all or a portion of the project will be subject to the prevailing wage, as applicable; and if only a portion of the scopes are subject to prevailing wage, then identification of such scopes provided that such scopes are known as of the time of bid solicitation;
 - i. The date and time of any pre-bid meeting(s), if any, which have been scheduled by the bidder, proposer, or contractor as of the bid solicitation; and
 - j. Any other information deemed relevant by the bidder, proposer, or contractor, as applicable, or the director to the extent the director provides written direction to the bidder, proposer, or contractor of such additional information at the time the goals are recommended by the director.
- C. A Proposer will be required to give the City documentation to prove that it made good faith efforts. The Proposer will be contacted by the City with further instructions about

when this documentation must be submitted.

X. Modification of the Contractor Utilization Plan or Substitution of an MBE/WBE.

- A. A Proposer may need to substitute an MBE and/or WBE or request that the amount of MBE/WBE participation listed in its Contractor Utilization Plan be modified. Proposer must file a **Request for Modification or Substitution (CREO KC Form 11)** prior to **actual substitution and within a reasonable time after learning that a modification or substitution is necessary**. The Director may approve substitutions or modifications and upon approval, the modifications and substitutions will become an amendment to the Contractor Utilization Plan. Modifications or substitutions may be approved when:
1. The Director finds that the Proposer made and provided evidence of good faith efforts to substitute the MBE/WBE listed on the Contractor Utilization Plan with other certified MBE/WBEs for the scope of work or any other scope of work in the contract; and
 2. The Proposer or Contractor has not attempted intentionally to evade the requirements of the program and it is in the best interests of the City to allow a modification or substitution; and
 3. The Director also finds one of the following:
 - a. The listed MBE/WBE is non-responsive or cannot perform; or
 - b. The listed MBE/WBE has increased its previously quoted price to the bidder, proposer or contractor without a corresponding change in the scope of the work; or
 - c. The listed MBE/WBE has committed a material default or breach of its contract with the contractor; or
 - d. Requirements of the scope of work of the contract have changed and render subcontracting not feasible or not feasible at the levels required by the goals established for the contract; or
 - e. The listed MBE/WBE is unacceptable to the contracting department; or
 - f. The listed MBE/WBE thereafter had its certification revoked; or
- B. A modification shall not be made unless the modification or substitution has first been requested and approved by the Director.

XI. Appeals.

- A. In conformance with the Act, appeals may be made to the City Fairness in Construction Board or Fairness in Professional Services and Goods Board on the following:
1. The grant or denial of a Request for Waiver;
 2. Substitution for an MBE/WBE listed on a Contractor Utilization Plan;
 3. Modification of the percentage of MBE/WBE participation on a Contractor Utilization Plan;
 4. Liquidated Damages;

5. The amount of MBE/WBE credit the Contractor may receive for MBE/WBE participation identified in the contractor utilization plan.
- B. Any appeal must be filed in writing with the Director within fifteen (15) calendar days of notice of the determination. Mailing, faxing, personal delivery or posting at CREO KC of determinations shall constitute notice. The appeal shall state with specificity why the Proposer or Contractor believes the determination is incorrect
- C. Failure to file a timely appeal shall constitute a waiver of a Proposer's or Contractor's right to appeal such determination and such person shall be estopped to deny the validity of any determination which could have been timely appealed.

XII. Access to Documents and Records.

- A. By submitting a proposal, each Proposer agrees to permit the City, its duly authorized agents or employees, access at all reasonable times to all books and business records of Proposer as may be necessary to ascertain compliance with the requirements of this document and the Act, within ten (10) calendar days of the date of the written request.
- B. All Proposers agree to cooperate with the contracting department and CREO KC in studies and surveys regarding the MBE/WBE program.

XIII. Miscellaneous.

- A. A Proposer or Contractor shall bear the burden of proof with regard to all issues on appeal.
- B. In the event of any conflict between this document and the Program, the provisions of the Program shall control. The terms used in this document are defined in the Program.
- C. Oral representations are not binding on the City.
- D. The City Council may waive the requirements of this document and the Program and award the contract to the best proposer if the City Council determines a waiver is in the best interests of the City.

XIV. Liquidated Damages – Economic Equity & Inclusion Goals--MBE/WBE Program.

- A. If Contractor fails to achieve the economic equity & inclusion goals stated in its Contractor Utilization Plan, as amended, the City will sustain damages, the exact extent of which would be difficult or impossible to ascertain. Therefore, in order to liquidate those damages, the monetary difference between either (1) the amount of the MBE/WBE goals set forth in the Contractor Utilization Plan, as amended, or (2) the goals established (whichever is lower) and the amount actually paid to qualified MBEs and WBEs for performing a commercially useful function will be deducted from the Contractor's payments as liquidated damages. In determining the amount actually paid to qualified MBEs and WBEs, no credit will be given for the portion of participation that was not approved by the Director, unless the Director determines that the Contractor acted in good faith. No deduction for liquidated damages will be made when, for reasons beyond the control of the Contractor, the MBE/WBE participation stated in the Contractor Utilization Plan, as amended and approved by the Director is not met.

[Specifier: The remainder of this document is applicable ONLY IF the RFQ/P is for a construction project that the City estimates will require more than 800 construction labor hours and cost in excess of \$300,000.00 to construct. If this is not applicable to your RFQ/P, delete the remainder of this document. Be sure to delete this note before printing]

PART B. CONSTRUCTION EMPLOYMENT PROGRAM REQUIREMENTS

(THIS PART IS APPLICABLE TO CITY CONSTRUCTION CONTRACTS ESTIMATED BY THE CITY PRIOR TO SOLICITATION AS REQUIRING MORE THAN 800 CONSTRUCTION LABOR HOURS AND COSTING IN EXCESS OF \$300,000.00.)

I. City's Construction Employment Program.

- A. The City has adopted a Construction Employment Program (Sections 3-501 through 3-525, Code of Ordinances) (the "Program") to implement the City's policy of supporting the fullest possible utilization of minority and women workers in the construction industry. A person or firm who is awarded a contract to construct, reconstruct, improve, enlarge or alter any fixed work that is estimated by the City prior to solicitation as requiring more than 800 construction labor hours, has an estimated costs that exceeds \$300,000.00, and involves the expenditure of public funds, is subject to company-wide construction employment goals. The minimum goals are currently set at 10% for minorities and 2% for women, but public recognition may be provided if the Proposer achieves at least twice the minimum participation. The successful Proposer may meet these company-wide goals by counting the Proposer's utilization of minorities and women throughout the Kansas City metropolitan statistical area.
- B. By submitting a proposal, the Proposer agrees, as a material term of the contract, to carry out the City's Construction Employment Program by making good faith efforts to utilize minority and women workers on the Proposer's job sites to the fullest extent consistent with submitting the best proposal to the City. Proposer agrees that the Program is incorporated into this document and agrees to follow the Program. Although it is not a requirement that a Proposer in fact meet or exceed the construction employment goals to receive approval from CREO KC, a Proposer not doing so is required to objectively demonstrate to CREO KC that good faith efforts have been made.
- C. The following CREO KC Forms are to be used for Construction Employment Program submittals using the B2GNow Diversity Management System:
 1. Project Workforce Monthly Report
 2. Company-Wide Workforce Monthly Report

II. Required Monthly Submissions during Term of Contract.

- A. Proposer must submit the following documents on a monthly basis if awarded the contract:
 1. **Project Workforce Monthly Report.** This report is contract specific. Two copies of this report must be submitted to the Director by the 15th of each month using the B2GNow Diversity Management System. The first copy will be utilized to report the Proposer's own workforce compliance data with regard to the City's construction contract. The

second copy will be utilized to report consolidated workforce compliance data for every subcontractor retained on the City's construction contract. Failure to submit timely reports may result in delays in processing of current and future contract approvals and payment applications.

2. **Company-Wide Workforce Monthly Report.** This report is not contract specific; it is used to report on the utilization of females and minorities, by trade, company-wide. Two copies of this report must be submitted to the Director by the 15th of each month using the B2GNow Diversity Management System. The first copy will be utilized to report the Proposer's own workforce compliance data with regard to every contract (both privately and publicly funded) Proposer has in progress throughout the Kansas City metropolitan statistical area. The second copy will be utilized to report consolidated workforce compliance data for every subcontractor retained by Proposer on every contract Proposer has in progress throughout the Kansas City metropolitan statistical area. Failure to submit timely reports may result in delays in processing of current and future contract approvals and payment applications.

III. Submittal Required for Final Contract Payment.

- A. The last Project Workforce Monthly Report(s) and Company-Wide Workforce Monthly Report(s) shall serve as the final reports and must be submitted before final payment will be made and/or retainage released. Proposer shall note the submittal of the final reports by notation in the box entitled "Final Cumulative Report"

IV. Methods for Securing Workforce Participation and Good Faith Efforts.

- A. A Proposer is required to make good faith efforts to achieve the construction employment goals. If a Proposer will be unable to secure enough minority and female participation to meet or exceed the construction employment goals, a Proposer must, within a reasonable time after so learning, request a waiver or modification of the goals by the Director of CREO KC. The Director will examine the Proposer's request and the Proposer's documentation of good faith efforts and grant or deny a waiver or modification. The Director will grant a waiver or modification only if the Proposer has made good faith efforts to secure minority and female participation.
- B. In evaluating good faith efforts, the Director will consider whether the Proposer has performed the following:
 1. For those Proposers that are not signatories to a collective bargaining agreement with organized labor:
 - a. Requested in writing the assistance of the Director with respect to efforts to promote the utilization of minorities and women in the workforce and acted upon the Director's recommendations; and
 - b. Advertised in minority or women trade association newsletters and/or minority or women owned media at least 15 calendar days prior to the utilization of any construction services on the city construction contract and used terminology that sufficiently describes the work available, the pay scale, the application process, and anything else that one might reasonably be expected to be informed of relevant to the position being advertised; and

- c. Maintained copies of each advertisement and a log identifying the publication and date of publication; and
 - d. Conducted real and substantial recruitment efforts, both oral and written, targeting resident, minority and women community-based organization, schools with a significant minority student population, and training organizations serving the recruitment area; and
 - e. Established and maintained a current list of resident, minority and women recruitment sources, providing written notification to the recruitment sources of available employment opportunities, and maintained records of the notices submitted to the organizations and any responses thereto; and
 - f. Maintained a current file for the time period of the city construction contract with the name, address, and telephone number of each resident, minority and woman job applicant, the source of the referral, whether or not the person was hired, and in the event that the applicant was not hired, the reason therefore; and
 - g. Promoted the retention of minorities and women in its workforce with the goals of achieving sufficient annual hours for minorities and women to qualify for applicable benefits; and
 - h. Required by written contract that all subcontractors comply with the above efforts.
2. For those Proposers that are signatories to collective bargaining agreements with organized labor:
- a. Supported the efforts of the Joint Apprenticeship Training Committee (JATC), a joint effort of Labor Unions and contractors, or some other apprenticeship program, whose purpose is to recruit, train and employ new workers for a full-time career in the construction industry; and
 - b. Requested in writing from each labor union representing crafts to be employed that:
 - i. the labor union make efforts to promote the utilization of residents of the City, minorities and women in the workforce; and
 - ii. the labor union identify any residents of the City, minorities and women in its membership eligible for employment; and
 - iii. the JATC take substantial and real steps to increase the participation of minorities in the union apprenticeship programs in the aggregate to 30% by 2011 and encourage other labor unions to do the same; and
 - iv. the JATC take substantial and real steps to increase the participation of women in the union apprenticeship programs in the aggregate to 5% by 2011 and encourage other labor unions to do the same; and
 - v. the JATC partner with workforce preparedness programs, community-based organizations, employment referral programs and school-sponsored programs to accomplish these goals.

- c. Collaborated with labor unions in promoting mentoring programs intended to assist minorities and women in increasing retention with the goals of achieving sufficient annual hours to qualify for applicable benefits; and
 - d. Maintained a current file with the name, address, and telephone number of each resident, minority and women worker identified by the labor union, whether or not the person was hired, and in the event the person was not hired, the reason therefore.
 - e. To the extent the good faith efforts applicable to Proposers that are signatories to collective bargaining agreements with organized labor conflict with the procedures implemented by the Proposer in order to comply with the relevant bargaining agreement, the Proposer shall substitute other procedures as may be approved by the Director in writing.
- C. A Proposer will be required to give the City documentation to prove that it made good faith efforts. The Proposer will be contacted by the City with further instructions about when this documentation must be submitted.

V. Appeals.

- A. In conformance with the Program, appeals may be made to the Construction Workforce Board on the following:
 - 1. Determinations by the Director that a contractor did not meet the construction employment goals and did not make a good faith effort to meet the goals;
 - 2. Recommendations by the Director to assess liquidated damages;
 - 3. Recommendation by the Director that a contractor be declared ineligible to receive any city construction contract for a period of time up to one year.
- B. Any appeal must be filed in writing with the Director within ten (10) working days of notice of the recommendation or determination. The appeal shall state with specificity why the Proposer believes the recommendation or determination is incorrect.
- C. Failure to file a timely appeal shall constitute a waiver of a Proposer's right to appeal such determination or recommendation and such person shall be estopped to deny the validity of any order, determination, recommendation or action of CREO KC which could have been timely appealed.

VI. Access to Documents and Records.

- A. By submitting a proposal, each Proposer agrees to permit the City, its duly authorized agents or employees, access at all reasonable times to all books and business records of Proposer as may be necessary to ascertain compliance with the requirements of this document and the Program, within ten (10) days of the date of the written request. Each Proposer further agrees to require, if awarded the contract, that every subcontractor permit the City the same access to documents and records.
- B. All Proposers agree to cooperate with the contracting department and CREO KC in studies and surveys regarding the construction employment program.

VII. Miscellaneous.

- A. A Proposer shall bear the burden of proof with regard to all issues on appeal.
- B. The successful Proposer may be required to meet with the Director of CREO KC or the Director's designee for the purpose of discussing the construction employment program, the Proposer's efforts to realize the goals, and any other problems and/or issues affecting the realization of the goals or the program in general.
- C. In the event of any conflict between this document and the Program, the provisions of the Program shall control. The terms used in this document are defined in the Program.
- D. Oral representations are not binding on the City.

VIII. Liquidated Damages; Suspension – Workforce Program.

- A. If a Proposer fails to achieve the construction employment goals without having previously obtained a waiver or modification of those goals, the City will sustain damages, the exact extent of which would be difficult or impossible to ascertain. These damages are magnified if the failure to abide by the requirements of the Workforce Program is recurring. Therefore, in order to liquidate those damages, City shall be entitled to deduct and withhold the following amounts:

If Proposer failed to meet or exceed the minimum employment goals or otherwise establish that Proposer is entitled to a waiver under circumstances in which Proposer has failed to meet or exceed the goals on one prior occasion within the twenty-four month period immediately preceding the completion of the work under the Contract, the sum of three thousand dollars (\$3,000.00).

If Proposer failed to meet or exceed the minimum employment goals or otherwise establish that Proposer is entitled to a waiver under circumstances in which Proposer has failed to meet or exceed the goals on two or more prior occasions within the twenty-four month period immediately preceding the completion of the work under the Contract, the sum of seven thousand dollars (\$7,000.00).

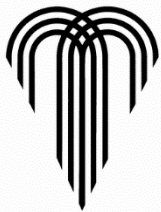
- B. In addition, Proposer shall be required to attend mandatory compliance training or be declared ineligible to contract with the City for a term provided herein, and as authorized by City's Code of Ordinances:

If Proposer failed to meet or exceed the minimum employment goals or otherwise establish that Proposer is entitled to a waiver under circumstances in which Proposer has not previously failed to meet or exceed the goals within the twenty-four month period immediately preceding the completion of the work under the Contract, Proposer shall be required to attend a mandatory training class on Workforce Program compliance.

If Proposer failed to meet or exceed the minimum employment goals or otherwise establish that Proposer is entitled to a waiver under circumstances in which Proposer has failed to meet or exceed the goals on one prior occasion within the twenty-four month period immediately preceding the completion of the work under the Contract, Proposer shall be suspended from participating, either as a contractor or subcontractor, on any future contract with the City for a period of thirty (30) days. Proposer waives any right to invoke any proceeding or procedure under Sections 3-321 of City's Code of Ordinances with regards to any

suspension arising hereunder.

If Proposer failed to meet or exceed the minimum employment goals or otherwise establish that Proposer is entitled to a waiver under circumstances in which Proposer has failed to meet or exceed the goals on two or more prior occasions within the twenty-four month period immediately preceding the completion of the work under the Contract, Proposer shall be suspended from participating, either as a contractor or subcontractor, on any future contract with the City for a period of six (6) months. Proposer waives any right to invoke any proceeding or procedure under Sections 3-321 of City's Code of Ordinances with regards to any suspension arising hereunder.



CONTRACTOR UTILIZATION PLAN/REQUEST FOR WAIVER

Project Number _____

Project Title _____

(Department Project)

Department

(Bidder/Proposer)

STATE OF _____)

) ss

COUNTY OF _____)

I, _____, of lawful age and upon my oath state as follows:

1. This Affidavit is made for the purpose of complying with the provisions of the MBE/WBE submittal requirements on the above project and the MBE/WBE Program and is given on behalf of the Bidder/Proposer listed below. It sets out the Bidder/Proposer's plan to utilize MBE and/or WBE contractors on the project.
2. The project target goals are _____% **MBE** and _____% **WBE**.
3. Bidder/Proposer assures that it will utilize a minimum of the following percentages of MBE/WBE participation in the above project:

BIDDER/PROPOSER PARTICIPATION: _____% **MBE** _____%
WBE

POST-BID/POST-RFP ESTIMATED BUDGET: \$ _____

4. The following are the M/WBE subcontractors whose utilization Bidder/Proposer warrants will meet or exceed the above-listed Bidder/Proposer Participation. Bidder/Proposer warrants that it will utilize the M/WBE subcontractors to provide the goods/services described in the applicable Letter(s) of Intent to Subcontract, copies of which shall collectively be deemed incorporated herein). (*All firms must currently be certified by Kansas City, Missouri*)

Name of M/WBE Firm _____

Address _____

Telephone No. _____

I.R.S. No. _____



Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____

Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____

Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____

Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____

Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____

(List additional M/WBEs, if any, on additional page and attach to this form)

4. The following is a breakdown of the percentage of the total contract amount that Bidder/Proposer agrees to pay to each listed M/WBE:

MBE/WBE BREAKDOWN SHEET

MBE FIRMS:

Name of MBE Firm	Supplier/Broker/Contractor	Subcontract Amount*	Weighted Value**	% of Total Contract
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

TOTAL MBE \$ / TOTAL MBE %:

\$ _____ %

WBE FIRMS:

Name of WBE Firm	Supplier/Broker/Contractor	Subcontract Amount*	Weighted Value**	% of Total Contract
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

TOTAL WBE \$ / TOTAL WBE %:

\$ _____ %

*“Subcontract Amount” refers to the dollar amount that Bidder/Proposer has agreed to pay each M/WBE subcontractor as of the date of contracting and is indicated here solely for the purpose of calculating the percentage that this sum represents in proportion to the total contract amount. Any contract amendments and/or change orders changing the total contract amount may alter the amount due an M/WBE under their subcontract for purposes of meeting or exceeding the Bidder/Proposer participation.

**“Weighted Value” means the portion of the subcontract amount that will be credited towards meeting the Bidder/Proposer participation. See CREO KC Forms and Instructions for allowable credit and special instructions for suppliers.

- Bidder/Proposer acknowledges that the monetary amount to be paid each listed M/WBE for their work, and which is approved herein, is an amount corresponding to the percentage of the total contract amount allocable to each listed M/WBE as calculated in the MBE/WBE Breakdown Sheet. Bidder/Proposer further acknowledges that this amount may be higher than the subcontract amount listed therein as change orders and/or amendments changing the total contract amount may correspondingly increase the amount of compensation due an M/WBE for purposes of meeting or exceeding the Bidder/Proposer participation



6. Bidder/Proposer acknowledges that it is responsible for considering the effect that any change orders and/or amendments changing the total contract amount may have on its ability to meet or exceed the Bidder/Proposer participation. Bidder/Proposer further acknowledges that it is responsible for submitting a Request for Modification or Substitution if it will be unable to meet or exceed the Bidder/Proposer participation set forth herein.
7. If Bidder/Proposer has not achieved both the M/WBE goal(s) set for this Project, Bidder/Proposer hereby requests a waiver of the MBE and/or WBE goal(s) that Bidder/Proposer has failed to achieve
8. Bidder/Proposer will present documentation of its good faith efforts, a narrative summary detailing its efforts and the reasons its efforts were unsuccessful when requested by the City.
9. I hereby certify that I am authorized to make this Affidavit on behalf of the Bidder/Proposer named below and who shall abide by the terms set forth herein:

Bidder/Proposer primary contact: _____

Address: _____

Phone Number: _____

Facsimile number: _____

E-mail Address: _____

By: _____

Title: _____

Date: _____

(Attach corporate seal if applicable)

Subscribed and sworn to before me this _____ day of _____, 20____.

My Commission Expires: _____

Notary Public





LETTER OF INTENT TO SUBCONTRACT

Check one:

Original LOI: ☐

Updated LOI: ☐

Project Name/Title _____

Project Location/Number _____

PART I: Prime Contractor _____ agrees to enter into a contractual agreement with M/W/DBE Subcontractor _____ who will provide the following goods/services in connection with the above-reference contract: [Insert a brief narrative describing goods/services to be provided. Broad Categorizations (e.g., "electrical," "plumbing," etc.) or the listing of NAICS Codes in which M/W/DBE Subcontractor is certified are insufficient and may result in denial of this Letter of Intent to Subcontract.]

for an estimated amount of \$ _____ (or _____ % of the total estimated contract value.)

M/WBE Vendor type: ☐ Subcontractor/manufacturer (counts as 100% of contract value towards goals)
☐ Supplier (counts as 60% of the total dollar amount paid or to be paid by a prime contractor for supplies or goods towards goals)
☐ Broker (counts as 10% of the total dollar amount paid or to be paid by a prime contractor for supplies or goods towards goals)

M/W/DBE Subcontractor is, to the best of Prime Contractor's knowledge, currently certified with the City of Kansas City's Civil Rights & Equal Opportunity Department to perform in the capacities indicated herein. Prime Contractor agrees to utilize M/W/DBE Subcontractor in the capacities indicated herein, and M/W/DBE Subcontractor agrees to work on the above-referenced contract in the capacities indicated herein, contingent upon award of the contract to Prime Contractor.

PART 2: This section is to be completed by the M/W/DBE subcontractor listed above. Please attach additional sheets as needed for more than one intended sub-tier contract. **IMPORTANT: Falsification of this document will result in denial and other remedies available under City Code.**

Select one: ☐ The M/W/DBE Subcontractor listed above **IS NOT** subcontracting any portions of the above-stated scope of work(s). (Continue to Part 3.)
☐ The M/W/DBE Subcontractor listed above **IS** subcontracting certain portions of the above stated scope of work(s) to:

(1) Company name: _____

Full address: _____

Street number and name

City, State and Zip Code

Primary contact: _____

Name

Phone

a) This subcontractor is (select one): ☐ MBE ☐ WBE ☐ DBE N/A

i: If this subcontractor is an M/W/DBE certified with the City of Kansas City, Missouri, a separate Letter of Intent must be attached to this document.

ii. If this subcontractor is NOT a certified M/W/DBE certified with the City of Kansas City, Missouri, the firm must still be listed for reporting purposes but a Letter of Intent is not required.

b) Scope of work to be performed: _____

c) The dollar value of this agreement is: _____



PART 3:

**NOTE: SIGNATURES AND NOTARIZATIONS REQUIRED FOR NEW LETTERS OF INTENT (LOI);
SIGNATURES ONLY FOR UPDATED LOI (ADDING VALUE TO EXISTING CONTRACT).**

PRIME CONTRACTOR BUSINESS NAME: _____

Signature: Prime Contractor

Print Name

Title

Date

State of _____)

County of _____)

I, _____, state that the above and foregoing is based on my best knowledge and belief.

Subscribed and sworn to before me, a notary public, on this
day of _____, 20____

My Commission Expires: _____

Notary Public

STAMP:

MWDBE SUBCONTRACTOR BUSINESS NAME: _____

Signature: Subcontractor

Print Name

Title

Date

State of _____)

County of _____)

I, _____, state that the above and foregoing is based on my best knowledge and belief.

Subscribed and sworn to before me, a notary public, on this
day of _____, 20____

My Commission Expires: _____

Notary Public

STAMP:

TIMETABLE FOR MBE/WBE UTILIZATION

(This form should be submitted to the City after contract award.)

I, _____, acting in my capacity as _____
(Name) (Position with Firm)
of _____, with the submittal of this Timetable, certify that
(Name of Firm)
the following timetable for MBE/WBE utilization in the fulfillment of this contract is correct and
true to the best of my knowledge.

ALLOTTED TIME FOR THE COMPLETION OF THIS CONTRACT

(Check one only)

15 days	_____	75 days	_____	135 days	_____
30 days	_____	90 days	_____	150 days	_____
45 days	_____	105 days	_____	165 days	_____
60 days	☐	120 days	☐	180 days	☐
Other	(Specify)				

Throughout _____ Beginning 1/3 _____
Middle 1/3 _____ Final 1/3 _____
Beginning 1/3 _____% Middle 1/3 _____% Final 1/3 _____%

PLEASE NOTE: Any changes in this timetable require approval of the Civil Rights & Equal Opportunity Department in advance of the change.

If you have any questions regarding the completion of this form, please contact the Civil Rights & Equal Opportunity Department at: (816) 513-1836.

(Signature)

(Position with Firm)

(Date)





REQUEST FOR MODIFICATION OR SUBSTITUTION

(This Form **must** be submitted to CREO KC to request substitutions for an MBE/WBE listed in the Contractor Utilization Plan or for modification of the amount of MBE/WBE participation listed in the Contractor Utilization Plan. This Form shall be an amendment to the Contractor Utilization Plan.)

BIDDER/PROPOSER/CONTRACTOR: _____

ADDRESS: _____

PROJECT NUMBER OR TITLE: _____

AMENDMENT/CHANGE ORDER NO: (if applicable) _____

Project Goals:	_____ % MBE	_____ % WBE
Contractor Utilization Plan:	_____ % MBE	_____ % WBE

1. I am the duly authorized representative of the above Bidder/Contractor/Proposer and am authorized to request this substitution or modification on behalf of the Bidder/Contractor/Proposer.

2. I hereby request that the Director of CREO KC recommend or approve: (check appropriate space(s))

a. ☐ A substitution of the certified MBE/WBE firm _____,
(Name of new firm)
to perform _____,
(Scope of work to be performed by new firm)

for the MBE/WBE firm _____ which is currently
(Name of old firm)
listed on the Bidder's/Contractor's/Proposer's Contractor Utilization Plan to
perform the following scope of work: _____.
(Scope of work of old firm)

b. ☐ A modification of the amount of MBE/WBE participation currently listed on the Bidder's/Contractor's/Proposer's Contractor Utilization Plan from
_____ % MBE _____ % WBE (Fill in % of MBE/WBE Participation currently listed on Contractor Utilization Plan)

TO

_____ % MBE _____ % WBE (Fill in New % of MBE/WBE Participation requested for Contractor Utilization Plan)

- c. Attach 00450.01 Letter of Intent to Subcontract letter for each new MBE/WBE to be added.
- d. Attach a copy of the most recent 00485.01 or on-line M/WBE Monthly Utilization Report

3. Bidder/Contractor/Proposer states that a substitution or modification is necessary because: (check applicable reason(s))



☐ The MBE/WBE listed on the Contractor Utilization Plan is non-responsive or cannot perform.

☐ The MBE/WBE listed on the Contractor Utilization Plan has increased its previously quoted price without a corresponding change in the scope of work.

☐ The MBE/WBE listed on the Contractor Utilization Plan has committed a material default or breach of its contract.

___ Requirements of the scope of work of the contract have changed and make subcontracting not feasible or not feasible at the levels required by the goals established for the contract.

___ The MBE/WBE listed on the Contractor Utilization Plan is unacceptable to the City contracting department.

___ Bidder/Contractor/Proposer has not attempted intentionally to evade the requirements of the Act and it is in the best interests of the City to allow a modification or substitution.

4. The following is a narrative summary of the Bidder's/Contractor's/Proposer's good faith efforts exhausted in attempts to substitute the MBE/WBE firm named above which is currently listed on the Contractor Utilization Plan with other qualified, certified MBE/WBE firms for the listed scope of work or any other scope of work in the project:

5. Bidder/Proposer/Contractor will present documentation when requested by the City to evidence its good faith efforts.

Dated: _____

(Bidder/Proposer/Contractor)

By: _____
(Authorized Representative)



Company Name: _____

Company Address: _____

Company City, State, Zip: _____

Name of Person Completing Report: _____

Phone Number: _____

Email: _____

Prime's Name: _____

KCMO Project Name: _____

KCMO Project Number: _____

Today's Date: _____

City Department: _____

- 1) Each applicable Prime Contractors **must complete this form for its company within 48 hours of bid opening**
- 2) The Civil Rights & Equal Opportunity Department strongly recommends usage of the electronic version of this form. This form may be obtained by visiting www.kcmo.gov website. The website is enabled with a "search" function on the Home page on the right corner. Select the magnifying glass and type in the search field "Contract Central". Select the first result, then click on the link to Standard City Contract Forms. Scroll down to Construction Contractor Employee Identification Report and click the link to open this document. Complete the fields in the Employee section; the Official Use Only section will automatically populate. NOTE: This form can be printed and attached to other required Bid documents.
- 3) All subcontractors shall be required to complete this form and submit to the Prime Contractor. For each subcontractor, the Prime must submit this form to City at least at least (10) days prior to the date the subcontractor shall commence work under a city construction contract.
- 4) Complete this form if you are the Prime contractor on a City construction project estimated over **\$300,000 & over 800 man hours**.
- 5) Complete this form with data from your **current construction workforce** (no office personnel).
- 6) Prime contractor is responsible to ensure subcontractor completes this form as required in #3 above.

KCMO		KCMO							
Females	Resident	Males	Resident	Foreman/Supervisor	Journeyman	Apprentice	Operating Engineer	Journeyman	Apprentice
African American	0 0	African American	##### 0		0	--		0	0
Asian/Pacific Islander American	0 0	Asian/Pacific Islander American	##### 0	Asbestos Worker	0	0	Painter	0	0
Caucasian American	0 0	Caucasian American	##### 0	Boilermaker	0	0	Pipe Fitter/Plumber	0	0
Hispanic/Latino American	0 0	Hispanic/Latino American	##### 0	Bricklayer	0	0	Plasterer	0	0
Native American	0 0	Native American	##### 0	Carpenter	0	0	Roofer	0	0
Other	0 0	Other	##### 0	Cement Mason	0	0	Sheet Metal	0	0
	0 0		##### 0	Electrician	0	0	Sprinkler Fitter	0	0
				Elevator Constructor	0	0	Truck Driver	0	0
		Number of KCMO Residents	0	Glazier	0	0	Welder	0	0
		Number of Journeyman	0	Iron Worker	0	0	Other	0	--
		Number of Apprentice	0	Laborer	0	0		0	0
					0	0			

KCMO Project Number: 0

[illegible]

Company Name: 0

KCMO Project Name: 0

KCMO Project Number: 0

	Name		Job Title (use drop down menu)	Address	City	State	Zip Code	KCMO Resident	Gender	Ethnicity
	Last	First								
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Company Name: 0

KCMO Project Name: 0

KCMO Project Number: 0

	Name		Job Title (use drop down menu)	Address	City	State	Zip Code	KCMO Resident	Gender	Ethnicity
	Last	First								
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AFFIDAVIT OF TRAINING PROGRAM

This form must be submitted with 48 hours of Bid Opening

Bidder _____

Project Title and Number _____

STATE OF MISSOURI)
) ss:

COUNTY OF _____)

After being duly sworn the person whose name and signature appears below hereby states under penalty of perjury that:

1. I am the duly authorized officer of the business indicated above ("Bidder") and I make this affidavit on behalf of Bidder.
2. Bidder certifies that it presently participates in a training program that facilitates entry into the construction industry and which may include an on-the-job or in-house training program, further described as follows:

(attach additional pages, if necessary)

3. If requested by the City, Bidder agrees to provide City further documentation of, or other information about, this training program within 48 hours of the request.
4. Bidder acknowledges that failure to submit this form to the City within 48 hours of the Bid Opening will automatically render its bid non-responsive.

I am authorized to make this Affidavit on behalf of the Bidder named below as:

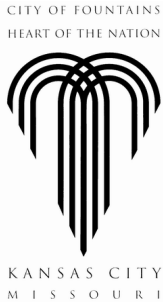
_____ of _____
(Title) (Name of Bidder)

Dated: _____ By: _____
(Affiant)

Subscribed and sworn to before me this _____ day of _____, 20____.

My Commission Expires: _____
Notary Public





Pre Contract Bidder's Certification

Project Number _____

Project Title _____

STATE OF _____)
) SS
COUNTY OF _____)

Before me, the undersigned authority, personally appeared, who, being by me duly sworn deposed as follows:

I am authorized to make this affidavit on behalf of the named Bidder. I am of sound mind, capable of making this affidavit, and personally acquainted with the facts herein stated:

A. Bidder is current on payment of its Federal and State Income tax withholding and unemployment insurance payments, either in Missouri for companies doing business in Missouri, or in the state in which Bidder has its principal office; and

B. Bidder declares one of the following, regarding all work performed two (2) years immediately preceding the date of the Bid (check one):

☐ Contract by contract listing of all of Bidder's written notices of violations of any Federal or State prevailing wage statute in which prevailing wage penalties were assessed against the Bidder or paid by the Bidder (Complete and attach additional sheets if necessary):

1. _____

2. _____

3. _____

☐ There have been no written notices of violations of any Federal or State prevailing wage statute in which prevailing wage penalties were assessed against the Bidder or paid by the Bidder.

C. Bidder is currently in good standing with the Missouri Secretary of State or Bidder has filed a Registration of Fictitious Name with the Missouri Secretary of State.

(Bidder's Name)

(Date)

Signature of Person Making This Affidavit

In witness whereof, I have hereunto subscribed my name and affixed my official seal this ____ day
of _____, 20__.

EMPLOYEE ELIGIBILITY VERIFICATION AFFIDAVIT

(Required for any contract with the City of Kansas City, Missouri in excess of \$5,000.00)

STATE OF _____)
) ss
COUNTY OF _____)

On this _____ day of _____, 20____, before me appeared _____, personally known by me or otherwise proven to be the person whose name is subscribed on this affidavit and who, being duly sworn, stated as follows:

I am of sound mind, capable of making this affidavit, and personally swear or affirm that the statements made herein are truthful to the best of my knowledge. I am the _____ (title) of _____ (business entity) and I am duly authorized, directed or empowered to act with full authority on behalf of the business entity in making this affidavit.

I hereby swear or affirm that the business entity does not knowingly employ any person in connection with the contracted services who does not have the legal right or authorization under federal law to work in the United States as defined in 8 U.S.C. § 1324a(h)(3).

I hereby additionally swear or affirm that the business entity is enrolled in an electronic verification of work program operated by the United States Department of Homeland Security (E-Verify) or an equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, under the Immigration Reform and Control Act of 1986, and that the business entity will participate in said program with respect to any person hired by the business entity to perform any work in connection with the contracted services. I have attached hereto documentation sufficient to establish the business entity's enrollment and participation in the required electronic verification of work program.

I am aware and recognize that unless certain contractual requirements are satisfied and affidavits obtained as provided in Section 285.530, RSMo, the business entity may face liability for violations committed by its subcontractors, notwithstanding the fact that the business entity may itself be compliant.

I acknowledge that I am signing this affidavit as the free act and deed of the business entity and that I am not doing so under duress.

Affiant's signature

Subscribed and sworn to before me this _____ day of _____, 20____.

Notary Public

My Commission expires:



CONTRACTOR AFFIDAVIT FOR FINAL PAYMENT

Project Number _____

Project Title _____

STATE OF _____)
)SS
COUNTY OF _____)

The Undersigned, _____ of lawful
(Name)

age, being first duly sworn, states under oath as follows:

1. I am the _____ of _____ who is the general
(Title) (CONTRACTOR)
CONTRACTOR for the CITY on Project No. _____ and Project Title _____.
2. All payrolls, material bills, use of equipment and other indebtedness connected with the Work for this Project have been paid and all Claims of whatever nature have been satisfied, as required by the Contract.
3. (✓) ☐ Prevailing wage does not apply; or
(✓) ☐ All provisions and requirements set forth in Chapter 290, Section 290.210 through and including 290.340, Missouri Revised Statutes, pertaining to the payment of wages to workmen employed on public works projects have been fully satisfied and there has been no exception to the full and complete compliance with these provisions and requirements and the Annual Wage Order contained in the Contract in carrying out the Contract and Work. CONTRACTOR has fully complied with the requirements of the prevailing wage law as required in the Contract and has attached affidavits from all Subcontractors on this Project, regardless of tier, affirming compliance with the prevailing wage law as stipulated in the Contract.
4. I hereby certify that (a) at project completion and pursuant to contractor's final request for payment, contractor achieved (____%) Minority Business Enterprise (MBE) participation and (____%) Women Business Enterprise (WBE) participation on this contract, and (b) listed herein are the names of all certified M/WBE subcontractors, regardless of tier, with whom I, or my subcontractors contracted.

1. Name of MBE/WBE Firm _____
Address _____

Telephone Number (_____) _____
IRS Number _____
Area/Scope*of Work _____
Subcontract Final Amount _____

2. Name of MBE/WBE Firm _____
Address _____

Telephone Number (_____) _____
IRS Number _____
Area/Scope*of Work _____
Subcontract Final Amount _____

List additional subcontractors, if any, on a similar form and attach to the bid.

Supplier** Final Amount: _____

*Reference to specification sections or bid item number.

- (✓) ☐ Met or exceeded the Contract utilization goals; or
 (✓) ☐ Failed to meet the Contract utilization goals (attach waiver, substitution or modification); or
 (✓) ☐ No goals applied to this Project.

5. CONTRACTOR certifies that each Subcontractor has received full payment for its respective work in connection with the Contract.

6. If applicable, I hereby certify that (1) at project completion and pursuant to contractor's final request for payment, contractor achieved, company-wide, at least ten percent (10%) minority workforce participation and two percent (2%) women workforce participation and (2) a true and accurate copy of my final project workforce monthly report is attached. **NOTE: This paragraph is only applicable if you completed a construction contract that was estimated by the City, prior to solicitation, as requiring more than 800 construction labor hours and costing in excess of \$300,000.00. If applicable you MUST attach copies of your final monthly workforce reports.**

7. This affidavit is made in behalf of the CONTRACTOR for the purpose of securing from Kansas City, Missouri, the certification of completion of the Project and receiving payment therefore.

8. If the Contract amount exceeded \$150,000, CONTRACTOR has submitted proof of compliance with the City tax ordinances administered by the City's Commissioner of Revenue and has on file proof of tax compliance from all Subcontractors. If the Contract term exceeded one (1) year, CONTRACTOR has provided proof of compliance with the City tax ordinances administered by the City's Commissioner of Revenue prior to receiving final payment and has on file proof of tax compliance from all Subcontractors prior to the Subcontractor receiving final payment from CONTRACTOR.

CONTRACTOR _____

By _____
 (Authorized Signature)

Title _____

On this _____ day of _____, _____, before me
 appeared _____, to me personally known to be the
 _____ of the _____,

and who executed the foregoing instrument and acknowledged that (s)he executed the same on behalf of
 _____ as its free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal on the day and year first above written.

My commission expires:

 Notary Public



SUBCONTRACTOR AFFIDAVIT FOR FINAL PAYMENT

Project Number _____

Project Title _____

STATE OF MISSOURI)

) ss:

COUNTY OF _____)

After being duly sworn the person whose name and signature appears below hereby states under penalty of perjury that:

1. I am the duly authorized officer of the business indicated below (hereinafter Subcontractor) and I make this affidavit on behalf of Subcontractor in accordance with the requirements set forth in Section 290.290, RSMo.

Subcontractor has completed all of the Work required under the terms and conditions of a subcontract as follows:

Subcontract with: _____, Contractor

Work Performed: _____

Total Dollar Amount of Subcontract and all Change Orders: \$ _____

City Certified ☐ MBE ☐ WBE ☐ DBE ☐ NA

List certifications:

2. Subcontractor fully complied with the provisions and requirements of the Missouri Prevailing Wage Law set forth in Sections 290.210, RSMo through 290.340, RSMo.

Business Entity Type:

- ☐ Missouri Corporation
☐ Foreign Corporation
☐ Fictitious Name Corporation
☐ Sole Proprietor
☐ Limited Liability Company
☐ Partnership
☐ Joint Venture
☐ Other (Specify) _____

Subcontractor's Legal Name and Address

Phone No. _____

Fax: _____

E:mail: _____

Federal ID No. _____

I hereby certify that I have the authority to execute this affidavit on behalf of Subcontractor.

By: _____
(Signature)

_____ (Print Name)

(Title)

(Date)

NOTARY

Subscribed and sworn to before me this _____ day of _____, 20____.

My Commission Expires: _____ By _____

Print Name

Title



DESIGN-BUILD GENERAL CONDITIONS

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ARTICLE 1 DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

1. **Addenda** - Written or graphic instruments issued prior to the opening of Bids that clarify, correct or change the Bidding Requirements or the Contract Documents.
2. **Agreement** - The written Contract between CITY and DESIGN-BUILDER governing the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.
3. **Application for Payment** - The form accepted by CITY's Representative which is to be used by DESIGN-BUILDER in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
4. **Asbestos** - Any material that contains more than one percent (1%) Asbestos and is friable or is releasing Asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
5. **Bid** - consists of (1) the Technical Approach Submittal of the DESIGN-BUILDER providing information on the design and construction Work to be undertaken by DESIGN-BUILDER for the Project and (2) the Price Submittal setting forth the firm, fixed price for which the DESIGN-BUILDER agrees to perform all of the Work required by the Contract Documents.
6. **Bidder** - One who submits a Bid directly to CITY, as distinct from a sub-bidder who submits a bid to a Bidder. If the CITY executes the Bid Form/Contract submitted by Bidder, the term "Bidder" shall mean DESIGN-BUILDER in both the Bidding Documents and Contract Documents unless the context clearly indicates otherwise.
7. **Bidding Documents** - The advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form/Contract, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).
8. **Bidding Requirements** - The advertisement or invitation to bid, Instructions to Bidders, Bid security, and the Bid Form/Contract with any supplements.
9. **Bonds** - Payment Bond and Performance and Maintenance Bond and other instruments of security.
10. **Calendar Day** - Any day shown on the calendar, including Saturdays, Sundays, and holidays.
11. **Change Order** - A written document issued by CITY that authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Contract.
12. **CITY/OWNER** - Kansas City, Missouri, a constitutionally chartered municipal corporation, with which DESIGN-BUILDER has entered into the Contract and for whom the Work is to be provided.

13. CITY's Project Design and Construction Criteria - are set forth in the Project Information portion of the Bidding Documents, and are those criteria developed by or for CITY to describe CITY's program requirements and objectives for the Project, including use, space, price, time, site, and expandability requirements, as well as submittal requirements and other requirements governing DESIGN-BUILDER's performance of the Work. CITY's Project Design and Construction Criteria may include, without limitation, survey information; interior space requirements; material quality standards; schematic layouts and conceptual design criteria; cost or budget estimates; design and construction schedules; site development requirements; provisions for utilities, storm water retention and disposal, and parking requirements; standards, codes, and design manuals required to be employed; aesthetic considerations; conceptual documents; design criteria and performance-based criteria and requirements; and other Project-specific technical materials and requirements.

14. CITY's Representative - Person or agency designated to act for the Director as provided in these Contract Documents.

15. Construction Documents - means the complete and detailed drawings and specifications prepared or furnished by the DOR that provide the detailed requirements for construction of the Project, including, without limitation, defining the quantities and qualities of, and the relationships among, all of the materials and equipment needed to construct and deliver to CITY a finished and functional Project that conforms to CITY's Project Design and Construction Criteria.

16. Consultant - a person, firm, or corporation having a contract with CITY to furnish services as an independent professional associate or consultant (including, without limitation, as a construction manager, construction advisor, or program manager) with respect to the Project and who is identified as such in the Supplementary Conditions. The term "Consultant" also includes such person's firms, or corporation's agents, officers, directors, or employees.

17. Contract - The entire and integrated written agreement between CITY and DESIGN-BUILDER concerning the Work that incorporates all Contract Documents. The Bid Form/Contract submitted by Bidder is the Contract between CITY and DESIGN-BUILDER upon execution by CITY. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

18. Contract Documents - The Contract Documents establish the rights and obligations of the parties and include the Contract, Addenda (which pertain to the Contract Documents), DESIGN-BUILDER's Bid Form/Contract (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Intent to Contract), the HRD Construction Project Instructions, the DESIGN-BUILDER's Utilization Plan/Request for Waiver, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Project Manual and the certification page(s) of the CITY and Consultant(s), together with approved project baseline schedule and amendments thereto and all Written Amendments, Change Orders, Work Change Directives, and CITY's written interpretations and clarifications issued on or after the Effective Date of the Contract, and approved Shop Drawings. Reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in

this Paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by CITY to DESIGN-BUILDER are not Contract Documents, except project schedules submitted by DESIGN-BUILDER and approved by CITY.

16. Contract Price - The money payable by CITY to DESIGN-BUILDER for completion of the Work in accordance with the Contract Documents as stated in the Agreement.

20. Contract Times - the number of calendar days or the date(s) stated in the Contract Documents for DESIGN-BUILDER to achieve certain Milestones, to achieve Substantial Completion of the Work, or portions of the Work, and to complete the entire Work such that DESIGN-BUILDER is entitled to receive final payment.

21. Day – Shall constitute a Calendar Day.

22. DESIGN-BUILDER - is the single entity or combination of persons and/or entities having the licensure, qualifications, and capability to perform as both a Designer of Record and a General Contractor on the Project, authorized by law to do business in Missouri and to perform or furnish professional design services and construction services for the Project, with whom CITY has entered into the Contract.

23. Designer of Record or DOR - is the qualified design professional member of DESIGN-BUILDER, holding a currently valid license or certificate of authority issued by the State of Missouri pursuant to Chapter 327, Revised Statutes of Missouri, who is to perform, provide for the performance of, oversee, and coordinate all of the professional design services for the Project, either directly, through employees or associates, or through agreements with Design Subconsultants; who shall review and approve all shop drawings issued on the Project; who shall coordinate the services of all design professionals and trade disciplines on the Project; who shall confirm the compliance of the Project as designed and constructed with the design intent of CITY's Project Design and Construction Criteria; and who shall bear ultimate responsibility for the accuracy, completeness, quality, and propriety of all professional design services performed on the Project.

24. Design Subconsultant means those qualified design professionals other than the DOR holding currently valid licenses or certificates of authority issued by the State of Missouri pursuant to Chapter 327, Revised Statutes of Missouri, who are retained by the DESIGN-BUILDER, the DOR, or the GC to perform or furnish professional design services for the Project.

25. Director - The term Director shall mean the duly appointed executive officer of a department of CITY who is empowered by the City Charter or by the City Council to enter into a contract on behalf of CITY, or to grant a permit for improvements to land owned by CITY. A Director is authorized to delegate this authority to a CITY employee so designated in writing.

26. Drawings - The drawings which graphically show the scope, extent and character of the Work to be furnished and performed by DESIGN-BUILDER and which have been prepared by DESIGN PROFESSIONAL and are included in the Contract Documents. Shop Drawings are not Drawings as so defined.

27. Effective Date of the Contract - The date indicated in the Contract on

which it becomes effective, but if no such date is indicated it means the date on which the Contract is fully executed by CITY.

28. General Contractor or GC - means that member of DESIGN-BUILDER, qualified to perform construction services for the Project in the City of Kansas City, Missouri, who is to perform or oversee the performance of the construction services for the Project, either directly or through agreements with Subcontractors; who shall oversee and coordinate the services of all trade disciplines on the Project; who shall ensure the compliance of the Project, as constructed, with the Project design documents; and who shall bear responsibility for the accuracy, completeness quality, and propriety of all construction services performed on the Project.

29. General Requirements - Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

30. Hazardous Environmental Condition - The presence at the Site of Asbestos, Lead-Based Paint, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

31. Hazardous Waste - The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

32. Laws or Regulations - Any and all applicable laws, rules, regulations, ordinances, codes and orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction.

33. Lead Architect - refers to that natural person, identified by DESIGN-BUILDER as such in the Key Personnel portion of the Technical Approach Submittal of DESIGN-BUILDER's Bid, who is undertaking primary responsibility for the performance and furnishing of all professional design services for the Project and for the other obligations of the DOR under the Contract Documents.

34. Lead-Based Paint - Any paint, varnish, stain, or other applied coating that has one (1) mg or more of lead per square centimeter. The terms "leaded paint" and "lead-containing paint" are synonymous with Lead-Based Paint.

35. Liens - Liens, charges, security interests or encumbrances upon real property or personal property.

36. Milestone - A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

37. Notice of Intent to Contract - The written notice by CITY to the apparent successful Bidder stating that upon compliance by that apparent successful Bidder with the conditions in the Bid Documents enumerated, within the time specified, and upon enactment of an appropriate ordinance or resolution, CITY will sign and deliver the Contract.

38. Notice to Proceed - The written notice given by CITY to DESIGN-BUILDER, establishing the date on which the Contract Time(s) will commence to run and on which date DESIGN-BUILDER shall begin to perform its obligations under the Contract Documents. The term includes, without limitation, the

Contract Notice to Proceed, the Design Notice to Proceed, and/or the Construction Notice to Proceed, as defined in the Contract for DESIGN-BUILDER Services... DESIGN-BUILDER shall perform no Work or services prior to the date on which the Contract Time(s) commence to run.

39. *Partial Utilization* - Use by CITY of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

40. *PCBs* - Polychlorinated biphenyls.

41. *Petroleum* - Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

42. *Project* - The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

43. *Project Manual* - The documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual may be issued in one or more volumes and is contained in the table(s) of contents.

44. *Request for Qualifications or RFQ* - is the written solicitation issued by CITY for the Project, requesting preparation and submission of Statements of Qualifications by interested Applicants.

45. *Radioactive Material* - Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

46. *Samples* - Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

47. *Shop Drawings* - All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled by or for DESIGN-BUILDER and submitted by DESIGN-BUILDER to illustrate some portion of the Work.

48. *Site* - Lands or areas indicated in the Contract Documents as being furnished by CITY upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by CITY which are designated for the use of DESIGN-BUILDER.

49. *Specifications* - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

50. *Statement of Qualifications or SOQ* - Written and/or graphic description of the credentials, qualifications, experience, and other information about an Applicant that is responsive to the evaluation criteria set forth in the RFQ.

51. *Subcontractor* - Any individual, firm, partnership, company, corporation or association licensed or otherwise authorized by law to do business in Missouri,

to whom DESIGN-BUILDER, with written notification to CITY, has entered into an agreement to perform a part of the Work.

52. Substantial Completion - When Work (or a specified part thereof) has progressed to the point where, in the opinion of CITY as evidenced by CITY's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

53. Supplementary Conditions - The part of the Contract Documents which amends and/or supplements these General Conditions.

54. Supplier- A manufacturer, fabricator, supplier, distributor, material man or vendor having a direct contract with DESIGN-BUILDER or with any Subcontractor to furnish materials or equipment to be incorporated into the Work by DESIGN-BUILDER or any Subcontractor.

55. Underground Facilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

56. Unit Price Work - Work to be paid for on the basis of unit prices.

57. Work - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor, and furnishing and incorporating material and equipment into the construction, and furnishing documents, all as required by the Contract Documents.

58. Work Change Directive - A written directive to DESIGN-BUILDER, issued on or after the Effective Date of the Contract, signed by CITY and recommended by CITY, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed, or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times, but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

59. Written Amendment- A written statement modifying the Contract Documents, signed by CITY and DESIGN-BUILDER on or after the Effective Date of the Contract and normally dealing with the non-engineering or non-technical rather than strictly construction-related aspects of the Contract Documents.

1.02 Terminology

A. Intent of Certain Terms or Adjectives

1. Whenever in the Contract Documents the terms "as ordered," "as directed,"

"as required," "as allowed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of CITY as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to CITY any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.08 or any other provision of the Contract Documents.

B. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty or deficient, in that it does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to CITY's Representative's recommendation of final payment (unless responsibility for the protection thereof has been assumed by CITY at Substantial Completion in accordance with Paragraph 13.5).

C. Furnish, Install, Perform, Provide

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of DESIGN-BUILDER, "provide" is implied.

D. Unless stated otherwise in the Contract Documents, words and phrases which have a well-known technical or construction industry or trade meanings are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 PRELIMINARY MATTERS

2.01 Delivery of Bonds

A. DESIGN-BUILDER shall deliver to CITY such Bonds as DESIGN-BUILDER may be required to furnish.

2.02 Evidence of Insurance

A. DESIGN-BUILDER shall deliver to CITY certificates of insurance or other evidence of insurance that CITY may request, which DESIGN-BUILDER is required to

purchase and maintain in accordance with Article 5 or any other applicable provision in the Contract Documents.

2.03 Copies of Documents

A. CITY shall furnish to DESIGN-BUILDER one (1) copy of the Drawings and Specifications, including addenda.

2.04 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the date indicated in the Notice to Proceed.

2.05 Starting the Work

A. DESIGN-BUILDER shall start to perform the Work on the date when the Contract Times commence to run, but no Work shall be done at the Site prior to the date on which the Contract Times commence to run, unless otherwise indicated in the Notice to Proceed.

2.06 Before Starting Construction

A. Preliminary Schedules: Within ten (10) days after the Effective Date of the Contract or on such later date as CITY's Representative shall provide in writing, DESIGN-BUILDER shall submit to CITY's Representative for review:

1. Preliminary Progress Schedule: DESIGN-BUILDER shall submit a proposed project schedule for CITY's acceptance. The proposed project schedule shall include a detailed and comprehensive design and construction schedule utilizing a critical path method diagram network that (a) shows all major procurement and construction elements and phases of the Project; (b) breaks down each element or phase by trade; (c) shows early and late starts so that all float time will be accurately identified; (d) all other activities necessary for the timely completion of the Project in accordance with the scheduled dates for Substantial and Final Completion; and (e) highlights the project's critical path. CITY's acceptance is expressly limited to CITY's acknowledgement that, based upon CITY's limited review, the dates of Substantial Completion and Milestone dates are acceptable. After final acceptance of the preliminary progress schedule by the CITY, it shall be considered the project baseline schedule pursuant to Paragraph 2.07(B).

2. Preliminary schedule of Shop Drawings and Sample submittals which will list each required submittal and the times for submitting, reviewing and processing such submittal; and

3. Preliminary 01290.02 Schedule of Values for all of the Work which will include quantities and prices of items which when added together equals the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.07 Initially Acceptable Schedules

A. Thirty day interim schedule: The DESIGN-BUILDER shall prepare and submit to the CITY a 30-day interim schedule within seven (7) Calendar Days after the Notice to Proceed. This schedule shall contain the sequence and dates of major work for the entire duration of the Work, including the following activities.

1. The construction activities to be accomplished or commenced during the first

thirty (30) Calendar Days following the Notice to Proceed;

2. Procurement and submittal approvals, fabrication and delivery of all long lead time procurement activities;

3. Activities or Milestones that may be affected by the actions of the CITY or third parties.

The DESIGN-BUILDER shall incorporate the CITY's comments and resubmit the 30-day interim schedule within seven (7) Calendar Days from receipt of the CITY's comments.

B. Project Baseline Schedule: The DESIGN-BUILDER's 30-day interim schedule, as revised by the CITY pursuant to Paragraph 2.07A, shall be considered the baseline schedule and shall be used by the DESIGN-BUILDER for planning, scheduling, managing, and executing the Work. The baseline schedule shall not be changed without the written consent of CITY.

C. DESIGN-BUILDER's schedule of values will be acceptable to CITY's Representative as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

A. The Contract Documents comprise the entire Contract between CITY and DESIGN-BUILDER concerning the Work.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for at no additional cost to CITY. Clarifications and interpretations of the Contract Documents shall be issued by CITY.

C. Correlation and intent of documents: The Drawings and Specifications are intended to supplement each other. Any Work shown on the Drawings and not mentioned in the Specifications (or vice versa) shall be as binding and shall be completed the same as if mentioned or shown on both. In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

1. The Contract, including all Change Orders and Written Amendments
2. Approved Shop Drawings
3. Addenda, with those of later date having precedence over those of earlier date
4. Project Baseline Schedule Requirements
5. The Supplementary Conditions
6. The General Conditions
7. Drawings and Specifications

D. In the case of an inconsistency between Drawings and Specifications, the requirements of the Specifications shall govern. If Drawings are in conflict, larger scale

details shall govern over smaller or no-scale Drawings. If Specification sections are in conflict with each other, the conflict shall be resolved by CITY in accordance with reasonable interpretation of such documents.

E. The general character of the detailed Work is shown on the Drawings, but minor modifications may be made in the full size or scale details. Where the word "similar" occurs on the Drawings, it shall be used in its general sense and not as meaning identical, and all details shall be worked out in relation to their location and their connection to the other parts of the Work. Where on any Drawings a portion of the Work is drawn out and the remainder is indicated in outline, the parts drawn out shall apply also to all other like portions of the Work. Where ornaments or other details are indicated by starting only, such details shall be continued throughout the courses or parts in which they occur and shall also apply to all other similar parts in the Work, unless otherwise indicated.

3.02 Reference to Standards and Specifications of Technical Societies

A. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or on the date of DESIGN-BUILDER's proposal if there are no Bids), except as may be otherwise specifically stated in the Contract Documents.

1. No provision of any such standard, specification, manual, code or instruction of Supplier shall be effective to change the duties or responsibilities of CITY, or DESIGN-BUILDER, or any of their Subcontractors, Consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to CITY or any of CITY's Consultants, agents or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies: If, during the performance of the Work, DESIGN-BUILDER discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Laws or Regulations applicable to the performance of the Work or of any standard, specification, manual, code or any instruction of any Supplier referred to in Paragraph 6.07, DESIGN-BUILDER shall report it immediately to CITY in writing. DESIGN-BUILDER shall not proceed with the Work affected thereby (except in an emergency as authorized by Paragraph 6.17) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04; provided, however, that DESIGN-BUILDER shall not be liable to CITY or CITY's Consultants for failure to report any such conflict, error, ambiguity or discrepancy unless DESIGN-BUILDER knew or reasonably should have known thereof.

B. Resolving Discrepancies. The provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and:

1. the provisions of any standard, specification, manual, code or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

2. the provisions of any Laws or Regulations applicable to the performance of the Work.

3.04 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

1. a Written Amendment or
2. a Change Order (pursuant to Article 10), whether pursuant to a Work Change Directive or otherwise.

B. The requirements of the Contract Documents may be supplemented and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

1. CITY's approval of a Shop Drawing or Sample, or
2. CITY's written interpretation or clarification.

ARTICLE 4 AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.01 Availability of Lands

A. CITY shall furnish the Site. CITY shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which DESIGN-BUILDER will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by CITY, unless otherwise provided in the Contract Documents. If DESIGN-BUILDER and CITY are unable to agree on entitlement to or the amount or extent of any adjustments in the Contract Price or the Contract Times or both as a result of any delay in CITY's furnishing these lands, rights-of-way or easements, DESIGN-BUILDER may make a Claim as provided in Article 15. DESIGN-BUILDER shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 Subsurface and Physical Conditions

A. Reports and Drawings: Reference is made to the Supplementary Conditions for identification of:

1. Subsurface Conditions: Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by CITY in preparing the Contract Documents; and
2. Physical Conditions: Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that have been utilized by CITY in preparing the Contract Documents.

B. Limited Reliance by DESIGN-BUILDER on Technical Data Authorized: DESIGN-BUILDER may rely upon the general accuracy of the technical data contained in reports and drawings of subsurface or physical conditions, but such reports and drawings are not Contract Documents. The technical data is identified in the Supplementary Conditions. Except for reliance on such technical data, DESIGN-BUILDER may not rely upon or make any Claim against CITY, or CITY's Consultants with respect to:

1. the completeness of such reports and drawings for DESIGN-BUILDER's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by DESIGN-BUILDER and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings, or
3. any DESIGN-BUILDER interpretation of or conclusion drawn from any technical data or any such other data, interpretations, opinions or information.

4.03 Differing Subsurface or Physical Conditions

A. Notice of Differing Subsurface or Physical Conditions. If DESIGN-BUILDER believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any technical data on which DESIGN-BUILDER is entitled to rely as provided in Paragraphs 4.02 A and 4.02 B is materially inaccurate; or
2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then DESIGN-BUILDER shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.17), notify CITY in writing about such condition(s). DESIGN-BUILDER shall not further disturb such conditions or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. CITY's Review: After receipt of notice as required by Paragraph 4.03 A, CITY will promptly review the pertinent conditions, determine the necessity for CITY to obtain additional exploration or tests with respect thereto and notify DESIGN-BUILDER in writing of CITY's findings and conclusions.

C. Possible Contract Documents Change: If CITY concludes that a change in the Contract Documents is required as a result of a condition that meets one or more of the categories in Paragraph 4.03 A, a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of such change.

D. Possible Price or Times Adjustments: An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of a subsurface or physical condition causes an increase or decrease in DESIGN-BUILDER's cost of, or time required for, performance of the Work; subject, however, to the following:

1. the condition must meet any one or more of the categories described in Paragraphs 4.03 A.1 through 4.03 A.4, inclusive;
2. a change in the Contract Documents pursuant to Paragraph 4.03 C will not be an automatic authorization of, nor a condition precedent to, entitlement to any such adjustments;

3. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.06 and 10.04; and

4. DESIGN-BUILDER shall not be entitled to any adjustment in the Contract Price or Contract Times if;

a. DESIGN-BUILDER knew, or by the exercise of ordinary care could have known, of such conditions at the time DESIGN-BUILDER made a final commitment to CITY with respect to Contract Price and Contract Times by the submission of a Bid; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for DESIGN-BUILDER prior to DESIGN-BUILDER's making such final commitment; or

c. DESIGN-BUILDER failed to give the written notice as required by Paragraph 4.03 A.

E. If CITY and DESIGN-BUILDER are unable to agree on entitlement to, or magnitude of, an equitable adjustment in the Contract Price pursuant to Article 10 and/or Contract Times pursuant to Article 11, a Claim may be made therefore as provided in Article 15. However, CITY, CITY's Consultants shall not be liable to DESIGN-BUILDER for any costs, losses or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all other dispute resolution costs) sustained by DESIGN-BUILDER on or in connection with any other project or anticipated project.

4.04. Physical Conditions - Underground Facilities

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to CITY by the owners of such Underground Facilities or by others.

1. CITY shall not be responsible for the accuracy or completeness of any such information or data; and

2. The cost of all of the following will be included in the Contract Price and DESIGN-BUILDER shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the Site, and was not shown or indicated in the Contract Documents, or was shown or indicated incorrectly in the Contract Documents, DESIGN-BUILDER shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an

emergency as required by Paragraph 6.17), identify the owner of such Underground Facility and give written notice to that owner and to CITY.

C. CITY's Review: After receipt of notice as required by Paragraph 4.04 B, CITY will promptly review the consequences of the existence of the Underground Facility and notify DESIGN-BUILDER in writing CITY's findings and conclusions.

D. Possible Contract Documents Change: If CITY concludes that a change in the Contract Documents is required as a result of the existence of an Underground Facility that either was not shown, or was shown incorrectly, in the Contract Documents, a Work Change Directive or Change Order will be issued as provided in Article 10 to reflect and document the consequences of such change.

E. Possible Price or Times Adjustments: An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of the Underground Facility causes an increase or decrease in DESIGN-BUILDER's cost of, or time required for, performance of the Work; subject, however, to the following:

1. a change in the Contract documents pursuant to Paragraph 4.04 D will not be an automatic authorization of, nor a condition precedent to, entitlement to any such adjustments;
2. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.06 and 10.04; and
3. DESIGN-BUILDER shall not be entitled to any adjustment in the Contract Price or Contract Times if;
 - a. DESIGN-BUILDER knew, or by the exercise of ordinary care could have known, of the existence of the Underground Facility at the time DESIGN-BUILDER made a final commitment to CITY with respect to Contract Price and Contract Times by the submission of a Bid; or
 - b. the existence of the Underground Facility could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for DESIGN-BUILDER prior to DESIGN-BUILDER's making such final commitment; or
 - c. DESIGN-BUILDER failed to give the written notice as required by Paragraph 4.04 B.

F. If CITY and DESIGN-BUILDER are unable to agree on entitlement to, or magnitude of, an equitable adjustment in the Contract Price pursuant to Article 10 and/or Contract Times pursuant Article 11, a Claim may be made therefore as provided in Article 15. However, CITY and CITY's Consultants shall not be liable to DESIGN-BUILDER for any costs, losses or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all other dispute resolution costs) sustained by DESIGN-BUILDER on or in connection with any other project or anticipated project.

4.05 Reference Points

A. CITY shall provide engineering surveys to establish reference points for construction that in CITY's judgment are necessary to enable DESIGN-BUILDER to proceed with the Work. DESIGN-BUILDER shall be responsible for laying out the Work,

shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of CITY. DESIGN-BUILDER shall report to CITY whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 Asbestos, Lead-Based Paint, PCBs, Petroleum, Hazardous Waste or Radioactive Material

A. Reports and Drawings: Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the CITY in the preparation of the Contract Documents.

B. Limited Reliance by DESIGN-BUILDER on Technical Data Authorized: DESIGN-BUILDER may rely upon the general accuracy of the technical data contained in reports and drawings relating to a Hazardous Environmental Condition at the Site, but such reports and drawings are not Contract Documents. Such technical data is identified in the Supplementary Conditions. Except for such reliance on such technical data, DESIGN-BUILDER may not rely upon or make any Claim against CITY, or CITY's Consultants with respect to:

1. the completeness of such reports and drawings for DESIGN-BUILDER's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by DESIGN-BUILDER and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
3. any DESIGN-BUILDER interpretation of or conclusion drawn from any technical data or any such other data, interpretations, opinions or information.

C. DESIGN-BUILDER shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. DESIGN-BUILDER shall be responsible for all Hazardous Environmental Conditions created with any materials brought to the Site by DESIGN-BUILDER, Subcontractors, Suppliers, or anyone else for whom DESIGN-BUILDER is responsible. DESIGN-BUILDER shall not be entitled to an extension of the Contract Times or an increase in the Contract Price if DESIGN-BUILDER, Subcontractor, Supplier or anyone for whom DESIGN-BUILDER is responsible created any Hazardous Environmental Condition at the Site or in connection with the Work.

D. If DESIGN-BUILDER encounters a Hazardous Environmental Condition at the Site or if DESIGN-BUILDER or anyone for whom DESIGN-BUILDER is responsible creates a Hazardous Environmental Condition at the Site, DESIGN-BUILDER shall immediately:

1. secure or otherwise isolate such condition;
2. stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6. 15); and
3. notify CITY (and promptly thereafter confirm such notice in writing). CITY shall promptly determine the necessity for CITY to retain a qualified expert to evaluate

such condition or take corrective action, if any.

E. DESIGN-BUILDER shall neither resume Work nor be required to resume Work in connection with such condition or in any affected area until after CITY has obtained any required permits related thereto and delivered to DESIGN-BUILDER written notice:

1. specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or
2. specifying any special conditions under which such Work may be resumed safely. If CITY and DESIGN-BUILDER cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price pursuant to Article 10 and/or Contract Times pursuant to Article 11 as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by DESIGN-BUILDER, a Claim may be made therefore as provided in Article 15.

F. If after receipt of written notice as required in Paragraph 4.06 E, DESIGN-BUILDER does not agree to resume Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under special conditions specified in the notice, then CITY may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If CITY and DESIGN-BUILDER cannot agree as to entitlement to or magnitude of an equitable adjustment in Contract Price pursuant to Article 10 and/or Contract Times pursuant to Article 11 as a result of deleting such portion of the Work, then a Claim may be made therefore as provided in Article 15. CITY may have such deleted portion of the Work performed by CITY's own forces or others in accordance with Article 7.

G. The provisions of Paragraphs 4.02, 4.03, and 4.04 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

H. All materials used, whether new or salvaged, shall be asbestos-free materials. DESIGN-BUILDER shall immediately call to the attention of the CITY's Representative any specified material or product which the DESIGN-BUILDER knows or suspects to contain asbestos, whether new or salvaged.

ARTICLE 5 BONDS AND INSURANCE

5.01 Performance, Payment and Other Bonds

A. DESIGN-BUILDER shall furnish Performance and Maintenance and Payment Bonds, each in an amount at least equal to the Contract Price, as set out in the Contract Documents, as security for the faithful performance and payment of all DESIGN-BUILDER's obligations under the Contract Documents. These Bonds shall remain in effect at least until one (1) year after the date when final payment of the Contract becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. DESIGN-BUILDER shall also furnish such other Bonds as are required by the Supplementary Conditions.

B. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations. A certified copy of the agent's authority to act must accompany all Bonds signed by an agent.

C. If the surety on any Bond furnished by DESIGN-BUILDER is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirement of Paragraph 5.01 B, DESIGN-BUILDER shall within twenty (20) days thereafter substitute another Bond and surety, both of which must be acceptable to CITY.

5.02 Licensed Sureties and Insurers

A. All Bonds and insurance required by the Contract Documents to be purchased and maintained by CITY or DESIGN-BUILDER shall be obtained from surety or insurance companies that are duly licensed in the State of Missouri and in the jurisdiction in which the Project is located, if not in Missouri, to issue Bonds or insurance policies for the limits and coverages so required. All surety and insurance companies shall hold an A.M. Best rating of A-, V, or better.

5.03 Certificates of Insurance

A. DESIGN-BUILDER shall deliver to CITY, prior to the start of any Work at the Project Site, properly completed certificates of insurance or other evidence that the required insurance is in full force and effect, in a form acceptable to CITY. The receipt or acceptance of a certificate of insurance that does not incorporate the required terms and coverage shall not constitute a waiver by the City of the insurance requirements contained in the Contract Documents.

B. All policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained by DESIGN-BUILDER in accordance with Paragraphs 5.04 and 5.06 will contain waiver provisions in accordance with Paragraph 5.07 A. The certificates of insurance will contain a provision stating that should any of the policies described in the certificate be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.

C. If the coverage afforded is cancelled or changed or its renewal is refused, DESIGN-BUILDER shall give at least thirty (30) days prior written notice to CITY and to each other additional insured to whom a certificate of insurance has been issued.

5.04 DESIGN-BUILDER's Liability Insurance

A. DESIGN-BUILDER shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and furnished, and will provide protection from claims set forth below which may arise out of or result from DESIGN-BUILDER's performance and furnishing of the Work and DESIGN-BUILDER's other obligations under the Contract Documents, whether it is to be performed or furnished by DESIGN-BUILDER, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits and other similar employee benefit acts;
2. claims for damages because of bodily injury, occupational sickness or disease, or death of DESIGN-BUILDER's employees;
3. claims for damages because of bodily injury, sickness or disease, or death of any person other than DESIGN-BUILDER's employees;
4. claims for damages insured by customary personal injury liability coverage;
5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefore; and
6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance so required by Paragraph 5.04 A, to be purchased and maintained shall:

1. with respect to insurance required by Paragraphs 5.04 A.3 through 5.04 A.5 inclusive, include as additional insureds (subject to any customary exclusion for professional liability) CITY, Consultants and any other individuals or entities identified in the Supplementary Conditions to be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in Paragraph 5.04 C or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering DESIGN-BUILDER's indemnity obligations;

5. remain in effect at least until final payment and at all times thereafter when DESIGN-BUILDER may be correcting, removing or replacing defective Work in accordance with Paragraphs 13.06 and 13.07;

6. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two (2) years after final payment (and DESIGN-BUILDER shall furnish CITY and each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued evidence satisfactory to CITY and any such additional insured of continuation of such insurance);

7. contain a cross-liability or severability of interest clause or endorsement. Insurance covering the specified additional insureds shall be primary insurance, and all other insurance carried by the additional insureds shall be excess insurance;

8. with respect to commercial automobile liability, commercial general liability, and umbrella liability insurance, DESIGN-BUILDER shall require its insurance carrier(s) to waive all rights of subrogation against CITY, and CITY's officers, directors, partners, employees and agents; and

9. contain a provision or endorsement that the costs of providing the insureds a defense and appeal, including attorneys fees, as insureds, shall be supplementary and shall not be included as part of the policy limits but shall remain the insurer's responsibility.

C. Specific policies of insurance required by this Paragraph 5.04 shall include:

1. Workers' Compensation and Employers' Liability Insurance. This insurance shall protect DESIGN-BUILDER against all claims under applicable state workers' compensation laws, including coverage as necessary for the benefits provided under the United States Longshoremen's and Harbor Workers' Act and the Jones Act. DESIGN-BUILDER shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of workers' compensation laws. This policy shall include an "all states" or "other states" endorsement. The liability limits shall be not less than:

Workers' Compensation: Statutory

Employers' liability: \$1,000,000 each occurrence

2. Commercial Automobile Liability Insurance. This insurance shall be occurrence type written in comprehensive form and shall protect DESIGN-BUILDER, and CITY, and Consultants against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles, either on or off the Project Site, whether they are owned, non-owned, or hired.

The liability limits shall be not less than: \$2,000,000

3. Commercial General Liability Insurance. This insurance shall be occurrence type written in comprehensive form acceptable to CITY. This insurance shall protect DESIGN-BUILDER, and CITY, and Consultants as additional insureds, against claims arising from injuries, sickness, disease, or death of any person or damage to property arising out of performance of the Work. The policy shall also include coverage for personal injury liability; contractual liability; completed operations and products liability; and for blasting, explosion, and collapse of buildings; and damage to underground property. The liability limits for bodily injury and property damage shall be not less than:

\$2,000,000 combined single limit for each occurrence

\$2,000,000 general aggregate.

4. Professional Liability Insurance with limits Per Claim/Annual Aggregate of \$2,000,000.

5. The insurer's costs of providing the insureds a defense and appeal as additional insureds, including attorney's fees, shall be supplementary and shall not be included as part of the policy limits but shall remain the insurer's separate responsibility.

5.05 CITY's Liability Insurance

A. In addition to the insurance required to be provided by DESIGN-BUILDER under Paragraph 5.04, CITY, at CITY's option, may purchase and maintain at CITY's expense liability insurance that will protect CITY against claims which may arise from operations under the Contract Documents.

5.06 Property Insurance

A. Unless otherwise provided in the Supplementary Conditions, DESIGN-BUILDER shall purchase and maintain property insurance on the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws or Regulations). This insurance shall:

1. include the interests of CITY, DESIGN-BUILDER, Subcontractors, and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, tornado, collapse, debris removal, demolition occasioned by enforcement of

Laws or Regulations, water damage, damage caused by frost and freezing, and acts of God;

3. be maintained in effect until final payment is made unless otherwise agreed to in writing by CITY with thirty (30) days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. CITY shall not be responsible for purchasing and maintaining any property insurance to protect the interests of DESIGN-BUILDER, Subcontractors or others involved in the Work to the extent of any deductible amounts. The risk of loss within the deductible amounts will be borne by DESIGN-BUILDER, Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

5.07 Waiver of Rights

A. CITY and DESIGN-BUILDER intend that all policies purchased in accordance with Paragraphs 5.04 and 5.06 will protect CITY, DESIGN-BUILDER, CITY's Consultants, Subcontractors, and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. CITY and DESIGN-BUILDER waive all rights against each other and their respective officers, directors, partners, employees and agents for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work, but only to the extent of insurance coverage; and, in addition, waive all such rights against CITY, Consultants, Subcontractors, and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of any and each of them) under such policies for losses and damages so caused and covered by insurance. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by CITY as trustee or otherwise payable under any policy so issued. None of the above waivers shall apply if specifically in conflict with Laws and Regulations.

5.08 Receipt and Application of Insurance Proceeds

A. Any insured loss under the property insurance will be adjusted with CITY and made payable to CITY as fiduciary for the insureds, as their interests may appear, subject to the requirements of any indentures of indebtedness entered into by CITY.

B. CITY as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object to CITY's exercise of this power in writing within fifteen (15) days after the occurrence of loss. If such objection is made, CITY as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, CITY as fiduciary shall adjust and settle the loss with the insurers.

5.09 Partial Utilization - Property Insurance

A. If CITY finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work; provided that no such use or occupancy shall

commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 DESIGN-BUILDER'S SERVICES AND RESPONSIBILITIES

6.01 General Requirements

A. Project Manager and Lead Architect. The Design-Build Project Manager and the Lead Architect shall be reasonably available to CITY's Representative and shall have the necessary expertise and experience required to supervise the Work. The Design-Build Project Manager and the Lead Architect shall communicate regularly with CITY's Representative. The Design-Build Project Manager, the Lead Architect, and any of the other Key Personnel identified in the Technical Approach Submittal portion of DESIGN-BUILDER's Bid may be removed or replaced only with the prior written consent of CITY.

B. Pre-Commencement Meeting. The parties will meet within ten (10) days after CITY's execution of the Contract to discuss issues affecting the administration of the Work and to implement the necessary procedures, including those relating to schedules, submittals, and payment, to facilitate the ability of the parties to perform their obligations under the Contract Documents.

C. List of Subcontractors. DESIGN-BUILDER shall submit required information for all Subcontractors on Form 01290.09 - Subcontractor and Major Material Suppliers List, provided in these Contract Documents, prior to Subcontractor beginning Work at the Site. No acceptance by CITY of any Subcontractor or Sub-Subcontractor shall relieve DESIGN-BUILDER of its responsibility for scheduling and coordinating the Work of all Subcontractors and Sub-Subcontractors, nor shall it relieve DESIGN-BUILDER of its complete and exclusive responsibility and liability for all acts and omissions of any Subcontractor or Sub-Subcontractor, nor shall it result in any waiver of CITY's right to reject defective or nonconforming Work.

6.02 Professional Design Services

A. DESIGN-BUILDER shall, consistent with applicable Missouri licensing laws, perform or furnish, through the DOR and any Design Subconsultants, the necessary architectural, engineering, and other professional design services and the labor, materials, supervision, equipment, computers, documents, and other items and services necessary for the preparation of the required drawings, specifications, and other design information and submittals to permit DESIGN-BUILDER to complete the Work consistent with CITY's Project Design and Construction Criteria, the Contract Documents, and Legal Requirements. DESIGN-BUILDER acknowledges its responsibility to CITY for the proper performance of the Work by the DOR and Design Subconsultants and its responsibility for any of their acts or omissions in connection with the Work, and acknowledges that such subcontracting shall in no way relieve DESIGN-BUILDER of its obligations and liabilities under the Contract Documents and Legal Requirements. Nothing in the Contract Documents is intended or deemed to create any legal or contractual relationship between CITY and any Design Subconsultant, or between CITY and the DOR (unless the DOR is the DESIGN-BUILDER under contract with CITY), including, but not limited to, any third-party beneficiary rights, and a provision to such effect shall be inserted into all agreements between DESIGN-BUILDER and its Design Subconsultants and DOR (if the DOR is not

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the DESIGN-BUILDER under contract with CITY).

6.03 Design Standards; Seals and Endorsements

A. Design Standards. Except as otherwise directed in writing by CITY, DESIGN-BUILDER and the DOR shall use and implement in the performance of professional design services under the Contract, all applicable design standards required by federal, state, and local laws or codes or such standards as are recognized and used in the industry. In the development of any design under the Contract, DESIGN-BUILDER and the DOR shall comply with the Contract Documents and Legal Requirements, including, without limitation, all applicable provisions of the Americans with Disabilities Act, 42 U.S.C. Section 12101 et seq., as well as 28 C.F.R. Parts 35 and 36 and 29 C.F.R. Part 1630, and CITY's Buy American policy, all as may be amended from time to time. DESIGN-BUILDER and the DOR shall notify and explain to CITY any applicable exceptions under these acts or provisions.

B. Seals and Endorsements. The DOR shall affix its seal to and endorse all drawings, plans, and specifications, or estimates, and engineering data prepared by the DOR under the Contract. All Design Subconsultants shall similarly affix their seals to and endorse their respective drawings, plans, and specifications, or estimates, and engineering data prepared for the Project.

C. Correction of Errors. DESIGN-BUILDER and the DOR shall monitor for quality assurance purposes all design services performed under the Contract, and shall immediately revise and correct the design drawings and plans at their own expense, without adjustment to the Contract Price and/or Contract Time(s), any act, omission, error, or oversight in the performance of such professional design services and the associated construction.

6.04 Standard of Care for Professional Design Services

A. The standard of care for all professional design services performed as part of the Work shall be the care and skill ordinarily exercised by members of the same design profession practicing under substantially similar conditions at the same time and locality of the Project, or as otherwise provided by Missouri law. Notwithstanding the preceding sentence, DESIGN-BUILDER shall design and construct the Project in such a manner that the Project and all of its components are functional and operational and in compliance with CITY's Project Design and Construction Criteria, Legal Requirements in effect as of the date of the Contract, and any other specific performance standards the parties may agree upon for any aspect of the Project.

6.05 Progress Schedule

A. DESIGN-BUILDER shall adhere to the progress schedule established in accordance with Article 2 as it may be adjusted from time to time as provided below:

1. DESIGN-BUILDER shall provide, at least once every thirty (30) calendar days, updated information on the project schedule, including thirty (30) day look ahead schedules, projected variances per event category and per Subcontractor, identification of all variances and calculation of the number of Days difference between the as-built critical path and the project schedule critical path
2. DESIGN-BUILDER shall, with each application for payment, provide completed monthly updated status report for the previous month on the project schedule and updated information indicating as-built and as-planned conditions. The updated information on the project schedule shall not modify any Milestone dates in the project schedule that CITY has previously approved. The updated

information required is a condition precedent to payment pursuant to paragraph 14.02 and shall include at a minimum:

- a concise statement of the outlook for meeting project schedule dates and the reasons for any change in outlook from the previous report;
- b. a review of any significant technical problems encountered during the month;
- c. an explanation of any corrective action taken or proposed; and
- d. a summary of any Claims anticipated by DESIGN-BUILDER with respect to the Work, including the anticipated costs and schedule impacts of any such Claims.

6.06 Recovery Schedules

A. If the DESIGN-BUILDER should:

1. fail, refuse or neglect to supply a sufficient number of workers or to deliver the materials or equipment with such promptness as to prevent the delay in the progress of the Work;
2. fail in any respect to commence and diligently prosecute the Work in accordance with the approved baseline project schedule in order to achieve substantial completion;
3. fail to commence, prosecute, finish, deliver or install the different portions of the Work on time as specified in the approved baseline project schedule; or
4. fail in the performance of any of the material covenants of the Contract Documents;

CITY shall have the right to direct the DESIGN-BUILDER, upon seven (7) calendar days notice, to prepare a written recovery plan, for CITY's approval, to accelerate the Work in order to conform to the approved baseline project schedule, including, without limitation, providing additional labor or expediting delivery of materials, performing overtime or re-sequencing the Work without adjustments to the Contract value. Upon CITY's approval of the recovery plan, DESIGN-BUILDER shall accelerate the Work in accordance with the plan.

B. Proposed recovery schedules shall be submitted to the CITY as a separate project plan for review and approval by CITY prior to incorporation into the approved baseline schedule. The recovery schedule shall be submitted in a format compatible with the baseline schedule format. Each proposed revision shall be submitted as a separate schedule, with the following minimum requirements:

1. A critical path method diagram showing revised and affected activities or Milestones.
2. An activity report for all revised and affected activities or Milestones.

C. Upon acceptance of the recovery schedule by CITY, data shall be added or revised for all new or revised activities and incorporated into the approved baseline project schedule.

6.07 Detailed Design Services

A. Interim Design Submissions. At the meeting contemplated by Section 6.07.B of these General Conditions of Contract, CITY and DESIGN-BUILDER shall, consistent with any applicable provision of the Contract Documents, agree upon any interim design

submissions that CITY may wish to review, which interim design submissions may include design criteria, drawings, diagrams, and specifications setting forth the Project requirements.

B. Design Review Meetings. On or about the time of scheduled design submissions, DESIGN-BUILDER's Project Manager and Lead Architect shall convene design review meetings with CITY to confer about the submissions. At the meetings, DESIGN-BUILDER shall identify, among other things, the evolution of the design and any significant changes or deviations from CITY's Project Design and Construction Criteria or the Contract Documents, or, if applicable, previously submitted design submissions. In the event DESIGN-BUILDER believes that any changes requested by CITY at such meetings are inconsistent with CITY's Project Design and Construction Criteria or earlier approvals such that DESIGN-BUILDER's compliance with same may have an adverse impact on the Contract Price and/or the Contract Time(s), DESIGN-BUILDER shall submit its written notice to CITY specifying such impact within seven (7) days after such meeting, or DESIGN-BUILDER shall be deemed to have waived any claim for adjustment to the Contract Price and/or the Contract Time(s) arising out of such meeting or request.

C. Approval of Interim Design Submissions. Following each design review meeting, DESIGN-BUILDER shall prepare and maintain meeting minutes and shall provide copies to all attendees for review. CITY shall review and approve the interim design submissions in a time that is consistent with the reasonable turnaround times set forth in DESIGN-BUILDER's approved schedule. Any such review and approval by CITY shall be only for purposes of determining the interim design submissions' apparent general consistency with CITY's Project Design and Construction Criteria, and shall not relieve DESIGN-BUILDER from any responsibility or liability for its complete and exclusive control and responsibility for providing complete and accurate design and construction services as required to achieve CITY's objectives, including, without limitation, the use, operation, and maintenance of the Project in conformance with CITY's Project Design and Construction Criteria, the Contract Documents, Legal Requirements, and applicable guidelines, requirements, and standards.

D. Construction Documents. DESIGN-BUILDER shall submit to CITY those Construction Documents consisting of drawings and specifications that describe and set forth in detail the requirements for construction of the Work. The Construction Documents shall be consistent with the latest set of interim design submissions; as such submissions may have been modified in a design review meeting and approved by CITY. The parties shall have a design review meeting to discuss, and CITY shall review and approve, the Construction Documents in accordance with the procedures and consistent with the purposes set forth in Sections 6.07.B. and 6.07.C. above and Section 6.07.E. below. Upon CITY's issuance of the Construction Notice to Proceed, DESIGN-BUILDER shall proceed with construction in accordance with the approved Construction Documents and shall submit to CITY, prior to commencement of construction, the number of copies of the approved Construction Documents, in the required form, as set forth in the Supplementary Conditions.

E. Approval of Construction Documents. CITY's review and approval of interim design submissions and the Construction Documents is for the purpose of mutually establishing a conformed set of Contract Documents compatible with the requirements of CITY's Project Design and Construction Criteria. Neither CITY's review and approval of any interim design submissions nor CITY's review and approval of the Construction Documents shall be deemed to transfer from DESIGN-BUILDER to CITY any of

DESIGN-BUILDER's exclusive responsibility, control, and liability for the design and construction required under the Contract Documents.

F. Design Packages. To the extent not prohibited by the Contract Documents or Legal Requirements and with CITY's written approval, DESIGN-BUILDER may prepare interim design submissions and Construction Documents for a portion of the Work to permit construction to proceed on that portion of the Work prior to completion of the Construction Documents for the entire Work.

6.08 Legal Requirements

A. General. DESIGN-BUILDER shall perform the Work in accordance with the Contract Documents and Legal Requirements, and shall provide all notices applicable to the Work as required by the Contract Documents and the Legal Requirements

B. Changes in Legal Requirements. The Contract Price and/or Contract Time(s) may be equitably adjusted to compensate DESIGN-BUILDER for the effects of any changes in Legal Requirements enacted after CITY's execution of the Contract that affect the performance of the Work. Such effects may include, without limitation, revisions DESIGN-BUILDER is required to make to the Construction Documents because of changes in Legal Requirements.

C. Americans with Disabilities Act. DESIGN-BUILDER agrees to comply, during the course of this Contract, with all provisions of the Americans with Disabilities Act, 42 U.S.C. Sec. 12101 et seq., as well as 28 C.F.R. Parts 35 and 36 and 29 C.F.R. Part 1630, as applicable and as amended from time to time.

D. Minority and Women's Business Enterprises. CITY is committed to ensuring that minority business enterprises (MBE) and women's business enterprises (WBE) participate to the maximum extent possible in the performance of CITY contracts. DESIGN-BUILDER shall comply with all requirements of CITY's Minority and Women's Business Enterprise Program as enacted in CITY's Code, Sections 38-84 through 38-100.4 and as hereinafter amended. DESIGN-BUILDER shall achieve the MBE/WBE participation goals set forth in DESIGN-BUILDER's Construction Contractor Utilization Plan/Request for Waiver (CITY's HRD Form 8-DB). DESIGN-BUILDER's compliance with this provision is a material part of this Contract.

E. Audit. The City Auditor, the CITY's Internal Auditor, the CITY's Director of Human Relations, and the CITY Department administering this Contract shall have the right to audit this Contract and all books, documents, and records relating thereto.

1. DESIGN-BUILDER shall maintain all of its books, documents, and records relating to this Contract during the Contract period and for three (3) years after the date of final payment or earlier termination of the Contract.

2. DESIGN-BUILDER shall make such books, documents, and records available to the City Auditor, the CITY's Internal Auditor, the CITY's Director of Human Relations, and the CITY Department administering this Contract, within ten (10) days after written request.

F. Prevailing Wage.

1. GENERAL CONTRACTOR shall comply and require its Subcontractors to comply with;

- a. sections 290.210 to 290.340, RSMO the State of Missouri Prevailing Wage Law (the "Law"); and

b. 8 CSR 30-3.010 to 8 CSR 30-3.060, the Prevailing Wage Law Rules (the "Rules"); and

c. the Annual Wage Order (Wage Order) issued by the State of Missouri's Department of Labor and Industrial Relations; and

d. any applicable Annual Incremental Wage Increase (Wage Increase) to the Annual Wage Order.

2. The Law, Rules, Annual Wage Order and any Wage Increase are incorporated into and made part hereof this Contract and shall be collectively referred to in this Section as the "Prevailing Wage Requirements."

3. GENERAL CONTRACTOR shall pay and require its Subcontractors to pay to all workers performing work under this Contract not less than the prevailing hourly rate of wages for the class or type of work performed by the worker in accordance with the Law, Rules, Wage Order and any applicable Wage Increase. GENERAL CONTRACTOR shall take whatever steps are necessary to insure that the prevailing hourly wage rates are paid and that all workers for GENERAL CONTRACTOR and each of its Subcontractors are paid for the class or type of work performed by the worker in accordance with the Prevailing Wage Requirements. If GENERAL CONTRACTOR shall fail to start to perform GENERAL CONTRACTOR's obligations under the Contract Documents within sixty (60) days from the date on which the Contract Times commenced to run, as indicated in the Notice to Proceed, GENERAL CONTRACTOR and each of its subcontractors shall be obligated to pay all workers in accordance with any new Wage Order, as subsequently amended by any applicable Wage Increase, issued by the Department of Labor and Industrial Relations within the aforementioned sixty (60) day period. The new Wage Order and any applicable Wage Increase shall govern notwithstanding the fact that the Wage Order being replaced might be physically attached or incorporated in the Contract Documents.

4. Prior to each of its Subcontractors beginning Work on the Site, GENERAL CONTRACTOR shall require each Subcontractor to complete CITY's Form 00490 entitled "Pre-contract Certification" that sets forth the Subcontractor's prevailing wage and tax compliance history for the two (2) years prior to the bid. GENERAL CONTRACTOR shall retain one (1) year and make the Pre-contract Certifications available to CITY within five (5) days after written request.

5. GENERAL CONTRACTOR shall keep and require each of its Subcontractors engaged in the construction of public works in performance of the Contract to keep full and accurate records on CITY's:

a. "Certified Payroll Report" Form indicating the worker's name, address, social security number, occupation(s) and craft(s) of every worker employed in connection with the public work together with the number of hours worked by each worker and the actual wages paid in connection with the Project; and

b. "Daily Labor Force Report" Form indicating the worker's name, occupational title or classification group & skill and the workers' hours. CITY shall furnish blank copies of the Daily Labor Force Report Form to GENERAL CONTRACTOR for its use and for distribution to Subcontractors; and

c. "Payroll Certification" Form. GENERAL CONTRACTOR shall prepare and shall require each Subcontractor to prepare a "Payroll Certification" Form to accompany the Certified Payroll Report. The Payroll Certification must be

signed by the employee or agent who pays or supervises the payment of the workers employed under the Contract for the GENERAL CONTRACTOR and each Subcontractor.

d. Copies of CITY's "Certified Payroll Report" form, the Daily Labor Force Report and Payroll Certification Form are included in the Project Manual and are collectively referred to in this Section as the "Records."

6. GENERAL CONTRACTOR shall submit its and its Subcontractors Daily Labor Force Reports to CITY each day. GENERAL CONTRACTOR shall make all of CONTRACTOR's and Subcontractors' Records open to inspection by any authorized representatives of OWNER and the Missouri Department of Labor and Industrial Relations at any reasonable time and as often as they may be necessary and such Records shall not be destroyed or removed from the State of Missouri for a period of one (1) year following the completion of the public work in connection with which the Records are made. GENERAL CONTRACTOR shall have its and its Subcontractors Certified Payroll Reports and Payroll Certifications available at the GENERAL CONTRACTOR's office and shall provide the Records to the City electronically at City's sole discretion. In addition, all Records shall be considered a public record and GENERAL CONTRACTOR shall provide the Records to the CITY in the format required by the CITY within three (3) working days of any request by CITY at the GENERAL CONTRACTOR's cost. CITY, in its sole discretion, may require GENERAL CONTRACTOR to send any of the Records directly to the person who requested the Record at GENERAL CONTRACTOR's expense.

7. GENERAL CONTRACTOR shall post and keep posted a clearly legible statement of all prevailing hourly wage rates to be paid to all workers employed by GENERAL CONTRACTOR and each of its Subcontractors in the performance of this Contract in a prominent and easily accessible place at the Site of the Work by all workers.

8. If the Contract Price exceeds \$250,000.00, GENERAL CONTRACTOR shall and shall require each Subcontractor engaged in any construction of public works to have its name, acceptable abbreviation or recognizable logo and the name of the city and state of the mailing address of the principal office of the company, on each motor vehicle and motorized self-propelled piece of equipment which is used in connection with the Project during the time the GENERAL CONTRACTOR or Subcontractor is engaged on the project. The sign shall be legible from a distance of twenty (20') feet, but the size of the lettering need not be larger than two (2") inches. In cases where equipment is leased or where affixing a legible sign to the equipment is impractical, the GENERAL CONTRACTOR may place a temporary stationary sign, with the information required pursuant to this section, at the main entrance of the Project in place of affixing the required information on the equipment so long as such sign is not in violation of any state or federal statute, rule or regulation. Motor vehicles which are required to have similar information affixed thereto pursuant to requirements of a regulatory agency of the state or federal government are exempt from the provisions of this subsection.

9. GENERAL CONTRACTOR must correct any errors in GENERAL CONTRACTOR's or any Subcontractors' Records, or GENERAL CONTRACTOR's or any Subcontractors' violations of the Law, Rules, Annual Wage Order and any Wage Increase within fourteen (14) calendar days after notice from CITY.

10. GENERAL CONTRACTOR shall and shall require its Subcontractors to cooperate with the CITY and the Department of Labor and Industrial Relations in the

enforcement of this Section, the Law, Rules, Annual Wage Order and any Wage Increase. GENERAL CONTRACTOR shall and shall require its Subcontractors to permit CITY and the Department of Labor and Industrial Relations to interview any and all workers during working hours on the Project at GENERAL CONTRACTOR's sole cost and expense.

11. GENERAL CONTRACTOR shall file with CITY, upon completion of the Project and prior to final payment therefore, affidavits from GENERAL CONTRACTOR and each of its Subcontractors, stating that each has fully complied with the provisions and requirements of the Missouri Prevailing Wage Law. CITY shall not make final payment until the affidavits, in proper form and order, from GENERAL CONTRACTOR and each of its Subcontractors, are filed by GENERAL CONTRACTOR.

12. GENERAL CONTRACTOR shall forfeit as a statutory penalty to the CITY one hundred dollars (\$100.00) for each worker employed, for each calendar day, or portion thereof, such worker is paid less than the prevailing hourly rates for any work done under this Contract, by GENERAL CONTRACTOR or by any of GENERAL CONTRACTOR's Subcontractors. If GENERAL CONTRACTOR or any of its Subcontractors have violated any section(s) of 290.210 to 290.340, RSMo, in the course of the execution of the Contract, CITY shall when making payments to the GENERAL CONTRACTOR becoming due under this Contract, withhold and retain therefrom all sums and amounts due and owing as a result of any violation of sections 290.210 to 290.340, RSMo.

G. Prevailing Wage Damages. GENERAL CONTRACTOR acknowledges and agrees that, based on the experience of CITY, violations of the Missouri Prevailing Wage Act, whether by GENERAL CONTRACTOR or its Subcontractors, commonly result in additional costs to CITY. GENERAL CONTRACTOR agrees that additional costs to CITY for any particular violation are difficult to establish and include but are not limited to: costs of construction delays, additional work for CITY, additional interest expenses, investigations, and the cost of establishing and maintaining a special division working under the City Manager to monitor prevailing wage compliance.

1. In the event of the failure by GENERAL CONTRACTOR or any of its Subcontractors to pay wages as provided in the Missouri Prevailing Wage Act, CITY shall be entitled to deduct from the Contract Price, and shall retain as liquidated damages, one hundred dollars (\$100.00) per day, per worker who is paid less than the prevailing hourly rate of wages, to approximate the additional costs. The sum shall be deducted, paid or owed whether or not the Contract Times have expired.

2. CITY shall give written notice to GENERAL CONTRACTOR setting forth the workers who have been underpaid, the amount of the statutory penalty and the amount of the liquidated damages as provided for in this Subparagraph J. GENERAL CONTRACTOR shall have fourteen (14) calendar days to respond, which time may be extended by CITY upon written request. If GENERAL CONTRACTOR fails to respond within the specified time, the CITY's original notice shall be deemed final. If GENERAL CONTRACTOR responds to CITY's notice, CITY will furnish GENERAL CONTRACTOR a final decision in writing within five (5) days of completing any investigation.

H. Missouri Secretary of State Business Entity Registration. DESIGN-BUILDER shall obtain, from all Subcontractors and Sub-Subcontractors for the Project, a copy of their current certificate of good standing or fictitious name registration from the Missouri Secretary of State before they begin work on the Site. DESIGN-BUILDER shall retain such documents in its files and shall make them available to CITY within ten (10) days after written request.

I. Tropical Hardwoods. The provisions of Code Section 2-1872, restricting the use of tropical hardwoods, shall apply to this Contract.

J. Preference for Missouri Products. Pursuant to Section 71.140, RSMo, preference shall be given to materials, products, supplies, and all other articles produced, manufactured, made, or grown within the State of Missouri.

K. Open Excavations. DESIGN-BUILDER shall comply, and shall cause each of its Subcontractors to comply, with Legal Requirements and with the following specific requirements relating to open excavations; provided, however, that inclusion of these requirements in the Contract Documents shall in no event result in CITY's responsibility or liability for any safety programs or precautions in connection with the Work, the Site, or the Project, as such responsibility and liability are exclusively those of DESIGN-BUILDER.

1. Protecting Excavations. DESIGN-BUILDER shall restore all required excavations to the level of the adjacent surfaces as soon as practicable. Unsupervised open excavations on public properties are discouraged at all times. If DESIGN-BUILDER, in performance of the Work, makes or causes to be made any excavation in, upon, under, through, or adjoining any street, sidewalk, alley, park, boulevard, parkway, or any other public properties, and leaves any part or portion thereof open, DESIGN-BUILDER shall provide effective protection for the public.

2. Securing Excavations. DESIGN-BUILDER shall protect and secure all excavations in roadways in compliance with existing federal, state, and local codes and standards, including, but not limited to, the most current edition of the Manual of Uniform Traffic Control Devices. DESIGN-BUILDER shall protect and secure all unsupervised excavations that are not within roadways, either by covering or fencing, in compliance with the following:

a. Covering. A protective cover that can sustain the weight of persons or objects placed upon it may be installed over an unsupervised excavation. The cover shall be secured to the ground to prevent movement. Protective covers shall have no opening(s) or protuberance(s) of sufficient size to cause or allow a fall and/or injury. Advance warning devices shall be installed as necessary.

b. Fencing. Fencing to prevent entry may be installed surrounding an unsupervised excavation that is not protectively covered in its entirety. The fencing shall be a minimum of 42" in height. The fencing shall be constructed in such a manner that it is adequately secured and will remain upright at all times under normal Site conditions.

c. Inspections. All protective coverings and fences over and around excavations shall be inspected at least daily to assure integrity. Protective coverings and/or fences in heavily trafficked areas shall be inspected more often as necessary.

L. Notification of Utilities. DESIGN-BUILDER shall adhere to the provisions of Sections 319.010 et seq., RSMo, which provide that a person or firm making an excavation in any public street, road or alley, right of way dedicated to public use, utility easement of record, or within any private street or private property may do so only after giving notice to, and obtaining information from, owners of Underground Facilities. Missouri's 24-hour toll-free accident-prevention hotline number is 1-800-344-7483 (1-800-DIG-RITE).

M. Missouri Sales Tax Exemption. CITY is a Missouri exempt entity pursuant to Section 144.062, RSMo, and tangible personal property to be incorporated or consumed in the construction of the Project may be purchased without the payment of sales tax. CITY shall furnish to DESIGN-BUILDER a Missouri Project Exemption Certificate for Sales Tax at the time of issuance of the Notice to Proceed.

N. Clean Air Act and Clean Water Act. DESIGN-BUILDER shall comply with requirements of the Clean Air Act (42 U.S.C. 7401 *et seq.*); Clean Water Act (33 U.S.C. 1251 *et seq.*), Missouri Clean Water Law (Chapter 644 RSMo), Code of Federal regulations (Title 40: Protection of Environment, Title 33: Navigation and Navigable Waters) and the rules of the Missouri Code of State Regulations (CSR Title 10).

O. OSHA 10-Hour Training Requirement. DESIGN-BUILDER and any subcontractor working under this Contract shall require every employee on the Site to complete a ten-hour construction safety program which meets the requirements of Section 292.675, RSMo, except for those employees who shall have previously completed the required program and hold documentation to that effect. DESIGN-BUILDER shall remove or require the removal of any person from the Site who is subject to this requirement and who does not complete or is unable to produce documentation of their successful completion of the required program within the time limitations prescribed by Section 292.675, RSMo. DESIGN-BUILDER shall forfeit the sum of two thousand five hundred dollars (\$2,500.00), in addition to one hundred dollars (\$100.00) per employee each calendar day, or portion thereof, the employee(s) shall continue to be employed without having completed the required program within the time limitations prescribed by Section 292.675, RSMo. CITY shall be entitled to withhold and retain any amounts due and owing hereunder when making payment to DESIGN-BUILDER.

P. Affirmative Action. If the Contract Price exceeds \$300,000.00 and DESIGN-BUILDER employs fifty (50) or more people, DESIGN-BUILDER shall comply with City's Affirmative Action requirements in accordance with the provisions of Chapter 38 of City's Code, the rules and regulations relating to those sections, and any additions or amendments thereto. DESIGN-BUILDER shall not discriminate against any employee or applicant for employment because of race, color, sex, religion, national origin or ancestry, disability, sexual orientation, gender identity or age in a manner prohibited by Chapter 38 of City's Code.

DESIGN-BUILDER shall:

1. Submit, in print or electronic format, a copy of DESIGN-BUILDER'S current certificate of compliance to the City's Human Relations Department (HRD) prior to receiving the first payment under the contract, unless a copy has already been submitted to HRD at any point within the previous two calendar years. If, and only if, DESIGN-BUILDER does not possess a current certification of compliance, DESIGN-BUILDER shall submit, in print or electronic format, a copy of its affirmative action program to HRD prior to receiving the first payment under the contract, unless a copy has already been submitted to HRD at any point within the previous two calendar years.
2. Require any Subcontractor awarded a subcontract exceeding \$300,000.00 to affirm that Subcontractor has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the subcontract.
3. Obtain from any Subcontractor awarded a subcontract exceeding \$300,000.00 a copy of the Subcontractor's current certificate of compliance and tender a copy of the same, in print or electronic format, to HRD within thirty (30) days from the date the subcontract is executed. If, and only if, Subcontractor does not possess a current certificate of compliance, DESIGN-BUILDER shall obtain a copy of the Subcontractor's affirmative action program and tender a copy of the same, in print or

electronic format, to HRD within thirty (30) days from the date the subcontract is executed.

City has the right to take action as directed by City's Human Relations Department to enforce this provision. If DESIGN-BUILDER fails, refuses or neglects to comply with the provisions of Chapter 38 of City's Code, then such failure shall be deemed a total breach of this Contract and this Contract may be terminated, canceled or suspended, in whole or in part, and DESIGN-BUILDER may be declared ineligible for any further contracts funded by City for a period of one (1) year. This is a material term of this Contract.

Q. Contract Information Management System. If applicable, DESIGN-BUILDER shall comply with CITY's Contract Information Management System requirements. DESIGN-BUILDER shall use CITY's Internet web based Contract Information Management System/Project Management Communications Tool provided by CITY, and protocols included in that software during the term of this Contract. DESIGN-BUILDER shall maintain user applications to CITY's provided system for all personnel, subcontractors or suppliers as applicable and shall require subcontractors/subconsultants to maintain same.

6.09 Government Approvals and Permits

A. DESIGN-BUILDER's Responsibility. DESIGN-BUILDER, at its own expense, shall secure all occupational and professional licenses; shall pay all Code application costs, Code review costs, governmental charges, and inspection fees; and shall secure from public or private sources or from any government or quasi-government entity having jurisdiction over the Project all necessary permits, approvals, and licenses required for the prosecution of the Work and necessary for the fulfillment of DESIGN-BUILDER's obligations under the Contract Documents.

B. DESIGN-BUILDER, at its own expense, shall comply with all Federal, State and local laws and regulations, including, but not limited to the Missouri Clean Water Law (Chapter 644 RSMo) together with any accompanying regulation(s) contained in the Missouri Code of State Regulations (CSR Title 10), as well as any implementing permits, together with any CITY Provisions during the life of this Contract including but not limited to:

- 1 Approvals and permits as required for construction or land disturbance activities.
2. Compliance with the State of Missouri – Department of Natural Resources ("MDNR") Missouri State Operating Permit ("Land Disturbance Permit"), MO-R100006 for all construction or land disturbance activity.
3. Development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).
 - a. DESIGN-BUILDER shall not commence land disturbance activity until the initial SWPPP has been finalized.
 - b. Preparation and submittal of all applications, documentation and exhibits required to obtain MDNR approvals for uninterrupted Work at the Site.
 - c. Amending/Updating SWPPP.
 - d. Site Inspections and submittal of Inspection Reports
 - e. Proper Operation and Maintenance to achieve compliance with the terms of the Permit.

- f. Maintenance of required records in accordance with MDNR requirements and requirements included in Article 6 of these Contract Documents.
4. In addition to requirements of Article 6, DESIGN-BUILDER shall also provide record access to Missouri Department of Natural Resources (MDNR).
5. No additional Contract time will be granted to obtain approvals or permits or for coordination with that agency

C. Subcontractors' Licenses. Before Subcontractors begin Work at the Site, DESIGN-BUILDER shall obtain copies of all licenses required of such Subcontractors by these Contract Documents. DESIGN-BUILDER shall retain such evidence in its files and make it available to CITY within ten (10) days after written request.

D. No Release from Responsibility. No review, inspection, or approval of any of the Work by any government or quasi-government entity having jurisdiction over the Project shall relieve DESIGN-BUILDER of its exclusive responsibility and liability for the performance of its obligations in accordance with the Contract Documents and Legal Requirements.

6.10 Construction Phase Services

A. DESIGN-BUILDER's Responsibility. Unless otherwise provided in the Contract Documents to be the responsibility of CITY or a separate contractor under CITY's control, DESIGN-BUILDER shall provide through itself or its Subcontractors the necessary supervision, labor, inspection, testing, start-up, material, equipment, machinery, temporary utilities, other temporary facilities, and all other items or services necessary to permit DESIGN-BUILDER to perform and complete the construction of the Project consistent with the Contract Documents and Legal Requirements.

B. DESIGN-BUILDER's Skill and Control. DESIGN-BUILDER shall perform all construction activities efficiently, in a workmanlike manner, and with the requisite expertise, skill, and competence to satisfy the Contract Documents and Legal Requirements. DESIGN-BUILDER shall at all times exercise complete and exclusive control over the means, methods, sequences, and techniques of construction, and all safety precautions and programs in connection with the performance of the Work.

C. Uncovering Work

1. Work Covered Improperly. If any Work (or the work of others at the Site) is covered contrary to the written request of CITY, DESIGN-BUILDER must uncover it at CITY's request for CITY's observation and replace it at DESIGN-BUILDER's expense.

2. Work Covered Properly. If CITY considers it necessary or advisable that covered Work be observed by CITY or be inspected or tested by others, DESIGN-BUILDER, at CITY's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as may be required, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

a. Defective Work. If it is found that such Work is defective, DESIGN-BUILDER shall pay all costs, losses, and damages (including, but not limited to, all fees and charges of contractors, engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) caused by, arising out of, or resulting from such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of

others); and CITY shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, CITY may make a Claim therefore.

b. Non-Defective Work. If, however, such Work is not found to be defective, DESIGN-BUILDER shall be allowed an increase in the Contract Price or an extension of the Contract Time(s) (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, DESIGN-BUILDER may make a Claim therefore.

D. Subcontractors

1. CITY's Approval. DESIGN-BUILDER shall engage only Subcontractors and Sub-subcontractors who are duly licensed and qualified to perform the Work consistent with the Contract Documents and Legal Requirements. Upon execution of the Contract and at such later times as CITY may request, DESIGN-BUILDER shall furnish, in writing, information about DESIGN-BUILDER's proposed Subcontractors and Sub-subcontractors. CITY shall promptly provide in writing any reasonable objections it may have to any such Subcontractor or Sub-subcontractor, in which case DESIGN-BUILDER shall submit an acceptable replacement. DESIGN-BUILDER shall not contract with any Subcontractor or Sub-subcontractor to which CITY objects, provided that the Contract Price and/or Contract Time(s) shall be equitably adjusted to the extent CITY's objection actually impacts DESIGN-BUILDER's cost and/or time of performance. DESIGN-BUILDER shall not be required to contract with any Subcontractor or Sub-Subcontractor against whom DESIGN-BUILDER has reasonable objection. CITY's consent or failure to object to any Subcontractor or Sub-subcontractor shall neither constitute any waiver by CITY of any of its rights and remedies under the Contract Documents or Legal Requirements, nor relieve DESIGN-BUILDER of any of its duties, obligations, liabilities, or warranties under the Contract Documents or Legal Requirements.

2. DESIGN-BUILDER's Subcontractors. DESIGN-BUILDER acknowledges its responsibility to CITY for the proper performance of the Work by DESIGN-BUILDER's Subcontractors and Sub-subcontractors and its responsibility for any of their acts or omissions in connection with the Work, and acknowledges that such subcontracting shall in no way relieve DESIGN-BUILDER of its obligations and liabilities under the Contract Documents and Legal Requirements.

3. Written Agreements. All Work performed by any Subcontractor or Sub-Subcontractor shall be pursuant to a written agreement or purchase order that specifically binds such Subcontractor or Sub-Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of CITY, and that affords to DESIGN-BUILDER the same rights against such Subcontractors and Sub-subcontractors as the Contract Documents afford to CITY against DESIGN-BUILDER. Nothing in the Contract Documents is intended or shall be construed to create any legal or contractual relationship between CITY and any Subcontractor or Sub-Subcontractor, nor to confer any benefit from CITY upon any Subcontractor or Sub-Subcontractor, including but not limited to any third-party beneficiary rights, and a provision to such effect shall be inserted into all subcontracts and purchase orders between DESIGN-BUILDER and its Subcontractors and Sub-subcontractors.

4. Contingent Assignment. Each agreement and purchase order referenced in

Section 6.10.D.3 above shall include an express assignment to CITY upon the conditions that (1) such assignment is effective only in the event of CITY's termination of the Contract for cause pursuant to Section 12.3 of these General Conditions of Contract, (2) such assignment is effective only with respect to those agreements and purchase orders CITY accepts in writing, and (3) such assignment is subject to any prior rights of the surety obligated under the Bonds.

E. Coordination

1. DESIGN-BUILDER's Forces. DESIGN-BUILDER shall coordinate the activities of the DOR, the GC, all Design Subconsultants, all Subcontractors, and all Sub-subcontractors with respect to the Work. Such coordination shall include, but not be limited to, jobsite meetings involving all such Project participants, at dates and times mutually agreed upon in advance with CITY's Representative.

2. CITY's Forces. If CITY performs any work on the Project or at the Site with CITY's own forces or with separate contractors under CITY's control, DESIGN-BUILDER shall reasonably cooperate and coordinate its activities with those of such separate forces or contractors so that the Project can be completed in an orderly and coordinated manner without unreasonable disruption, delay, or damage to any party.

F. Supervision and Superintendence

1. DESIGN-BUILDER shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

2. At all times during the progress of the Work, DESIGN-BUILDER shall assign a competent resident superintendent of the Work, who shall not be replaced without written request to and written approval by CITY except under extraordinary circumstances. The superintendent will be DESIGN-BUILDER's representative at the Site and shall have authority to act on behalf of DESIGN-BUILDER. All communications given to or received from the superintendent shall be binding on DESIGN-BUILDER.

G. Services, Working Hours, Labor, Materials, and Equipment

1. DESIGN-BUILDER shall provide competent, suitably qualified personnel to survey, layout, and construct the Work as required by the Contract Documents. DESIGN-BUILDER shall at all times maintain good discipline and order at the Site. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto. CITY's prior written approval shall be required in the event DESIGN-BUILDER intends to perform Work at the Site outside regular working hours.

2. Unless otherwise specified in the Contract Documents, DESIGN-BUILDER shall furnish and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

3. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees shall expressly run to the benefit of CITY. If required by CITY, DESIGN-

BUILDER shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's instructions except as may be otherwise provided in the Contract Documents.

H. Use of Site and Other Areas

1. DESIGN-BUILDER shall confine its construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas identified in and permitted by the Contract Documents and other areas permitted by Legal Requirements. DESIGN-BUILDER shall not unreasonably encumber the Site and the other areas with construction equipment or other materials or equipment. DESIGN-BUILDER shall assume full responsibility for any damage to the Site or the other areas, or to the owner(s) or occupant(s) thereof, or of any adjacent land or areas, resulting from the performance of the Work.

2. Should any claim be made by any such owner(s) or occupant(s) because of the performance of the Work, DESIGN-BUILDER shall promptly resolve such claim. In case of a failure on the part of DESIGN-BUILDER to restore such property or to make good such damage or injuries, CITY may, upon forty-eight (48) hours' written notice to DESIGN-BUILDER, repair, rebuild, or otherwise restore such property as CITY may deem necessary, and the cost thereof will be deducted from any moneys due or which may become due to DESIGN-BUILDER under this Contract.

3. DESIGN-BUILDER shall, to the fullest extent permitted by Legal Requirements, defend, indemnify, and hold harmless CITY, its Consultant(s), and its or their officials, officers, directors, employees, and agents from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of contractors, engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) arising out of or resulting from any claim or action, legal or equitable, brought by any such owner(s) or occupant(s) against CITY or any other party indemnified hereunder to the extent caused by or based upon DESIGN-BUILDER's performance of the Work.

4. During the progress of the Work, DESIGN-BUILDER shall keep the Site and the other areas free from accumulations of waste materials, rubbish, and other debris resulting from the Work. DESIGN-BUILDER shall leave the Site clean and ready for utilization or occupancy by CITY at Substantial Completion of the Work. At the completion of the Work, DESIGN-BUILDER shall remove all waste materials, rubbish, and debris from the Site and the other areas, as well as all tools, appliances, construction equipment and machinery, and surplus materials. DESIGN-BUILDER shall restore to its pre-Work condition all property not designated for alteration by the Contract Documents.

DESIGN-BUILDER shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall DESIGN-BUILDER subject any part of the Site, the Work or adjacent property to stresses or pressures that will endanger it or them.

I. Emergencies

1. In the event of emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, DESIGN-BUILDER, without

special instruction or authorization from CITY, is obligated to act to prevent threatened damage, injury, or loss. DESIGN-BUILDER shall give prompt written notice to CITY if DESIGN-BUILDER believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If CITY determines that a change in the Contract Documents is required because of the action taken by DESIGN-BUILDER in response to an emergency, a Work Change Directive or Change Order will be issued.

2. A change in the Contract Documents pursuant to Section 6.10.I will not be an automatic authorization of, nor a condition precedent to, entitlement to adjustment to the Contract Price and/or Contract Time(s). If CITY and DESIGN-BUILDER are unable to agree on entitlement to, or magnitude of, an equitable adjustment to the Contract Price and/or Contract Time(s), a Claim may be made therefore. However, neither CITY nor its Consultant(s) shall be liable to DESIGN-BUILDER for any costs, losses, or damages (including but not limited to all fees and charges of contractors, engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) sustained by DESIGN-BUILDER on or in connection with any other project or anticipated project.

J. Access to the Work

1. CITY, its Consultant(s), other CITY representatives and personnel, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and Work at reasonable times for their observation, inspection, and testing of the Work. DESIGN-BUILDER shall afford proper and safe conditions for such access and shall advise of DESIGN-BUILDER's Site safety procedures and programs so that such persons and entities may comport themselves therewith as may be applicable.

K. Tests and Inspections

1. DESIGN-BUILDER shall give to CITY's Representative timely notice of readiness of the Work for all required inspections, tests, or approvals, and DESIGN-BUILDER shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

2. If any Work (or the work of others at the Site) that is to be inspected, tested, or approved is covered by DESIGN-BUILDER without written approval required by Sections 6.10.K.4 or 6.10.A, it must, if requested by CITY's Representative, be uncovered for observation.

3. Uncovering Work as provided in Section 6.10.K.2 shall be at DESIGN-BUILDER's expense unless DESIGN-BUILDER gave timely notice to CITY's Representative of DESIGN-BUILDER's intention to cover the same and CITY's Representative failed to act with reasonable promptness in response to such notice.

4. If Legal Requirements of any public body (including CITY) having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, DESIGN-BUILDER shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish the required certificates of inspection or approval to CITY's Representative.

5. DESIGN-BUILDER shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for CITY's acceptance of materials or equipment to be incorporated into the Work, or acceptance of materials, mix designs, or equipment submitted for approval prior to DESIGN-BUILDER's purchase thereof for incorporation into the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to CITY.

6. CITY shall engage and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

- a. for inspections, tests or approvals covered by Sections 6.10.K.4 and 6.10.K.5;
- b. that costs incurred in connection with tests or inspections conducted pursuant to Section 6.10.K.2 shall be paid as provided in Section 6.10.K.3; and
- c. as otherwise specifically provided in the Contract Documents.

L. Clean Up

1. General. DESIGN-BUILDER shall keep the Site, including adjacent land areas and roads, reasonably free from debris, trash, mud, and construction wastes to permit DESIGN-BUILDER to perform its construction services efficiently and safely, and without interfering with the use of adjacent land areas and roads.

2. Regular Clean-Up Required. On a regular basis agreeable to CITY, DESIGN-BUILDER shall remove from CITY's property and from adjacent land areas and roads, and shall legally dispose of, all waste, trash, mud, and debris generated as a result of the Work performed under this Contract.

3. Disposal Records. DESIGN-BUILDER shall maintain written records of disposal methods and disposal sites, including, without limitation, copies of dump receipts or other forms provided by licensed landfills or agreements with property owners on whose property such waste materials are placed. DESIGN-BUILDER shall make such disposal records available to CITY within ten (10) working days from the date of CITY's written request therefore.

4. Substantial Completion. Upon Substantial Completion of the Work, or a portion of the Work, DESIGN-BUILDER shall remove all debris, trash, mud, construction wastes, materials, equipment, machinery, and tools arising from the Work or applicable portions thereof and shall leave the area "broom clean," to permit CITY to use or occupy the Project or a portion of the Project for its intended use.

5. CITY's Right to Clean Up. If DESIGN-BUILDER fails to provide the clean-up of the Site as required by this Section 6.10.L, CITY, in its sole option, may have the required clean-up performed. All costs, losses, and damages (including but not limited to all fees and charges of contractors, engineers, architects, attorneys, and other professionals, and all court or other dispute resolution costs) caused by or resulting from such clean-up or other costs, losses, and damages incurred or sustained by CITY in exercising such rights and remedies will be charged against DESIGN-BUILDER.

6.11 DESIGN-BUILDER's Responsibility for Project Safety

A. Exclusive Responsibility. DESIGN-BUILDER recognizes the importance of performing the Work in a safe manner so as to prevent damage, injury, or loss to (i) all individuals at the Site, whether working or visiting; (ii) the Work, including materials and equipment incorporated into the Work or stored on-Site or off-Site; and (iii) all other property at the Site or adjacent thereto. DESIGN-BUILDER assumes complete and exclusive responsibility for implementing and monitoring all safety precautions and programs related to the performance of the Work. DESIGN-BUILDER's Safety Officer identified in the Technical Approach Submittal of DESIGN-BUILDER's Bid shall supervise the implementation and monitoring of all safety precautions and programs related to the Work. Unless otherwise required by the Contract Documents, DESIGN-BUILDER's Safety Officer shall be an individual stationed at the Site who may have responsibilities on the Project in addition to safety. The Safety Officer shall make routine daily inspections of the Site and shall hold weekly safety meetings with DESIGN-BUILDER's personnel, Subcontractors, and others as applicable. CITY may attend such meetings in its sole discretion, but CITY shall have no obligation to do so, and no responsibility or liability shall be imposed upon CITY for its attendance or failure to attend such meetings.

B. Accident Reporting. DESIGN-BUILDER and Subcontractors shall comply with Legal Requirements relating to safety, as well as any CITY-specific safety requirements set forth in the Contract Documents provided that such CITY-specific requirements do not violate any applicable Legal Requirements. DESIGN-BUILDER will immediately report in writing to CITY's Representative any safety-related injury, loss, damage, or accident arising from the Work and, to the extent mandated by Legal Requirements, to all government or quasi-government authorities having jurisdiction over safety-related matters involving the Project or the Work.

C. Subcontractors' Responsibility. DESIGN-BUILDER's responsibility for safety under this Section 6.9 and the Contract Documents and Legal Requirements is not intended in any way to relieve Subcontractors and Sub-Subcontractors of their own contractual and legal obligations and responsibility for (i) complying with Legal Requirements, including those related to health and safety matters; and (ii) taking all necessary measures to implement and monitor all safety precautions and programs to guard against injury, losses, damages, or accidents resulting from their performance of the Work.

6.12 DESIGN-BUILDER's Warranty

A. DESIGN-BUILDER warrants to CITY that the Work, including all workmanship, materials, and equipment furnished as part of the Work, shall be new unless otherwise specified in the Contract Documents, of good quality, in conformance with the Contract Documents, and free of defects in materials and workmanship. DESIGN-BUILDER's warranty obligation excludes defects caused by abuse, alterations, or failure to maintain the Work by persons other than DESIGN-BUILDER or anyone for whose acts DESIGN-BUILDER may be liable. Nothing in this warranty is intended to limit any manufacturer's warranty providing CITY with greater warranty rights than set forth in this Section 6.10 or the Contract Documents. Upon Substantial Completion, DESIGN-BUILDER will provide CITY with all manufacturers' and products warranties associated with the Work, and shall provide assignments of such warranties to CITY if necessary.

6.13 DESIGN-BUILDER's Correction of Defective Work

A. One-Year Correction Period. If, (i) during the course of DESIGN-BUILDER's

performance of its obligations under the Contract Documents; or (ii) within one (1) year after the date of Substantial Completion, or (iii) within such longer period of time as may be prescribed by Legal Requirements, by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the Site or other areas made available for DESIGN-BUILDER's use by CITY or permitted by Legal Requirements as contemplated in Section 6.08 is found to be defective, CITY shall give written notice thereof to DESIGN-BUILDER. Within seven (7) days after the date of CITY's written notice, DESIGN-BUILDER shall, without cost to CITY and in accordance with CITY's written instructions, complete the following corrective Work or, if such corrective Work cannot be completed within seven (7) days, DESIGN-BUILDER shall reasonably commence to perform, and shall complete within a reasonable time thereafter, the following corrective Work:

1. Correct the repair of damages to the Site or other areas; or
2. Correct such defective Work, or if it has been rejected by CITY, remove it from the Site and replace it with Work that is not defective; and
3. Satisfactorily correct or remove and replace any damage to other Work or to the work of others or damage to other lands or areas resulting therefrom.

B. Early Use of Equipment. In special circumstances where a particular item of equipment is placed into continuous service before Substantial Completion of all of the Work, the correction period for that item may start to run from an earlier date if so provided in the Contract Documents.

C. Additional One-Year Correction Period. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Section 6.13, the correction period with respect to such corrected or replaced Work will be extended for an additional period of one (1) year, or such longer period of time as may be prescribed within Section 6.13.A, after such correction or removal and replacement has been satisfactorily completed.

6.14 CITY's Acceptance of Defective Work

A. CITY's Sole Option. If, instead of requiring correction or removal and replacement of defective Work, CITY prefers to accept such defective Work, CITY may do so, in its sole discretion.

B. DESIGN-BUILDER's Costs. In the event CITY decides to accept such defective Work, DESIGN-BUILDER shall pay all costs, losses, and damages (including, but not limited to, all fees and charges of contractors, engineers, architects, attorneys, and other professionals, and all court or other dispute resolution costs) attributable to CITY's evaluation of and determination to accept such defective Work, and in addition DESIGN-BUILDER shall pay CITY for the diminished value of the Work.

C. Deductive Change Order. If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions into the Contract Documents with respect to the Work and, due to the diminished value of the Work; CITY shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, CITY may make a Claim therefore.

D. Payment by DESIGN-BUILDER. If the acceptance of defective Work occurs after final payment, DESIGN-BUILDER shall pay the appropriate amount to CITY.

6.15 CITY's Correction of Defective Work

A. CITY's Right to Correct Work. If DESIGN-BUILDER fails, within the time period set forth in Section 6.13. above after written notice from CITY, to correct, or commence to correct, defective Work or to remove and replace, or commence to remove and replace, rejected Work as required by CITY, or if DESIGN-BUILDER fails to perform the Work in accordance with the Contract Documents and Legal Requirements, or if DESIGN-BUILDER fails to comply with any other provision of the Contract Documents or Legal Requirements, or in the event of an emergency where delay by DESIGN-BUILDER would cause serious risk of loss or damage, CITY, in its sole option, may have the defective Work corrected or the rejected Work removed and replaced.

B. CITY's Right to Take Possession. In connection with such corrective and remedial action, CITY may exclude DESIGN-BUILDER from all or part of the Site; take possession of all or part of the Work and suspend DESIGN-BUILDER's services related thereto; take possession of DESIGN-BUILDER's tools, appliances, construction equipment, and machinery at the Site; and incorporate into the Work all materials and equipment stored at the Site or for which CITY has paid DESIGN-BUILDER but which are stored elsewhere. DESIGN-BUILDER shall allow CITY, its Consultants, CITY's other contractors, and its or their agents and employees, access to the Site to enable CITY to exercise the rights and remedies under this Section 6.13.

C. DESIGN-BUILDER's Costs. All costs, losses, and damages (including but not limited to all fees and charges of contractors, engineers, architects, attorneys, and other professionals, and all court or other dispute resolution costs) caused by or resulting from such removal and replacement (including, but not limited to, all costs of repair or replacement of work of others destroyed or damaged by the correction, removal, and replacement of such defective or rejected Work) or other costs, losses, and damages incurred or sustained by CITY in exercising such rights and remedies will be charged against DESIGN-BUILDER.

D. Deductive Change Order. If such removal and replacement occurs prior to final payment, a Change Order will be issued and CITY shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, CITY may make a Claim therefore.

E. Payment by DESIGN-BUILDER. If such removal and replacement occurs after final payment, DESIGN-BUILDER shall pay the appropriate amount to CITY.

6.16 No Time Extension

A. DESIGN-BUILDER shall not be allowed an extension of the Contract Time(s) (or Milestones) because of any delay in the performance of the Work attributable to the exercise by CITY of CITY's rights and remedies under Sections 6.13, 6.14, and/or 6.15.

6.17. No Effect on Legal Requirements

A. The one-year period referenced in Section 6.13 applies only to DESIGN-BUILDER's obligation to correct defective or nonconforming Work, and such obligations are in addition to any other obligation or warranty imposed under the Contract Documents, Legal Requirements, or applicable law.

B. The provisions of Section 6.13 shall not be construed as a substitute for or waiver of the provisions of any applicable statute of limitations or repose, and the time period set forth in Section 6.13 does not constitute a period of limitations or repose for any other rights or remedies CITY may have under the Contract Documents, Legal Requirements, or applicable law with respect to enforcement of DESIGN-BUILDER's obligations.

6.18 Indemnification

A. For purposes of this Paragraph 6.18 only, the following terms shall have the meanings listed:

1. Claims means all claims, damages, liability, losses, costs and expenses, including court costs and reasonable attorneys' fees, including attorney's fees incurred by the CITY in the enforcement of this indemnity obligation.
2. DESIGN BUILDER'S Agents means DESIGN BUILDER's officers, employees, subconsultants, subcontractors, successors, assigns, invitees, and other agents.
3. CITY means CITY, its Program Manager/Construction Advisor and any of their agents, officials, officers, employees and program managers or construction advisors.

B. DESIGN BUILDER's obligations under this Paragraph with respect to indemnification for acts or omissions, including negligence, of CITY, shall be limited to the coverage and limits of insurance that DESIGN BUILDER is required to procure and maintain under this Contract. DESIGN BUILDER affirms that it has had the opportunity to recover the costs of the liability insurance required in this Contract in its contract price.

C. DESIGN BUILDER shall defend, indemnify and hold harmless CITY from and against all Claims arising out of or resulting from all acts or omissions in connection with this Contract caused in whole or in part by DESIGN BUILDER or DESIGN BUILDER's Agents, regardless of whether or not caused in part by any act or omission, including negligence, of OWNER.

D. In any and all Claims against CITY, DESIGN PROFESSIONAL, CONSULTANT, or any of their respective agents, officers, directors or employees by any employee (or the survivor or personal representative of such employee) of DESIGN BUILDER, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.18 C shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for DESIGN BUILDER or any such Subcontractor, Supplier or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.

E. The indemnification obligations of DESIGN BUILDER under Paragraph 6.18 C shall not extend to liability arising out of, resulting from, or caused by the professional negligence, errors or omissions of DESIGN PROFESSIONAL, CONSULTANT, or any of their respective agents, officers, directors or employees.

ARTICLE 7 OTHER WORK

7.01 Related Work at Site

A. CITY may perform other work related to the Project at the Site by CITY's own forces, or let other direct contracts therefore, or have other work performed by utility owners. If such other work is to be performed and such fact was not noted in the Contract Documents, then:

1. Written notice thereof will be given to DESIGN-BUILDER prior to starting any such other work, and
2. DESIGN-BUILDER may make a Claim therefore as provided in Article 15 if

DESIGN-BUILDER believes that such performance involves additional expense to DESIGN-BUILDER or requires additional time and the parties are unable to agree as to the amount or extent thereof.

B. DESIGN-BUILDER shall afford each other contractor who is a party to such a direct contract, and each utility owner (and CITY, if CITY is performing the additional work with CITY's employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, DESIGN-BUILDER shall do all cutting, fitting and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. DESIGN-BUILDER shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of CITY and the others whose work will be affected. The duties and responsibilities of DESIGN-BUILDER under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of DESIGN-BUILDER in said direct contracts between CITY and such utility owners and other contractors.

C. If the proper execution or results of any part of DESIGN-BUILDER's Work depends upon work performed by others under this Article 7, DESIGN-BUILDER shall inspect such other work and promptly report to CITY and CITY in writing any delays, defects or deficiencies in such other work that render it unavailable or unsuitable for the proper execution or results of DESIGN-BUILDER's Work. DESIGN-BUILDER's failure to report same will constitute an acceptance of such other work as fit and proper for integration with DESIGN-BUILDER's Work, except for latent or non-apparent defects and deficiencies in such other work.

7.02 Coordination

A. If CITY contracts with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the person, firm or corporation who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified;
2. the specific matters to be covered by such authority and responsibility will be itemized; and
3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, CITY shall have sole authority and responsibility in respect of such coordination.

ARTICLE 8 CITY'S RESPONSIBILITIES

8.01 Duty to Cooperate

A. CITY shall, throughout the performance of the Work, cooperate with DESIGN-BUILDER and perform CITY's responsibilities, obligations, and services in a reasonably timely manner to facilitate DESIGN-BUILDER's timely and efficient performance of the Work and so as not to unreasonably delay or interfere with DESIGN-BUILDER's performance of its obligations under the Contract Documents.

B. CITY shall provide DESIGN-BUILDER access to the Site, and CITY shall provide timely reviews and approvals of interim design submissions and Construction

Documents consistent with the reasonable turnaround times set forth in DESIGN-BUILDER's schedule approved in writing by CITY as referenced in Section 2.5 of these General Conditions of Contract.

8.02 Furnishing of Services and Information

A. Unless stated to the contrary in the Contract Documents (including, without limitation, Article 4 hereof), CITY shall provide, at its own cost and expense, for DESIGN-BUILDER's information and use, the following, upon which DESIGN-BUILDER is entitled to rely in performing the Work unless otherwise stated in the information provided or in the Supplementary Conditions:

1. To the extent available, surveys describing the property, boundaries, topography, and reference points for use during construction, including existing service and utility lines;
2. Temporary and permanent easements, zoning, and other requirements and encumbrances affecting land use or necessary to permit the proper design and construction of the Project and enable DESIGN-BUILDER to perform the Work;
3. A legal description of the Site;
4. To the extent available, as-built and record drawings of any existing structures at the Site.

B. CITY is responsible for securing and executing all necessary agreements with adjacent land or property owners that are necessary to enable DESIGN-BUILDER to perform the Work. CITY is further responsible for all costs, including attorneys' fees, incurred in securing such agreements.

8.03 CITY's Representative

A. CITY's Representative shall be responsible for providing CITY-supplied information and approvals in a reasonably timely manner to permit DESIGN-BUILDER to fulfill its obligations under the Contract Documents. CITY's Representative shall also provide DESIGN-BUILDER with prompt notice if CITY's Representative observes any material failure on the part of DESIGN-BUILDER to fulfill its contractual obligations, including any errors, omissions, or defects in the performance of the Work.

8.04 CITY's Separate Contractors

A. CITY is responsible for all work performed on the Project or at the Site by separate contractors under CITY's control (including, without limitation, separate architects and engineers CITY has engaged for the Project). CITY shall contractually require its separate contractors to cooperate with, and coordinate their activities so as not to interfere with, DESIGN-BUILDER in order to enable DESIGN-BUILDER to timely complete the Work consistent with the Contract Documents.

ARTICLE 9 CHANGES IN THE WORK

9.01 Authorized Changes in the Work

A. Without invalidating the Contract and without notice to any surety, CITY may, at any time or from time to time, order additions, deletions or revisions in the Work. Such additions, deletions or revisions will be authorized by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, DESIGN-BUILDER shall promptly proceed with the Work involved that will be performed under the applicable conditions of the Contract Documents.

B. If CITY and DESIGN-BUILDER are unable to agree on entitlement to, or on the

amount or extent, if any, of an adjustment in the Contract Price pursuant to Article 10 or an adjustment of the Contract Times pursuant to Article 11 or both that should be allowed as a result of a Work Change Directive, a Claim may be made therefore as provided in Article 15.

9.02 Unauthorized Changes in the Work

A. DESIGN-BUILDER shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified or supplemented, except in the case of an emergency or in the case of uncovering Work.

9.03 Signing of Change Orders

A. CITY and DESIGN-BUILDER, shall sign appropriate Change Orders covering:

1. changes in the Work which are:
 - a. ordered by CITY or
 - b. required because of acceptance of defective Work or correcting defective Work.; or
 - c. agreed to by the parties;
2. changes in the Contract Price or Contract Times or both which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
3. changes in the Contract Price or Contract Times or both which embody the substance of any written decision approved by CITY, provided that, in lieu of signing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws or Regulations, but during any such appeal, DESIGN-BUILDER shall carry on the Work and adhere to the progress schedule..

9.04 Notification to Surety

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times or both) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be DESIGN-BUILDER's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 10 CHANGE OF CONTRACT PRICE

10.01 Change of Contract Price

A. The Contract Price constitutes the total compensation payable to DESIGN-BUILDER for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by DESIGN-BUILDER shall be at DESIGN-BUILDER's expense without change in the Contract Price.

B. The Contract Price may only be changed by a Change Order. Any request for an adjustment in the Contract Price shall be based on written notice delivered within fourteen (14) calendar days after occurrence of the event giving rise to the request or within fourteen (14) calendar days after first recognition of the conditions giving rise to the request. Prior notice is not required for requests or claims relating to an emergency endangering life or property as described in Paragraph 6.16. Thereafter, the DESIGN-BUILDER shall submit written

documentation of its request, including appropriate supporting documentation, within ten (10) calendar days after giving notice, unless the CITY grants an extension based on good cause shown by the DESIGN-BUILDER that such additional time is warranted.

C. The value of any Work covered by a Change Order or of any request for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by Unit Prices contained in the Contract Documents, by application of such Unit Prices to the quantities of the items involved (subject to the provisions of Paragraph 10.04); or
2. where the Work involved is not covered by Unit Prices contained in the Contract Documents, by a mutually agreed lump sum; or
3. where the Work involved is not covered by Unit Prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 10.01 C.2, on the basis of the Cost of the Work (determined as provided in Paragraphs 10.02 A and B) plus a DESIGN-BUILDER's fee for overhead and profit (determined as provided in Paragraph 10.01 D).

D. The DESIGN-BUILDER's fee allowed to DESIGN-BUILDER for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or
2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 10.02 A.1 and 10.02 A.2, the DESIGN-BUILDER's fee shall be ten percent (10%);
 - b. for costs incurred under Paragraph 10.02 A.3, the DESIGN-BUILDER's fee shall be five percent (5%);
 - c. where one or more tiers of subcontracts are on the basis of the Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 10.01 D.2 and 10.02 A.1 through A.3 is that the Subcontractor who actually performs or furnishes the Work, at whatever tier, will be paid a fee of ten percent (10%) of the costs incurred by such Subcontractor under Paragraphs 10.02 A.1 and 10.02 A.2 and that any higher tier Subcontractor and DESIGN-BUILDER will each be paid a fee of five percent (5%) of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 10.02 A.4, 10.02 A.5 and 10.02 B;
 - e. the amount of credit to be allowed by DESIGN-BUILDER to CITY for any change which results in a net decrease in cost will be the amount of the actual net decrease in costs plus a deduction in DESIGN-BUILDER's fee by an amount equal to five percent (5%) of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in DESIGN-BUILDER's fee shall be computed on the basis of the net change in accordance with Paragraphs 10.01 D.2.a through 10.01 D.2.e, inclusive.

E. Whenever the Cost of the Work is to be determined pursuant to Paragraphs 10.02 A and B, DESIGN-BUILDER shall establish and maintain records thereof in accordance

with generally accepted accounting practices and submit in form acceptable to CITY an itemized cost breakdown together with supporting data.

10.02 Cost of the Work

A. The term "Cost of the Work" means the sum of all costs necessarily incurred and paid by DESIGN-BUILDER in the proper performance of the Work. When the value of any Work covered by a Change Order or when a request for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to DESIGN-BUILDER will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the request. Except as otherwise agreed to in writing by CITY, costs covered by Change Orders or requests shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any costs itemized in 10.02 B:

1. Payroll costs for employees in the direct employ of DESIGN-BUILDER in the performance of the Work, using occupational titles and job classifications agreed upon by CITY and DESIGN-BUILDER. Such employees shall include, without limitation, job Site superintendents, foremen and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing the Work after regular working hours, on Saturdays, Sundays or legal holidays shall be included in the above to the extent authorized by OWNER.

2. Cost of all materials and equipment furnished and incorporated into the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to DESIGN-BUILDER unless CITY deposits funds with DESIGN-BUILDER with which to make payments, in which case the cash discounts shall accrue to CITY. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to CITY, and DESIGN-BUILDER shall make provisions so that they may be obtained.

3. Payments made by DESIGN-BUILDER to Subcontractors for Work performed or furnished by Subcontractors. If required by CITY, DESIGN-BUILDER shall obtain competitive bids from Subcontractors acceptable to OWNER and DESIGN-BUILDER and shall deliver such bids to CITY who will then determine, with the advice of CITY, which bids, if any, will be accepted. If any subcontract provides that the Subcontractor is to be paid on the basis of the Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as DESIGN-BUILDER's Cost of the Work and fee as provided in Paragraphs 10.01 D and E and 10.02 A and B. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work when such services are approved in advance by CITY in writing.

5. Other costs including the following:

a. The proportion of necessary transportation, travel and subsistence

expenses of DESIGN-BUILDER's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the Site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value of such items used but not consumed which remain the property of DESIGN-BUILDER.

c. Rentals of all construction equipment and machinery and the parts thereof whether rented from DESIGN-BUILDER or others in accordance with rental agreements approved by CITY, and the costs of transportation, loading, unloading, installation, assembly, dismantling and removal thereof, all in accordance with the terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

d. Applicable sales, consumer, use or similar taxes related to the Work, and for which DESIGN-BUILDER is liable, imposed by Laws or Regulations.

e. Deposits lost for causes other than negligence of DESIGN-BUILDER, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses required to perform the Work.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by DESIGN-BUILDER in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by CITY in accordance with Article 5), provided they have resulted from causes other than the negligence of DESIGN-BUILDER, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of CITY. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining DESIGN-BUILDER's fee. If, however, any such loss or damage requires reconstruction and DESIGN-BUILDER is placed in charge thereof, DESIGN-BUILDER shall be paid for those services a fee proportionate to that stated in Paragraph 10.01 D.2.

g. The cost of utilities, fuel and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressage and similar petty cash items in connection with the Work.

i. Cost of premiums for additional or increased Bonds, or for insurance required because of approved changes in the Work.

B. Costs excluded: The term "Cost of the Work" shall not include any of the following:

1. Payroll costs and other compensation of DESIGN-BUILDER's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by DESIGN-BUILDER whether at the Site or in DESIGN-

BUILDER's principal or a branch office for general administration of the Work (if not specifically included in the agreed upon occupational titles and job classifications referred to in Paragraph 10.02 A.1 or specifically covered by Paragraph 10.02 A.4), all of which are to be considered administrative costs covered by the DESIGN-BUILDER's fee.

2. Expenses of DESIGN-BUILDER's principal and branch offices other than DESIGN-BUILDER's office at the Site.

3. Any part of DESIGN-BUILDER's capital expenses, including interest on DESIGN-BUILDER's capital employed for the Work and charges against DESIGN-BUILDER for delinquent payments.

4. Costs due to the negligence of DESIGN-BUILDER, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials, or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 10.02 A.

10.03 Cash Allowances

A. It is understood that DESIGN-BUILDER has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be furnished and performed for such sums as may be acceptable to CITY. DESIGN-BUILDER agrees that:

1. the allowances include the cost to DESIGN-BUILDER (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. DESIGN-BUILDER's costs for unloading and handling on the Site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

B. Prior to final payment, an appropriate Change Order will be issued by CITY to reflect actual amounts due DESIGN-BUILDER on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

10.04 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Contract. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price.

B. Each unit price will be deemed to include an amount considered by DESIGN-BUILDER to be adequate to cover DESIGN-BUILDER's overhead and profit for each separately identified item.

C. CITY or DESIGN-BUILDER may negotiate an adjustment of the price per unit of

Unit Price Work stated in the Contract if:

1. the quantity of any item of Unit Price Work performed by DESIGN-BUILDER differs by twenty percent (20%) or more from the estimated quantity of such item indicated in the Contract; and
2. there is no corresponding adjustment with respect to any other item of Work; and
3. DESIGN-BUILDER believes that DESIGN-BUILDER is entitled to an increase in Contract Price as a result of having incurred additional expense or CITY believes that CITY is entitled to a decrease in Contract Price.

10.05 Dispute Resolution

A. If CITY and DESIGN-BUILDER are unable to agree on entitlement to, or magnitude of, an equitable adjustment in the Contract Price in accordance with Article 10 within fourteen (14) calendar days from the receipt of supporting documentation of the request pursuant to 10.01.B., unless the CITY grants an extension based on good cause shown by the DESIGN-BUILDER that such additional time is warranted, then a Claim for such adjustment may be made pursuant to Article 15.

ARTICLE 11 CONTRACT TIMES

11.01 Time of the Essence

A. All times stated in the Contract Documents are of the essence of the Contract.

11.02 Change of Contract Times

A. The Contract Times (or Milestones) may only be changed by a Change Order. Any request for an adjustment in the Contract Times shall be based on written notice delivered within fourteen (14) calendar days after occurrence of the event giving rise to the request or within fourteen (14) calendar days after first recognition of the conditions giving rise to the request. Thereafter, the DESIGN-BUILDER shall submit written documentation of its requests, including appropriate supporting documentation, within ten (10) days after giving notice, unless the CITY grants an extension based on good cause shown by the DESIGN-BUILDER that such additional time is warranted.

11.03 Proof Required To Justify An Extension of Time For Excusable and Compensable Delays

A. In support of any request for an extension of the Contract Times pursuant to this Article, DESIGN-BUILDER must demonstrate to the reasonable satisfaction of the CITY that the critical path of the approved baseline project schedule was delayed. DESIGN-BUILDER shall be entitled to an increase in contract time for the number of days that the critical path was delayed solely as a result of the compensable or excusable event. A compensable or excusable event includes, but is not limited to:

1. unreasonable delay of issuance of Notice to Proceed by CITY;
2. CITY's unreasonable delay of delivery furnished materials, equipment, or work;
3. unreasonable delay responding to shop drawings and submittals;
4. CITY's unreasonable delay in issuing a Change Order;

5. an order by the CITY to stop the Work where the DESIGN-BUILDER was not at fault; and
6. other reasonable grounds as determined by the CITY in its sole discretion.

B. DESIGN-BUILDER shall compare the critical path of the approved baseline project schedule to the actual critical path of the Work, identifying the specific impact of the compensable or excusable event.

C. DESIGN-BUILDER shall submit to the CITY a written time impact analysis illustrating the influence of each compensable or excusable event on the date of Substantial Completion. The time impact analysis shall demonstrate the time impact based on the date of the delay in time and the event time computations or all affected activities.

D. If the critical path of the Work is delayed by "Force Majeure", the DESIGN-BUILDER shall be entitled only to an extension of the Contract Times for the number of days of delay to the critical path. For purposes of this paragraph, "Force Majeure" shall mean fire, tornado, flood, earthquake, war, act of terrorism, civil disturbance, or labor strikes away from the project site.

E. Extensions of contract time pursuant to the this section will be granted only to the extent that the time adjustments exceed the total float time available when the event causing the delay occurred.

11.04 Delays Within DESIGN-BUILDER's Control

A. The Contract Times (or Milestones) will not be extended due to delays within the control of DESIGN-BUILDER. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of DESIGN-BUILDER.

11.05 Delays Beyond the CITY's and DESIGN-BUILDER's Control

A. Where DESIGN-BUILDER is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both CITY and DESIGN-BUILDER, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be DESIGN-BUILDER's sole and exclusive remedy for such delay.

11.06 Delay Damages

A. In no event shall CITY be liable to DESIGN-BUILDER, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

1. delays caused by or within the control of DESIGN-BUILDER, or
2. delays beyond the control of CITY or DESIGN-BUILDER including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

B. Nothing in this Paragraph 11.06 bars a change in Contract Price pursuant to this Article 11 to compensate DESIGN-BUILDER due to delay, interference, or disruption directly attributable to actions or inaction of CITY, CITY's Consultant or anyone for whom CITY, or CITY's Consultant is responsible.

11.07 Dispute Resolution

A. If CITY and DESIGN-BUILDER are unable to agree on entitlement to, or magnitude of, an equitable adjustment in the Contract Time in accordance with Article 11 within fourteen (14) calendar days from the receipt of supporting documentation of the request pursuant to 11.02, unless the CITY grants an extension based on good cause shown by the DESIGN-BUILDER that such additional time is warranted, then a Claim for such adjustment may be made pursuant to Article 15.

ARTICLE 12 TESTS AND INSPECTIONS;

CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

12.01 Access to Work

A. CITY, CITY's Consultants, other representatives and personnel of CITY, independent testing laboratories and governmental agencies with jurisdictional interests will have access to the Site and Work at reasonable times for their observation, inspecting and testing. DESIGN-BUILDER shall provide them proper and safe conditions for such access and advise them of DESIGN-BUILDER's Site safety procedures and programs so that they may comply therewith as applicable.

12.02 Tests and Inspections

A. DESIGN-BUILDER shall give CITY and CITY's Representative timely notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. If any Work (or the work of others at the Site) that is to be inspected, tested or approved is covered by DESIGN-BUILDER without written approval required by Paragraphs 12.02 D or 12.02 E, it must, if requested by CITY's Representative, be uncovered for observation.

C. Uncovering Work as provided in Paragraph 12.02 B, shall be at DESIGN-BUILDER's expense unless DESIGN-BUILDER has given CITY and CITY's Representative timely notice of DESIGN-BUILDER's intention to cover the same and CITY and CITY's Representative have not acted with reasonable promptness in response to such notice.

D. If Laws or Regulations of any public body (including CITY) having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, DESIGN-BUILDER shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith, and furnish CITY and CITY's Representative the required certificates of inspection or approval.

E. DESIGN-BUILDER shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for CITY's and CITY's acceptance of materials or equipment to be incorporated into the Work, or acceptance of materials, mix designs, or equipment submitted for approval prior to DESIGN-BUILDER's purchase thereof for incorporation into the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to CITY.

F. CITY shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests or approvals covered by Paragraph 12.02 D and E;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 12.04 B shall be paid as provided in said Paragraph 12.04 B; and
3. as otherwise specifically provided in the Contract Documents.

12.03 Notice of Defects

A. Prompt notice of all defective Work of which the CITY has actual knowledge will be given to DESIGN-BUILDER. Defective Work may be rejected, corrected or accepted as provided in this Article 12.

12.04 Uncovering Work

A. If any Work (or the work of others at the Site) is covered contrary to the written request of CITY or CITY's Representative, it must, if requested by CITY's Representative, be uncovered for CITY's or CITY's Representative's observation and replaced at DESIGN-BUILDER's expense.

B. If CITY considers it necessary or advisable that covered Work be observed by CITY or CITY's Representative or be inspected or tested by others, DESIGN-BUILDER, at CITY's request, shall uncover, expose or otherwise make available for observation, inspection or testing as may be required, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, DESIGN-BUILDER shall pay all costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and CITY shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, CITY may make a Claim therefore as provided in Article 15. If, however, such Work is not found to be defective, DESIGN-BUILDER shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement and reconstruction. If the parties are unable to agree as to the amount or extent thereof, DESIGN-BUILDER may make a Claim therefore as provided in Article 15.

12.05 CITY May Stop the Work

A. If the Work is defective, or DESIGN-BUILDER fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, CITY may order DESIGN-BUILDER to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of CITY to stop the Work shall not give rise to any duty on the part of CITY to exercise this right for the benefit of DESIGN-BUILDER, any SubDESIGN-BUILDER, Supplier, other individual or entity or any surety or employee or agent of any of them.

12.06 Correction or Removal of Defective Work

A. If required by CITY, DESIGN-BUILDER shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by either CITY or CITY's Representative, remove it and replace it with Work that is not defective. DESIGN-BUILDER shall pay all costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) caused by or resulting from such correction or removal (including but not limited to all costs of

repair or replacement of work of others).

12.07 Correction Period

A. If within one (1) year after the date of Substantial Completion, or such longer period of time as may be prescribed by Laws or Regulations, by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for DESIGN-BUILDER's use by CITY or permitted by Laws and Regulations as contemplated in Paragraph 6.10 is found to be defective, DESIGN-BUILDER shall promptly, without cost to CITY and in accordance with CITY's written instructions:

1. correct the repair of damages to such land or areas; or
2. correct such defective Work, or if it has been rejected by CITY, remove it from the Site and replace it with Work that is not defective; and
3. satisfactorily correct or remove and replace any damage to other Work or to the work of others or damage to other lands or areas resulting therefrom. If DESIGN-BUILDER does not promptly comply with the terms of such instructions, or in the event of an emergency where delay by DESIGN-BUILDER would cause serious risk of loss or damage, CITY may have the defective Work corrected or the rejected Work removed and replaced, and all costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by DESIGN-BUILDER.

B. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

C. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 12.07, the correction period hereunder with respect to such Work will be extended for an additional period of one (1) year, or such longer period of time as may be prescribed within Paragraph 12.07 A, after such correction or removal and replacement has been satisfactorily completed.

D. DESIGN-BUILDER's obligations under this Paragraph 12.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 12.07 shall not be construed as a substitute for or waiver of the provisions of any applicable statute of limitation or repose.

12.08 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, CITY prefers to accept it, CITY may do so. DESIGN-BUILDER shall pay all costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to CITY's evaluation of and determination to accept such defective Work and shall pay OWNER for the diminished value of the Work. If any such acceptance occurs prior to CITY's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions into the Contract Documents with respect to the Work and, due to the diminished value of the Work, CITY shall be entitled

to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, CITY may make a Claim therefore as provided in Article 15. If the acceptance of defective Work occurs after such recommendation, an appropriate amount shall be paid by DESIGN-BUILDER to CITY.

12.09 CITY May Correct Defective Work

A. If DESIGN-BUILDER fails within a reasonable time after written notice from CITY or CITY's Representative to correct defective Work or to remove and replace rejected Work as required by CITY in accordance with Paragraph 12.06, or if DESIGN-BUILDER fails to perform the Work in accordance with the Contract Documents, or if DESIGN-BUILDER fails to comply with any other provision of the Contract Documents, CITY may, after seven (7) days written notice to DESIGN-BUILDER, correct and remedy any such deficiency.

B. CITY shall proceed expeditiously when exercising the rights and remedies under this Paragraph 12.09. In connection with such corrective and remedial action, CITY may exclude DESIGN-BUILDER from all or part of the Site; take possession of all or part of the Work and suspend DESIGN-BUILDER's services related thereto; take possession of DESIGN-BUILDER's tools, appliances, construction equipment and machinery at the Site; and incorporate into the Work all materials and equipment stored at the Site or for which CITY has paid DESIGN-BUILDER but which are stored elsewhere. DESIGN-BUILDER shall allow CITY, CITY's Representative, agents and employees, CITY's other contractors, CITY and Consultants access to the Site to enable CITY to exercise the rights and remedies under this Paragraph 12.09.

C. All costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by CITY in exercising such rights and remedies will be charged against DESIGN-BUILDER and a Change Order will be issued incorporating the necessary revisions into the Contract Documents with respect to the Work; and CITY shall be entitled to an appropriate decrease in the Contract Price. If CITY and DESIGN-BUILDER are unable to agree as to the amount thereof, CITY may make a Claim therefore as provided in Article 15. Such Claims for costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal and replacement of DESIGN-BUILDER's defective or rejected Work.

D. DESIGN-BUILDER shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by CITY of CITY's rights and remedies under Paragraphs 12.06 and 12.09.

ARTICLE 13 PAYMENTS TO DESIGN-BUILDER AND COMPLETION

13.01 Schedule of Values

A. Pursuant to Paragraph 2.06.A.3, DESIGN-BUILDER shall submit to CITY a Schedule of Values allocating the Contract Price among the various elements of the construction portion of the Work. The Schedule of Values shall be prepared on CITY's form, with such detail and supported by such data and documentation as CITY may require. The Schedule of Values shall be used as a guideline for CITY's review of DESIGN-BUILDER's Applications for Payment for the construction portion of the Work.

13.02 Monthly Progress Payments

A. On or before the date established in the Contract Documents, DESIGN-BUILDER shall submit, for CITY's review and approval, DESIGN-BUILDER's

Application for Payment, on CITY's form, requesting payment for all Work performed as of the date of the Application for Payment. The Application for Payment shall be complete and accurate and accompanied by all supporting documentation required by the Contract Documents and/or established at the meeting contemplated by Section 6.01.B of these General Conditions of Contract, including, without limitation, certified payrolls in form and substance acceptable to CITY. CITY shall have the right to review all design services and construction services, performed at the Site or elsewhere, to determine whether the quantity and quality of labor, services, equipment, and materials are as required by the Contract Documents and as represented in the Application for Payment.

B. If payment is requested on the basis of materials and equipment not incorporated into the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, paid invoice, or other documentation warranting that CITY has received the materials and equipment free and clear of all liens and claims, and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect CITY's interest therein, all of which will be subject to CITY's approval.

C. The Application for Payment shall constitute DESIGN-BUILDER's representation that the Work has been performed consistent with the Contract Documents and Legal Requirements, has progressed to the Design Milestone or portion of the Schedule of Values indicated in the Application for Payment, and that title to all Work will pass to CITY free and clear of all claims, liens, encumbrances, and security interests upon the incorporation of the Work into the Project, or upon DESIGN-BUILDER's receipt of payment under the Application for Payment for that portion of the Work, whichever occurs earlier.

13.03 Payment; Withholding of Payment

A. On or before the date established in the Contract Documents, CITY shall pay DESIGN-BUILDER all amounts properly due under the Application for Payment. No payment to DESIGN-BUILDER by CITY, nor any use or occupancy of the Project or any part thereof by CITY, shall be interpreted or construed to constitute CITY's acceptance of any Work not in conformance with the Contract Documents or Legal Requirements, and shall not be held to prevent the maintenance of an action on DESIGN-BUILDER's Bonds or insurance, or against DESIGN-BUILDER directly, for failure to perform said Work in conformance with the Contract Documents and Legal Requirements. DESIGN-BUILDER expressly accepts the risk that defective Work may not be detected (1) during any review by CITY, (2) prior to CITY making any payment to DESIGN-BUILDER, or (3) prior to CITY's occupancy of the Project or any part thereof.

B. If CITY determines that DESIGN-BUILDER is not entitled to payment for all or part of an Application for Payment, CITY will notify DESIGN-BUILDER in writing. The notice shall indicate the specific amounts withheld, the reasons and contractual basis for the withholding, and the specific measures DESIGN-BUILDER must take to rectify CITY's concerns. Such reasons for withholding payment under an interim Application for Payment or under the Application for Final Payment shall include, but not be limited to, the following acts or omissions: (i) the assessment of liquidated damages; (ii) unsatisfactory Project progress; (iii) defective design or construction Work or materials not remedied; (iv) disputed Work; (v) failure to comply with any material provision of the Contract Documents or Legal Requirements; (vi) third party claims filed or reasonable evidence that a claim will be filed; (vii) failure to make timely payments for labor, services, equipment, or materials; (viii) damage to CITY's separate contractor, or to a

Design Subconsultant, Subcontractor, or Sub-subcontractor, (ix) reasonable evidence that a Design Subconsultant, a Subcontractor, or a Sub-subcontractor cannot be fully compensated under its contract with the DESIGN-BUILDER; (x) evidence that the remaining portion of the Work cannot be completed in accordance with the Contract Documents and Legal Requirements for the unpaid balance of the Contract Price, (xi) overstatement of amounts included in any Application for Payment, (xii) losses caused by DESIGN-BUILDER, (xiii) DESIGN-BUILDER's failure or refusal to perform any of its obligations to CITY, (xiv) citation by any enforcing authority for acts or omissions of the DESIGN-BUILDER which do not comply with the Contract Documents and/or which result in a violation of any Legal Requirements, or (xv) any other reason listed in the Prompt Pay Act. In the event an insufficient amount is due to DESIGN-BUILDER under the current Application for Payment, CITY may make written demand for the return of an amount believed by CITY to be adequate to cover CITY's potential liabilities and damages arising from DESIGN-BUILDER's specified act or omission, and DESIGN-BUILDER shall promptly comply with such demand. DESIGN-BUILDER and CITY will attempt to resolve CITY's concerns prior to the date payment is due.

C. CITY shall pay DESIGN-BUILDER all undisputed amounts in an Application for Payment within the times required by the Contract Documents and applicable law, including the Prompt Pay Act.

13.04 DESIGN-BUILDER's Payment Obligations

A. In accordance with its contractual obligations to such parties and in conformance with Missouri law, including, without limitation, the Prompt Pay Act, DESIGN-BUILDER will pay to Design Consultants and Subcontractors all amounts received by DESIGN-BUILDER from CITY on account of their services and work. DESIGN-BUILDER will impose similar requirements on its Design Subconsultants and Subcontractors to pay those parties with whom they have contracted. No subcontract or other agreement arising from this Contract shall include, by either express or implied terms, a "pay when paid" or "pay if paid" clause. Any such clause is against CITY policy and shall be considered null and void.

B. To the fullest extent permitted by Legal Requirements, DESIGN-BUILDER shall defend, indemnify, and hold harmless CITY, its Consultant(s), and its or their officials, officers, directors, employees, and agents from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of contractors, engineers, architects, attorneys, and other professionals and all court or other dispute resolution costs) arising out of or resulting from any claims for payment and/or mechanic's liens.

13.05 Substantial Completion

A. DESIGN-BUILDER shall notify City in writing when DESIGN-BUILDER believes the Work or, to the extent permitted in the Contract Documents, a portion of the Work, has achieved Substantial Completion, and shall submit to CITY a list of items remaining to be completed or corrected. Within ten (10) working days after CITY's receipt of DESIGN-BUILDER's notice, CITY and DESIGN-BUILDER will jointly inspect such Work to determine whether it is substantially complete in accordance with the requirements of the Contract Documents and Legal Requirements, including the issuance of all necessary certificates of occupancy or other authorizations for the use or occupancy of the Project required by any government or quasi-government authority having jurisdiction over the Project.

B. If CITY determines that such Work is substantially complete, CITY shall prepare

and issue a Certificate of Substantial Completion, signed by DESIGN-BUILDER to acknowledge the responsibilities assigned to it, that will set forth (i) the date of Substantial Completion of the Work or portion thereof, (ii) the remaining items of Work and the date on which they must be completed or corrected before final payment shall become due, (iii) provisions (to the extent not already set forth in the Contract Documents) establishing CITY's and DESIGN-BUILDER's responsibility for the Project's security, maintenance, utilities, damage to the Work, and insurance pending final payment, and (iv) an acknowledgment that warranties commence to run on the date of Substantial Completion, except as may otherwise be noted in the Certificate of Substantial Completion.

C. Upon Substantial Completion of the entire Work or, if applicable, any portion of the Work, and upon receipt and approval of DESIGN-BUILDER's Application for Payment therefor, CITY shall release to DESIGN-BUILDER all retained amounts relating, as applicable, to the entire Work or completed portion of the Work, less all offsets and deductions authorized by the Contract Documents or by applicable law, and less an amount equal to two hundred percent (200%) of the reasonable value of all remaining or incomplete items of Work as noted in the Certificate of Substantial Completion.

D. Prior to Substantial Completion of all of the Work, CITY, at its sole option, may use or occupy a portion of the Work which has been determined to have achieved Substantial Completion provided that (i) a Certificate of Substantial Completion has been issued for that portion of Work, (ii) DESIGN-BUILDER and CITY have obtained the consent of their sureties and insurers, and, to the extent applicable, the appropriate government or quasi-government authorities having jurisdiction over the Project, including, without limitation, the issuance of all necessary certificates of occupancy, and (iii) CITY and DESIGN-BUILDER agree that CITY's use or occupancy will not interfere with DESIGN-BUILDER's completion of the remaining Work. Such partial use or occupancy shall not be construed to mean that the entire Project has achieved Substantial Completion.

13.06 Final Completion; Final Payment

A. DESIGN-BUILDER shall notify CITY in writing when DESIGN-BUILDER believes that all of the Work is finally complete and ready for CITY's final inspection. Within ten (10) working days after CITY's receipt of DESIGN-BUILDER's notice, CITY and DESIGN-BUILDER will jointly inspect the Work to determine whether the Work is finally complete in accordance with the requirements of the Contract Documents and Legal Requirements and whether the Contract has been fully performed.

B. At the time of submission of its Application for Final Payment, and as a condition precedent to final payment, DESIGN-BUILDER shall provide the following, in form and substance acceptable to CITY:

1. An affidavit that there are no claims, obligations, or liens outstanding or unsatisfied for labor, services, materials, equipment, taxes, or other items performed, furnished, or incurred for or in connection with the Work which might in any way affect CITY's interests, and an agreement to defend and indemnify CITY against any of same.
2. A general release executed by DESIGN-BUILDER under oath, waiving, upon receipt of final payment, all claims against CITY, except those claims previously made in writing to CITY by DESIGN-BUILDER, still pending at the time of the Application for Final Payment, and specifically identified in the

general release as unsettled at the time of the Application for Final Payment;

3. Consent of DESIGN-BUILDER's surety to final payment;

4. One complete record set, both in electronic form and on a reproducible medium acceptable to CITY, of all Contract Documents and submittals;

5. All operating manuals, instruction manuals, maintenance manuals, product and manufacturers' warranties, and other documents, things, and deliverables required by the Contract Documents;

6. Certificates of insurance confirming that required coverages and limits of liability are and will remain in effect consistent with the requirements of the Contract Documents; and

7. A "Contractor Affidavit for Final Payment" from DESIGN-BUILDER and a "Subcontractor Affidavit for Final Payment" from all Subcontractors and Sub-subcontractors, regardless of tier.

C. After receipt of DESIGN-BUILDER's Application for Final Payment, and provided that DESIGN-BUILDER has completed all of the Work and provided all documents and information in conformance with the Contract Documents and Legal Requirements, CITY shall make final payment to DESIGN-BUILDER within the time required in the Contract Documents and pursuant to applicable Missouri law.

D. Upon making final payment, CITY waives all claims against DESIGN-BUILDER except claims relating to (i) DESIGN-BUILDER's failure to satisfy its payment obligations, if such failure affects CITY's interests, (ii) DESIGN-BUILDER's failure to perform and complete the Work consistent with the Contract Documents and Legal Requirements, including defects appearing after Substantial Completion, and (iii) the terms of any special warranties required by the Contract Documents.

ARTICLE 14 SUSPENSION OF WORK AND TERMINATION

14.01 CITY May Suspend Work

A. Notwithstanding any other provision of this Contract, at any time and without cause, and at its sole and absolute discretion, CITY, may suspend the Work or any portion of the Work by written notice to CONTRACTOR, which will initially fix the date on which Work will be resumed. DESIGN-BUILDER shall resume the Work on the date so fixed in the notice unless the date is changed by a subsequent written notice from CITY. DESIGN-BUILDER may be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any suspension if DESIGN-BUILDER makes a Claim therefore in accordance with Article 15.

B. DESIGN-BUILDER will not be allowed an adjustment in the Contract Price or an extension of the Contract Times if CITY suspends the Work because DESIGN-BUILDER's acts or omissions create or cause an emergency that CITY believes affects the safety or protection of persons, the Work, or property at the Site or adjacent thereto. CITY may order DESIGN-BUILDER to stop the Work, or any portion thereof, until the cause for such order has been adequately addressed by DESIGN-BUILDER; however, this right of CITY to stop the Work shall not give rise to any duty on the part of CITY to exercise this right for the benefit of DESIGN-BUILDER, any Subcontractor, Supplier, other individual or entity or any surety or employee or agent of any of them.

14.02 CITY May Terminate for Default

A. DESIGN-BUILDER may be deemed in default and CITY may terminate the services of DESIGN-BUILDER upon the occurrence of any one or more of the following events:

1. DESIGN-BUILDER fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under Paragraph 2.06 and 2.07 as adjusted from time to time pursuant to Paragraphs 6.05, 6.06, 11.02 and 11.03);
2. DESIGN-BUILDER abandons the Work or declares its intention to abandon the work;
3. DESIGN-BUILDER assigns or attempts to assign its rights or obligations under this Contract or any part thereof to any third party without the prior written consent of CITY;
4. DESIGN-BUILDER fails to make prompt payment duly owing to any subcontractor or material supplier within thirty (30) calendar days after payment was due;
5. DESIGN-BUILDER fails to achieve the required dates of substantial and final completion;
6. DESIGN-BUILDER disregards Laws or Regulations of any public body having jurisdiction;
7. DESIGN-BUILDER disregards the authority of CITY or OWNER; or
8. DESIGN-BUILDER otherwise violates in any substantial way any provisions of the Contract Documents.

B. CITY may, after giving DESIGN-BUILDER (and the surety) seven (7) days written notice and to the extent permitted by Laws or Regulations, terminate the services of DESIGN-BUILDER, exclude DESIGN-BUILDER from the Site and take possession of the Work and of all DESIGN-BUILDER's tools, appliances, construction equipment and machinery at the Site and use the same to the full extent they could be used by DESIGN-BUILDER (without liability to DESIGN-BUILDER for trespass or conversion), incorporate into the Work all materials and equipment stored at the Site or for which CITY has paid DESIGN-BUILDER but which are stored elsewhere, and finish the Work as CITY may deem expedient. In such case, DESIGN-BUILDER shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by CITY arising out of or resulting from completing the Work, such excess may be paid to DESIGN-BUILDER. If such costs, losses and damages exceed such unpaid balance, DESIGN-BUILDER shall pay the difference to CITY within fourteen (14) calendar days of CITY'S demand for payment. When exercising any rights or remedies under this Paragraph CITY shall not be required to competitively bid this work unless required by law.

C. Where DESIGN-BUILDER's services have been so terminated by CITY, the termination will not affect any rights or remedies of CITY against DESIGN-BUILDER then existing or which may thereafter accrue. Any retention or payment of moneys due DESIGN-BUILDER by CITY will not release DESIGN-BUILDER from liability.

D. If, after a default termination, it is determined that the DESIGN-BUILDER was not

in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the CITY. The CITY shall then be liable to DESIGN-BUILDER for only those costs enumerated in paragraph 14.03.

14.03 CITY May Terminate for Convenience

A. Notwithstanding any other provision of this Contract, upon seven (7) calendar days written notice to DESIGN-BUILDER, CITY may, at its sole and absolute discretion, without cause and without prejudice to any other right or remedy of CITY, elect to terminate the Contract. In such case, DESIGN-BUILDER shall, with thirty (30) calendar days of receiving notice of termination under this paragraph, submit to CITY its statement of costs and expenses and shall be paid:

1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
3. for all costs, losses and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and
4. for reasonable expenses directly attributable to termination if approved in advance by CITY.

B. DESIGN-BUILDER shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

C. DESIGN-BUILDER waives any costs not submitted to CITY pursuant to paragraph 14.03.A.

D. CITY shall, within thirty (30) calendar days after receipt of DESIGN-BUILDER's statement, pay DESIGN-BUILDER all amounts it determines are properly determined.

ARTICLE 15 CLAIMS AND DISPUTES

15.01 Definition

A. A Claim is a demand or assertion by the DESIGN-BUILDER seeking, as a matter of right, the adjustment of Contract price and/or times with respect to the terms of the Contract.

15.02 Written Notice and Burden of Proof

A. Claims must be made by written notice pursuant to Article 16.01. The written notice shall clearly indicate that the DESIGN-BUILDER is making a claim. The responsibility to substantiate Claims shall rest with the DESIGN-BUILDER. No Claim may be made under this Contract except as provided in this Article.

B. Certification of Claim: The written notice of Claim shall include the following statement signed by the DESIGN-BUILDER's representative: "The DESIGN-BUILDER certifies that all statements made and the facts set out in this claim are true and correct and that no false records have been submitted in support of this claim." **Strict compliance with this paragraph shall be a condition precedent to the creation, existence or validity of any Claim.**

15.03 Time Limits on Claims

A. The DESIGN-BUILDER must give notice to the CITY within fourteen (14) calendar days after the denial of a request for or failure to reach an agreement on a change in Contract Price and/or change in Contract Time pursuant to Article 10 and Article 11 respectively. After the fourteen (14) day period for making Claims has expired, the Claim shall be considered waived.

B. The DESIGN-BUILDER shall submit the Claim to the CITY's Representative.

15.04 Continuing Contract Performance

A. Pending final resolution of a Claim, unless otherwise agreed in writing, the DESIGN-BUILDER shall proceed diligently with performance of the Work and the CITY shall continue to make payments in accordance with the Contract Documents. The CITY may, but is not obligated to, notify the Surety of the nature and amount of the Claim.

15.05 Injury or Damage to Person or Property

A. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts that party is legally liable, written notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding thirty (30) days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter.

15.06 Initial Resolution of Claims and Disputes

A. After the DESIGN-BUILDER has submitted the Claim to the CITY's Representative, the CITY'S Representative and DESIGN-BUILDER'S Representative shall conduct a settlement conference within fourteen (14) calendar days from the date of receipt of the Claim. If the Claim is not settled within seven (7) calendar days following the date of the settlement conference, the CITY'S Representative and the DESIGN-BUILDER's Representative shall state, in writing, following the conclusion of the seven (7) calendar day period, their respective position as to the matters in dispute.

B. The CITY'S and DESIGN-BUILDER'S statement of positions shall state all known factual grounds for each party's position. If the dispute remains unresolved at the end of the seven (7) calendar days from submission of the parties' written position statements, the DESIGN-BUILDER shall have the right to proceed with the pursuit of Claims pursuant to paragraph 15.07.

C. If a Claim has been resolved, the OWNER will prepare or obtain appropriate documentation.

15.07 Final Resolution of Claims and Disputes

A. All administrative procedures set forth in this contract must first be exhausted before suit is filed.

B. If the CITY'S Representative and the DESIGN-BUILDER'S Representative are unable to resolve the dispute pursuant to 15.06, the parties must submit their statements of position to the Director, who shall review the Claim and make a decision within fourteen (14) calendar days.

C. Absent fraud, gross mistake or bad faith, the Director's decision shall be final and binding on CITY and DESIGN-BUILDER within fourteen (14) calendar days after issuance. The DESIGN-BUILDER shall give written notice to the CITY stating its intent to submit its Claim to a court of law pursuant to paragraph 16.05.A. within thirty (30) calendar days after notice of Director's decision.

D. The time frames for the Director's decision and for DESIGN-BUILDER'S written notice of intent may be by participation in voluntary mediation. Mediator selection and the procedures to be employed in voluntary mediation shall be mutually acceptable to the parties. Costs of the mediator shall be shared equally among the parties participating in the mediation. In no event shall any time frame be tolled more than 30 days for mediation. However, mediation may be employed at any time at the discretion and mutual agreement of the parties.

E. If the dispute is not resolved during voluntary mediation, The DESIGN-BUILDER agrees that it will file no suit based on facts or evidentiary materials that were not presented for consideration to the CITY during the mediation process or of which the DESIGN-BUILDER had knowledge and failed to present during the administrative procedures.

ARTICLE 16 MISCELLANEOUS

16.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be given by personal delivery, by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice or by confirmed electronic facsimile transmission. Notice is effective on the date of personal delivery, deposit of registered or certified mail, postage prepaid, or confirmed electronic facsimile transmission.

16.02 Computation of Times

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last calendar day of such period. If the last day of such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

16.03 Cumulative Remedies

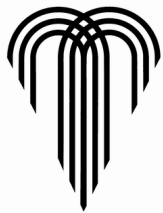
A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon DESIGN-BUILDER and all of the rights and remedies available to CITY and CITY hereunder are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

16.04 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract.

16.05 Controlling Law

A. This Contract shall be construed and governed in accordance with the laws of the State of Missouri without giving effect to Missouri's choice of law provisions. The CITY and DESIGN-BUILDER: (1) shall submit exclusively to the jurisdiction of the state and federal courts located in Jackson County, Missouri and no other; (2) shall waive any and all objections to jurisdiction and venue; and (3) shall not raise forum non-conveniens as an objection to the location of any litigation.



DESIGN-BUILD SUPPLEMENTARY CONDITIONS

Project Number 81001018 Contract #1715

Project Title Wastewater Backup Generators

These Supplementary Conditions amend or supplement the General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions that are not so amended or supplemented remain in full force and effect.

SC-2.03 A. Article 2, Paragraph 2.03, Copies of Documents, is amended by deleting Paragraph 2.03 A and replacing it with the following:

A. CITY shall furnish to DESIGN-BUILDER up to two (2) copies of the Drawings and Specifications, including Addenda.

SC-4.02 Article 4, Paragraph 4.02, Subsurface and Physical Conditions; Subparagraphs A and B are supplemented as follows:

In the preparation of the Contract Documents, no reports of explorations and tests of subsurface conditions at or contiguous to the Site of the Work were utilized.

SC-4.06 Article 4, Paragraph 4.06, Asbestos, Lead-Based Paint, PCBs, Petroleum Waste or Radioactive Material, Subparagraphs A and B are supplemented as follows:

In the preparation of the Contract Documents, no reports of explorations and tests of any Hazardous Environmental Condition(s) at the Site of the Work were utilized.

SC- 5.01 A. Article 5, Paragraph 5.01, Performance, Payment and Other Bonds, Subparagraph A, second sentence, is revised as follows:

These Bonds shall remain in effect at least until 2 years after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents.

SC-5.03 A. Article 5, Paragraph 5.03 Certificates of Insurance, Subparagraph A is amended by adding the following Subparagraph 1:

1. DESIGN-BUILDER shall obtain evidence that all Subcontractors have in force general, automobile, and employer's and workers' compensation liability insurance in the amounts required by these Contract Documents, and evidence that each is current on its unemployment insurance payments before Subcontractors begin Work at the Site. DESIGN-BUILDER shall retain such evidence in its files and make available to CITY within ten (10) days after written request.

SC-5.04 C. Article 5, Paragraph 5.04, DESIGN-BUILDER's Liability Insurance, Subparagraph C is amended as follows:

The following additional policies of insurance are required:

6. Environmental Liability Insurance. This insurance shall protect DESIGN-BUILDER, and CITY, DESIGN PROFESSIONAL and Consultants as additional insureds, against claims for injuries to members of the public and damage to the property of others resulting from environmental impairment. The liability limits of the environmental policy shall not be less than \$2,000,000.

7. Asbestos Liability Insurance. This insurance shall be an "occurrence" policy and shall

protect DESIGN-BUILDER, and CITY, DESIGN PROFESSIONAL and Consultants as additional insureds, against all claims arising from bodily injury, sickness, disease or death of any person other than the DESIGN-BUILDER's employees arising out of any act related to asbestos abatement work. The liability limits for bodily injury and property damage shall be not less than:

\$1,000,000 each occurrence

\$2,000,000 general aggregate.

If DESIGN-BUILDER provides Environmental or Asbestos Liability Insurance through a Subcontractor, DESIGN-BUILDER shall contractually require the Subcontractor to include CITY as additional insured in the Subcontractor's policy. DESIGN-BUILDER shall deliver to CITY, prior to the start of any Work at the Project Site, properly completed certificates of insurance or other evidence that the required insurance is in full force and effect, in a form acceptable to CITY. DESIGN-BUILDER shall contractually require its Subcontractor to defend, indemnify and hold harmless CITY from and against all Claims arising out of or resulting from all acts or omissions in connection with this Contract caused in whole or in part by Subcontractor or Subcontractor's agents, regardless of whether or not caused in part by any act or omission, including negligence, of CITY. DESIGN-BUILDER must provide evidence that this requirement has been complied in accordance with the provisions of Paragraphs 6.01 B and 6.06 G.

SC-5.06 A. Article 5, Paragraph 5.06, Property Insurance, Paragraph A, is amended by adding the following after the first sentence:

Property Insurance on the Work at the Site shall be written with a deductible amount not to exceed \$10,000.00.

SC-6.07. D. Article 6.07, Detailed Design Services, Paragraph 6.07.D, is amended by adding the following:

Design-Builder shall furnish to City two (2) copies of the approved Construction Documents prior to commencement of construction. Additional copies will be furnished, upon request, at the cost of reproduction.

SC-6.10. Article 6., Construction Phase Services, shall be amended by adding the following Paragraph 6.10.D.5:

The Design-Builder, subcontractors (all tiers), and suppliers shall furnish sufficient forces, construction plant, and equipment, and shall work such hours as may be required to insure the prosecution of the Work in accordance with the time periods specified in the Contract Documents. If in the opinion of the City, the Design-Builder falls behind the Construction Progress Schedule, the Design-Builder shall take such steps as may be necessary to improve the progress. The City may require the Design-Builder to submit a recovery plan which may include an increase in the number of shifts, and/or overtime operations, and days of work including holidays, Saturdays, and Sundays, all without additional costs to the City.

SC-6.10.E Article 6, Construction Phase Services, shall be amended by adding the following Paragraphs:

6.10.E.1 It is anticipated that work under separate contracts will be performed at the Site, concurrent with the Work to be performed pursuant to these Contract Documents. The City will have authority and responsibility for coordination of the activities among these DESIGN-BUILDERS performing work at the Site.

Design-Builder and Design-Builder's employees shall confine their activities to the areas assigned except for the necessary Work connected with this Contract. In the event of conflicting interests not immediately resolved between two or more contractors, the decisions of the City will be final.

Description

SC-6.12.A.. Article 6, Construction Phase Services, shall be amended by adding the following Paragraph 6.12:

a. DESIGN- BUILDER shall submit 3 sets of required Warranty data bound into 11-1/2 inch by 11-1/2 inch 3 D-side ring expansion plastic binders.

a.1. Binder covers shall have printed title "WARRANTIES", Project identification, and subject matter on cover and exterior edge of binder.

a.2. DESIGN-BUILDER shall provide a table of contents for each volume, with each Product or piece of equipment identified, typed on 24 pound white paper.

a.3. DESIGN-BUILDER shall provide a directory with list names, addresses, and telephone numbers of Design-Build Team, Architect, Architect's consultants, contractor,, all tier subcontractors, and product and equipment supplier.

a.4. DESIGN-BUILDER shall arrange Warranties by system.

SC-8.02., Article 8, City's Services and Responsibilities, is deleted and replaced with the following paragraph:

8.02.A. Due to the unavailability of current survey information, the successful bidder is required to provide survey information.

SC-11.01 Article 11, Paragraph 11.01, Time of the Essence is amended by adding the following new Subparagraphs immediately following Subparagraph 11.01 A:

B. Starting and Completion

1. The Work to be performed under this Contract shall begin on the date specified in the written Notice to Proceed issued by the Director of Water Services, and the Work shall be substantially complete, in accordance with Paragraph 13.05 within *One thousand and Ninety-five* (1095) Calendar Days thereafter. Once the Work starts, DESIGN-BUILDER shall continuously pursue completion of the Work.

2. The Work shall be completed and ready for final payment in accordance with Paragraph 13.06 on or before within *One thousand one-hundred and Ninety-five* (1195) Calendar Days after the date of Substantial Completion of the Work.

C. Liquidated Damages

1. If the Work is not substantially completed, in accordance with Paragraph 13.05, on or before (date) **[or]** within the period stated in Paragraph 11.01 B.1], DESIGN-BUILDER shall pay liquidated damages to CITY in the amount of Two Thousand (\$ 2000) for each Calendar Day until the Work is substantially complete. The amount of liquidated damages shall be deducted from any payments due or to become due DESIGN-BUILDER.

2. If the Work is not completed and ready for final payment in accordance with Paragraph 13.05, within the period stated in Paragraph 11.01 B.2, DESIGN-BUILDER shall pay liquidated damages to CITY in the amount of Five Hundred (\$ 500) for each Calendar Day until the Work is completed and ready for final payment. The amount of liquidated damages shall be deducted from any payments due or to become due DESIGN-BUILDER.

SC-13.01A: Article 13, Payment, is revised by adding the following Paragraphs to 13.01, Schedule of Values:

- .1 Design-Builder will submit PDF of the Schedule of Values using City Form 02190.02.
- .2 Include separate line items for (i) Bonds and (ii) Insurance.
- .3 Dollar amounts shall include material, labor, overhead, and profit applicable to each individual item indicated.
- .6 Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.

SC- 13.02. Article 13, Payment, is revised by adding the following to Paragraphs as follows:

13.02.D. City shall make payments to Design-Builder monthly on or about the 15th day of each month. Payments to Design-Builder will be made on the basis of ninety-five percent (95%) of the value of the Work satisfactorily completed plus ninety-five percent (95%) of the value of properly stored and insured, unused materials on hand on the Site of the Work. City shall retain five percent (5%) of each partial payment until completion and acceptance of the Work covered by the Contract and final payment is due. All Work covered by a payment becomes City's property, provided that the Work paid for remains the sole responsibility of Design-Builder until all terms and conditions of the Contract have been met.

13.02.E. Design-Builder shall submit **PDF** of the Application for Payment, in typewritten form, using City Form 01290.01 and accompanied by Schedule of Values, Form 01290.02, as well as any other supporting documents required by the Contract.

- .1 Using the approved Schedule of Values, indicate dollar value in each column of each line item for portion of Work completed through the last day of the application period. Round off dollar values to the nearest dollar. Complete every entry on the form including the MBE/WBE dollar amounts and percentages.
- .2 Differentiate between items stored on-site and items stored off-site. Include evidence of insurance or bonded warehousing if required.
- .3 Change Orders: Indicate each authorized Change Order as separate items on continuation sheet. List by Change Order Number and indicate dollar value breakdown of each Change Order.
- .4 Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

13.02.F In addition to the requirements of Paragraph 13.02.E, Design-Builder shall submit the following with each Application for Payment.

- .1 Updated Construction Progress Schedule.
- .2 Construction Progress Photos Jpg files.

SC- 13.06. Article 13, Payment, is revised by adding the following to Paragraphs as follows:

13.06.B. Final Payment Application: In addition to other Application for Payment requirements, the Final Payment Application must be accompanied by Form 01290.14 Contractor Affidavit for Final Payment and Form 01290.15 Subcontractor Affidavit for Final Payment for each subcontractor regardless of tier.

SC- 13.05.B. Article 13, Payment, Paragraph 13.05., Substantial Completion, is supplemented as follows:

13.05.B.1 To be considered substantially complete, the following items of the Work must be operational and ready for City's continuous use as intended:

- (i) All electrical equipment installed and functional such as automatic transfer switches, generators, storage tanks, sensors, and PLC programming.
- (ii) A list of deficiencies has been completed by the Contractor and accepted by the Program Manager.
- (iii) Testing and commissioning are complete.

Items of the Work not essential to plant operation, which may be completed without interruption of plant operation, may be completed after the Work is accepted as substantially complete, and may include the following:

- (i) minor adjustment of hardware,
- (ii) Seeding and other Site Restoration activities
- (iii) similar minor adjustments or replacements

City shall also allow Design-Builder reasonable access to complete items listed in Paragraph 13.05 A which may be completed after the Work is accepted

14.02.E If CITY must complete the Work, all costs and charges incurred by CITY, together with the cost of completing the Work under the Contract, will be deducted from any monies due or which may become due DESIGN-BUILDER. If such expense exceeds the sum which would have been payable under the Contract, then DESIGN-BUILDER and the surety shall be liable and shall pay to CITY the amount of such access.



ADDENDUM NUMBER 01

Project/Contract Number 81001018/1715

Project Title Wastewater Generator Project

ISSUE DATE: **December 18, 2024**

Respondents are hereby notified that the Proposal and Contract Documents for the above project, for which Proposals are to be received on **January 30, 2024**, are amended as follows:

RFP Package

1. Modify Proposal Submission: January 9, 2024, with **Proposal Submission: January 30, 2024**
2. Delete Form F-1. Project Design Criteria Generator rev MR and replace with Form F-1. Project Design Criteria Generator Addendum 1.
3. Modify the following:
 - a. In Section 01000, Subparagraph 1.08, A., add the following: “KC Water will obtain all the ROWs necessary for this project.”
4. Modify the following:
 - a. In Section 01757, Subparagraph 1.01, A., add the following: “All commissioning shall be required by the DB Team.”
5. Modify the following:
 - a. In Design-Build Services RFP, Subparagraph 4.3.11, insert the following:
“Allowances:
\$100,000.00 allowance will be provided for work with Spire.”
6. Delete specification section 01110 – Summary of Work
7. Add section 00412 Allowance Form rev 1.
8. Delete specification section 00410 Design-Build Bid Form and replace it with specification section 00410 Design-Build Bid Form rev 1.

NOTE: Bidders must acknowledge receipt of this Addendum by listing the number and date, where provided, on the Bid Form - Document 00410.

Bidder: _____

CITY OF FOUNTAINS
HEART OF THE NATION



KANSAS CITY
MISSOURI

Form G-1. DESIGN-BUILD BID FORM – PRICE SUBMITTAL

Project Number 81001018/1715

Project Title WW Backup Generators

1. The undersigned Bidder, having examined the Bidding Documents, related documents and the Site of the Work, and being familiar with all the conditions affecting the proposed Work, including Laws and Regulations and the availability of materials and supplies, agrees, if this Bid is selected by CITY, to enter into a Contract with CITY in the form included in the Contract Documents to furnish all labor and materials, equipment and services necessary for the proper completion of the Work in accordance with the Contract Documents, including design services and general construction work at the price(s) stated below, which stated sums include fees and all other charges applicable to materials, appliances, labor and all things subject to and upon which other charges may be levied.
2. Bidder agrees the Contract Documents will comprise the entire agreement between CITY and Bidder. The Contract Documents are identified in the General Conditions and are incorporated into and made part hereof this Bid Form/Contract by reference.
3. The Bid Price(s) shall be shown in numeric figures only.

TOTAL BASE BID PRICE IN NUMERIC FIGURES \$ _____

ALLOWANCE NO. 1 - SPIRE \$ 100,000.00

TOTAL SUM - BID IN NUMERIC FIGURES \$ _____

4. The undersigned Bidder has given City's Project Manager written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by the Project Manager or by the Program Manager is acceptable to Bidder.
5. The undersigned Bidder agrees that this Price Submittal Bid shall remain subject to selection by CITY, and may not be withdrawn for ninety (90) days after the day Price Submittal Bids are opened.
6. The undersigned Bidder certifies that this Price Submittal Bid contains no modifications, deviations, riders or qualifications.
7. Form 01290.02 Schedule of Values contains prices included in the Base Bid, and are incorporated into this Bid. Form must be completed and returned with this Bid.
8. Form 00413 Allowances contain prices included in the Base Bid, and are incorporated into this Bid. This form must be completed and returned with this Bid.
9. The undersigned Bidder acknowledges receipt of the following addenda listed by number and date appearing on each addendum:

Bidder: _____

Addendum Number	Dated	Addendum Number	Dated
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)

10. By submitting its bid, Bidder is agreeing to meet or exceed the minimum employment goals of 10% minority and 2% women during the term of its contract with the City, or request a waiver of the goals. If a waiver is requested, Bidder must establish good faith efforts towards meeting the goals as set forth in the HRD Instructions for Construction Contracts and the City's Workforce Ordinance. Should Bidder fail to meet or exceed the minimum employment goals or otherwise establish that Bidder is entitled to a waiver under circumstances in which Bidder has previously failed to meet or exceed the goals on one or more occasions with the twenty-four month period immediately preceding the completion of the Work under this Bid Form/Contract, Bidder may be suspended from participating, either as a contractor or subcontractor, on any future contract with the City for a period ranging from thirty days to six months as further specified in the Contract Documents.
11. By submitting its bid, Bidder warrants that if its bid should exceed \$300,000.00 and Bidder employs fifty (50) or more people, Bidder has an affirmative action program in place and will maintain the affirmative action program in place for the duration of its contract with the City. Bidder further warrants that it will comply with the affirmative action requirements contained in the General Conditions as incorporated by reference into this Bid Form/Contract.
12. Section 13 through Section 15 constitutes the Affidavit of Intended Utilization required to be submitted by Bidders.
13. By submitting its bid, Bidder is agreeing to the following: (1) Bidder has made by bid opening a good faith effort to meet the MBE/WBE/DBE goals established for the project; or Bidder will continue to make during the 48 hours after bid opening a good faith effort to meet the MBE/WBE/DBE goals established for the project; and (2) Bidder will timely submit its **00450 HRD 08 Contractor Utilization Plan/Request for Waiver** and **00450.01 Letter of Intent to Subcontract** for each MBE/WBE listed on the 00450 HRD 08 Construction Contractor Utilization Plan/Request for Waiver;; and (3) Bidder will submit documentation of its good faith efforts to meet the MBE/WBE/DBE goals when requested by the City. Failure to meet these requirements in good faith will result in Bidder forfeiting its bid bond.

PROJECT GOALS:	<u>14%</u>	MBE	<u>14%</u>	WBE	<u> </u>	%DBE
BIDDER PARTICIPATION:	<u> </u>	% MBE	<u> </u>	% WBE	<u> </u>	% DBE

Bidder: _____

14. To the best of Bidder's knowledge, the following are names of certified MBEs and/or WBEs with whom Bidder, or Bidder's subcontractors, presently intend to contract with if awarded the Contract on the above project: **(All firms must currently be certified by Kansas City, Missouri Human Relations Department)**

- a. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- b. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- c. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- d. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- e. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- f. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____

(List additional MBE/WBEs, if any, on additional pages and attach to this form)

Bidder: _____

15. By submitting its bid, Bidder is agreeing it will identify and timely submit within 48 Hours after Bid opening those MBE/WBE subcontractors with dollar amounts and scopes of work, which apply to or exceed the MBE/WBE goals for the Project on the **00450 HRD 08 Contractor Utilization Plan/Request for Waiver**.
16. Bidder agrees that failure to meet or exceed the MBE/WBE Goals for the above project will require the Director of Human Relations to recommend disapproval of the bid unless the Director of Human Relations finds the Bidder established good faith efforts towards meeting the goals as set forth in the HRD Forms and Instructions for Construction Projects and the City's MBE/WBE Ordinance.

Bidder: _____

Business Entity Type:

- ☐ Missouri Corporation
☐ Foreign Corporation
☐ Fictitious Name Registration
☐ Sole Proprietor
☐ Limited Liability Company
☐ Partnership
☐ Joint Venture
☐ Other: (Specify) _____

BIDDER

Legal name & address of Bidder, person
firm, partnership, corporation, or
association submitting Bid:

Phone No: _____

Cell No: _____

Facsimile No: _____

Bidder's E-Mail: _____

Federal ID. No. _____

I hereby certify that I have authority to execute this document on behalf
of Bidder, person, firm, partnership, corporation or association
submitting Bid.

By: _____
(Signature)

(Print Name)

Title: _____

Date: _____

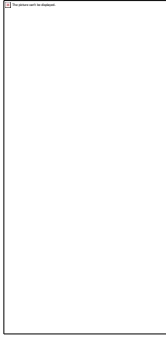
(Attach corporate seal if applicable)

NOTARY

Subscribed and sworn to before me this _____ day of _____, 20__.

My Commission Expires: _____

Bidder: _____



ALLOWANCE FORM

Project Number: 81001018/1715

Project Title: WW Backup Generators

[illegible]

Bidder: _____

Form F-1. Project Design Criteria
Project Number 81001018/1715
Project Title WW Backup Generators

Criterion	Fixed (F)/ Indicative (I) / Indicative Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Generator Design Parameters					
Run time	IP	12	hrs		
Attenuation (if residential)	Per City Ordinance	55	dB		
Natural Gas Piping Materials of Construction	I	Section 15200-150CS - Carbon Steel	-		
Fuel Gas elevation (above grade)		2'-0" to 4'-0"	ft-in		
Tank Material of Construction		Carbon Steel	-		
Warranty Length	I	2	years		
Electrical Feed Location		Bottom Feed	-		
Enclosure Type		NEMA 4X	-		
Oil spill Containment					
Fuel tank Size					
How to fuel					
Safety					
Maintenance	IP	Weekly exercising -30	minutes		
Manufacturer	IP	MTU generators from Central Power			
Flood Plain		500 Year			
Site #600 (Southwest Boulevard Flood Pumping Station)					
Facility Location		39°04'37.2"N 94°36'07.6"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #601 (25th Street Flood Pumping Station)					
Facility Location		39°04'59.7"N 94°36'08.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #603 (Broadway Flood Pumping Station)					
Facility Location		39°06'39.5"N 94°35'18.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #604 (N. Downtown Airport Flood Pumping Station)					
Facility Location		39°08'06.3"N 94°35'18.7"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		

Criterion	Fixed (F)/ Indicative (I) / Indicative Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Generator - Fuel Source	IP	Natural Gas			
Site #606 (Gillis Flood Pumping Station)					
Facility Location		39°07'02.5"N 94°34'23.5"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #607 (Lydia Flood Pumping Station)					
Facility Location		39°07'10.3"N 94°34'05.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #608 (Prospect Flood Pumping Station)					
Facility Location		39°07'36.9"N 94°33'00.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #609 (Milwaukee Flood Pumping Station)					
Facility Location		39°08'28.5"N 94°31'48.3"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #610 (Trueman Flood Pumping Station)					
Facility Location		39°08'28.6"N 94°30'23.6"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	L	None			
Existing Generation On-Site	L	None			
Existing Feed Configuration	L	Parallel			
Voltage - out	L	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #612 (Blue Banks Flood Pumping Station)					
Facility Location		39°07'09.8"N 94°29'22.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #616 (Westside Effluent Pumping Station)					
Facility Location		39°06'32.9"N 94°36'14.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #619 (North Church Estates Pumping Station)					
Facility Location		39°13'25.0"N 94°28'18.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #632 (New Second Creek Pumping Station)					
Facility Location		39°18'38.9"N 94°38'44.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #637 (South Airport Relief Wells)					
Facility Location		39°06'50.2"N 94°35'49.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas			
Site #642 (Wildwood West Pumping Station)					
Facility Location		39°15'11.8"N 94°42'18.2"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #643 (KCI Industrial Pumping Station)					
Facility Location		39°16'30.8"N 94°41'06.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #652 (Buckeye Creek Pumping Station)					
Facility Location		39°09'10.8"N 94°31'00.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #661 (Turkey Creek Pumping Station)					
Facility Location		39°09'07.8"N 94°36'24.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #676 (South Airport Pumping Station)					
Facility Location		39°06'50.2"N 94°35'48.3"W			

Criterion	Fixed (F)/ Indicative (I) / Indicative Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #677 (Lawndale Pumping Station)					
Facility Location		38°54'38.6"N 94°31'30.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #682 (Lake Waukomis Pumping Station)					
Facility Location		39°14'09.5"N 94°38'43.2"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #684 (White Alice Pumping Station)					
Facility Location		39°12'39.9"N 94°40'18.6"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #686 (Brush Creek and Prospect Pumping Station)					
Facility Location		39°02'30.6"N 94°33'17.5"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #688 (Harlem Pumping Station)					
Facility Location		39°07'07.1"N 94°34'58.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #692 (83rd Street Pumping Station)					
Facility Location		38°58'47.8"N 94°32'15.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #694 (Mace Road Pumping Station)					
Facility Location		39.2308, -94.6776			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #697 (Hulse Woods Pumping Station)					
Facility Location		29°13'29.57"N 94°12'28.47"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #699 (Kemper Flood Pumping Station)					
Facility Location		39.090471, -94.606719			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #693 (Birmingham Pumping Station)					
Facility Location		38°10'26.6"N 94°26'42.7"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #718 (Rocky Branch Pumping Station)					
Facility Location		39°20'11.4"N 94°34'28.9"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	1			
Existing Generation On-Site	F	500W			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #720 (Fishing River Pumping Station)					
Facility Location		39°18'34.6"N 94°26'44.2"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #745 (KCI Deicing Treatment)					
Facility Location		39°18'10.1"N 94°42'59.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #856 (4800 KC Water HQ)					
Facility Location		39°00'50.0"N 94°31'50.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	1			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		



ADDENDUM NUMBER 2

Project/Contract Number 81001018/1715

Project Title Wastewater Generator Project

ISSUE DATE: January 15, 2025

Respondents are hereby notified that the Proposal and Contract Documents for the above project, for which Proposals are to be received on **January 30, 2024**, are amended as follows:

RFP Package

1. Paragraph 1.2.1 Project Technical Requirements. Delete Bullet Point for “Preliminary Drawings.”
2. Paragraph 1.2.1 Project Technical Requirements. Delete Paragraph 2.
3. Paragraph 1.2.1 Project Technical Requirements. Paragraph 3, First Sentence. Delete “Representative”.
4. Paragraph 4.3.4 Part 2 – Technical Approach, Drawings. Delete “Representative”.
5. Paragraph 4.3.4 Part 2 – Technical Approach, Drawings, Organization. Delete “matching the organization of the Preliminary Drawings as provided in Attachment E (Project Technical Requirements)”
6. Paragraph 4.3.8 Appendix B – Design Drawings. Delete “Representative”.
7. Paragraph 4.3.9 Appendix C – Equipment Forms. Delete “Representative”.
8. Paragraph 4.3.11 Part 5 – Cost Proposal, Paragraph 2. Delete “Representative” in two places.
9. Delete form DB 00435 – Alternative Technical Concepts (ATCS) and replace with DB 00435 – Alternative Technical Concepts (ATCS) rev 2.
10. Delete specification section 00410 Design-Build Bid Form and replace it with specification section 00410 Design-Build Bid Form rev 1.
11. Add specification section 01110 – Summary of Work_ver3.
12. Add specification section 00413 – Allowance Form rev 1.

Drawings

1.Paragraph 4.3.4 Part 2 – Technical Approach, Drawings, Content. Delete and Replace with

- a. “Shortlisted Respondents may prepare and submit drawings needed to convey the intent of the Project for one or two reference sites. For example, a Site Plan shall be prepared and showing the location of the Generator, ATS, and routing of any gas lines. Changes to fencing shall be shown on the Site Plan. Indication shall be made on the Site Plan as to the structural pad or elevated floodproofing structure for the generator. If floodproofing is provided, indicate height and material of construction. Indication shall be made on the site plan if no changes are needed to the electrical space, control space, or communication space. If changes are needed to the electrical space, control space, or communication space, additional drawings shall be provided to show what changes are necessary. Drawings shall be 11” x 17” size, indicate north on layouts, and use appropriate scale to convey the needed information.”

Q1.	Platte Woods is the #2 priority site. It is crossed out on Addendum 1, Form F-1, Page 3. However, on Page 4 of the same document, it was added to the list with two (2) 10 HP pump motors. Please confirm which is correct.
A1.	Platte Woods has been removed from this project scope. Please disregard the horsepower information for this facility.
Q2.	Please confirm this n+1 and 1.25 service factor example is correct: Lake Waukomis [two 100 hp motors + (n+1 100 hp motor)] x [1.25 service factor] = 375 hp
A2.	Design for N pumps. We installed N+1 pumps. Design-builder should size generators for all the pumps minus the largest HP pump along with building loads included in the power records where appropriate. We will not use the standby pump and all the others for the HP. Example: Lake Waukomis [two 100 hp motors - (n+1 (100 hp motor))] x [1.25 service factor] = [(2-1)*100HP]*1.25=125 HP.
Q3.	KC Water HQ indicates 577kW peak load. Should this include the 1.25 service factor which would be 721kW?
A3.	This facility will not utilize the 1.25 service factor.
Q4.	Second Creek: The large antenna onsite suggests that there may be an existing grounding grid. Please inform if there is a grounding grid and the extent on the site. Please provide a location showing the grounding grid if it exists.
A4.	Please see construction drawing number D1270.12 for grounding details.

Q5.	All Facilities: The utility service disconnect is currently located at grade and could be flooded, consider raising this during the project?
A5.	All designs must meet the standards for the 500-year floodplain.
Q6.	All Facilities: No 120/240V feeds for Generator heater/battery charger available
A6.	DB Team will be responsible for design of extra electrical circuits if none are present.
Q7.	Who is responsible for Stakeholder engagement with levee district?
A7.	KC Water will be responsible for approval from the Levee District.
Q8.	All Facilities: Responsibilities of locating utilities outside facility fencing
A8.	DB Team will be responsible of contacting Missouri 811 for utility locates outside of facility fencing.
Q9.	Generator security considerations.
A9.	DB Team's design shall incorporate security measures to secure the generator at each site.
Q10.	Possibility of replacement of existing electrical equipment
A10.	Standard of Care for the Water/Wastewater will be utilize to determine if a replacement is necessary.
Q11.	Potential stakeholder engagement with airport.
A11.	DB Team will be responsible for discussing their design with Airport Staff.
Q12.	All Facilities: Access agreement and land acquisition.
A12.	KC Water will be responsible for any agreements as needed.
Q13.	Birmingham Pumping Station: This station shows 6 pumps on the drawings but only two pumps in the Hp table
A13.	There are currently only two pumps being utilized as listed in the HP table.
Q14.	Fishing River and Rocky Branch: How should these facilities be sized?
A14.	Each of the same grouping of motors should utilize (n+1). All others loads will then be added. Each Team is responsible for determining the number of generators.

NOTE: Bidders must acknowledge receipt of this Addendum by listing the number and date, where provided, on the Bid Form - Document 00410.

Bidder: _____

CITY OF FOUNTAINS
HEART OF THE NATION



KANSAS CITY
MISSOURI

Form G-1. DESIGN-BUILD BID FORM – PRICE SUBMITTAL

Project Number 81001018/1715

Project Title Wastewater Generators Project

1. The undersigned Bidder, having examined the Bidding Documents, related documents and the Site of the Work, and being familiar with all the conditions affecting the proposed Work, including Laws and Regulations and the availability of materials and supplies, agrees, if this Bid is selected by CITY, to enter into a Contract with CITY in the form included in the Contract Documents to furnish all labor and materials, equipment and services necessary for the proper completion of the Work in accordance with the Contract Documents, including design services and general construction work at the price(s) stated below, which stated sums include fees and all other charges applicable to materials, appliances, labor and all things subject to and upon which other charges may be levied.
2. Bidder agrees the Contract Documents will comprise the entire agreement between CITY and Bidder. The Contract Documents are identified in the General Conditions and are incorporated into and made part hereof this Bid Form/Contract by reference.
3. The Bid Price(s) shall be shown in numeric figures only.

TOTAL BASE BID PRICE IN NUMERIC FIGURES \$ _____

ALLOWANCE NO. 1 - SPIRE \$ 100,000.00

ALLOWANCE NO. 2 – COMMUNITY OUTREACH \$ 50,000.00

TOTAL SUM - BID IN NUMERIC FIGURES \$ _____

4. The undersigned Bidder has given City's Project Manager written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by the Project Manager or by the Program Manager is acceptable to Bidder.
5. The undersigned Bidder agrees that this Price Submittal Bid shall remain subject to selection by CITY, and may not be withdrawn for ninety (90) days after the day Price Submittal Bids are opened.
6. The undersigned Bidder certifies that this Price Submittal Bid contains no modifications, deviations, riders or qualifications.
7. Form 01290.02 Schedule of Values contains prices included in the Base Bid, and are incorporated into this Bid. Form must be completed and returned with this Bid.
8. Form 00413 Allowances contain prices included in the Base Bid, and are incorporated into this Bid. This form must be completed and returned with this Bid.
9. The undersigned Bidder acknowledges receipt of the following addenda listed by number and date appearing on each addendum:

Bidder: _____

Addendum Number	Dated	Addendum Number	Dated
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)

10. By submitting its bid, Bidder is agreeing to meet or exceed the minimum employment goals of 10% minority and 2% women during the term of its contract with the City, or request a waiver of the goals. If a waiver is requested, Bidder must establish good faith efforts towards meeting the goals as set forth in the HRD Instructions for Construction Contracts and the City's Workforce Ordinance. Should Bidder fail to meet or exceed the minimum employment goals or otherwise establish that Bidder is entitled to a waiver under circumstances in which Bidder has previously failed to meet or exceed the goals on one or more occasions with the twenty-four month period immediately preceding the completion of the Work under this Bid Form/Contract, Bidder may be suspended from participating, either as a contractor or subcontractor, on any future contract with the City for a period ranging from thirty days to six months as further specified in the Contract Documents.
11. By submitting its bid, Bidder warrants that if its bid should exceed \$300,000.00 and Bidder employs fifty (50) or more people, Bidder has an affirmative action program in place and will maintain the affirmative action program in place for the duration of its contract with the City. Bidder further warrants that it will comply with the affirmative action requirements contained in the General Conditions as incorporated by reference into this Bid Form/Contract.
12. Section 13 through Section 15 constitutes the Affidavit of Intended Utilization required to be submitted by Bidders.
13. By submitting its bid, Bidder is agreeing to the following: (1) Bidder has made by bid opening a good faith effort to meet the MBE/WBE/DBE goals established for the project; or Bidder will continue to make during the 48 hours after bid opening a good faith effort to meet the MBE/WBE/DBE goals established for the project; and (2) Bidder will timely submit its **00450 HRD 08 Contractor Utilization Plan/Request for Waiver** and **00450.01 Letter of Intent to Subcontract** for each MBE/WBE listed on the 00450 HRD 08 Construction Contractor Utilization Plan/Request for Waiver;; and (3) Bidder will submit documentation of its good faith efforts to meet the MBE/WBE/DBE goals when requested by the City. Failure to meet these requirements in good faith will result in Bidder forfeiting its bid bond.

PROJECT GOALS:	<u>14%</u> MBE	<u>14%</u> WBE	<u> </u> %DBE
BIDDER PARTICIPATION:	<u> </u> % MBE	<u> </u> % WBE	<u> </u> % DBE

Bidder: _____

14. To the best of Bidder's knowledge, the following are names of certified MBEs and/or WBEs with whom Bidder, or Bidder's subcontractors, presently intend to contract with if awarded the Contract on the above project: **(All firms must currently be certified by Kansas City, Missouri Human Relations Department)**

- a. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- b. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- c. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- d. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- e. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____
- f. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____

(List additional MBE/WBEs, if any, on additional pages and attach to this form)

Bidder: _____

15. By submitting its bid, Bidder is agreeing it will identify and timely submit within 48 Hours after Bid opening those MBE/WBE subcontractors with dollar amounts and scopes of work, which apply to or exceed the MBE/WBE goals for the Project on the **00450 HRD 08 Contractor Utilization Plan/Request for Waiver**.
16. Bidder agrees that failure to meet or exceed the MBE/WBE Goals for the above project will require the Director of Human Relations to recommend disapproval of the bid unless the Director of Human Relations finds the Bidder established good faith efforts towards meeting the goals as set forth in the HRD Forms and Instructions for Construction Projects and the City's MBE/WBE Ordinance.

Bidder: _____

Business Entity Type:

- ☐ Missouri Corporation
☐ Foreign Corporation
☐ Fictitious Name Registration
☐ Sole Proprietor
☐ Limited Liability Company
☐ Partnership
☐ Joint Venture
☐ Other: (Specify) _____

BIDDER

Legal name & address of Bidder, person
firm, partnership, corporation, or
association submitting Bid:

Phone No: _____

Cell No: _____

Facsimile No: _____

Bidder's E-Mail: _____

Federal ID. No. _____

I hereby certify that I have authority to execute this document on behalf
of Bidder, person, firm, partnership, corporation or association
submitting Bid.

By: _____
(Signature)

(Print Name)

Title: _____

Date: _____

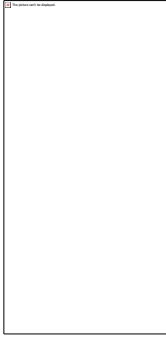
(Attach corporate seal if applicable)

NOTARY

Subscribed and sworn to before me this _____ day of _____, 20__.

My Commission Expires: _____

Bidder: _____



ALLOWANCE FORM

Project Number: 81001018/1715

Project Title: Wastewater Generators Project

[illegible]

Bidder: _____



DB 00435 – ALTERNATIVE TECHNICAL CONCEPTS (ATCS)

Project/Contract Numbers: 81001018/1715

Project Title: Wastewater Generator Project

PART 1 - GENERAL

1.01 SUMMARY

- A. This project includes design criteria for Design-Build Shortlisted Respondents to adhere to, follow, and may also be indicative of the design intent of the City and City's preferences. The City would like to promote innovation and encourage best value; therefore, the City will consider technical alternatives that are better than or equal to the Indicative Design Criteria or Indicative Preferred Design Criteria. Proposed variances from Indicative Design Criteria must be included and submitted as part of the Interim Deliverable and Additional ATC Requests.

1.02 DEFINITIONS

- A. Refer to Section 01420 – Definitions and Acronyms for additional definitions.
- a. Alternative Technical Concept (ATC)– Proposed variances from the Respondent that have been approved by the City and will be considered proprietary and will be kept Confidential.
 - b. Fixed Design Criteria – Must be adhered to and followed by the Respondent; changes to Fixed Criteria will be declared by addendum.
 - c. Indicative Design Criteria – City's Design intent
 - d. Indicative Preferred Design Criteria – Indicative Design Criteria with strong City preference.
 - e. Proposed Variances – Any criteria different from design criteria and has not been approved by City.

1.03 DELIVERABLES

- A. ATC Request
- a. Overview - The ATC request will communicate the Respondent's design concepts and technical approach for their design. The goal of the ATC presentations is for the respondent to solicit early technical feedback from the City in order to improve the quality of Proposals received by the City.

The deliverable is intended to facilitate conversation and evaluation of design ideas between the Respondent and the City. The deliverable should be broad enough to provide the City with a general understanding of the Respondent's potential approaches and should also specifically focus on any concepts that may constitute a deviation from the Project Technical Requirements or other Contract Documents and provide justification for such variance.

The material does not need to be complete or finalized; however, all proposed variances to the Indicative Design Criteria must be included. It is understood that the material will be conceptual and preliminary, subject to replacement or modification before being included in the final proposal.

- b. Submittal



DB 00435 – ALTERNATIVE TECHNICAL CONCEPTS (ATCS)

Project/Contract Numbers: 81001018/1715

Project Title: Wastewater Generator Project

1. Requirements – Submitted Electronically to City Contacts and includes the following.
 - a. Abbreviated business case analysis
 - i. Any reductions in Operating Costs
 - ii. Lower net Present value (in comparison to Project Design Criteria)
 - iii. Assumptions
 - iv. Calculations
 - b. Supporting Documentation which may include
 - i. Conceptual design drawings
 - ii. Figures
 - iii. Equipment Data Sheets
 - iv. Performance Information
 - c. It is recommended to also include the following if not part of the business case analysis.
 - i. Summary of concepts under consideration, including process flow diagram(s).
 - ii. Advantages and disadvantages of the concepts presented including capital and operational cost implications.
 - iii. Potential variances from the Project Technical Requirements or other Contract Documents associated with the concepts under consideration.
 - iv. Any additional information that the Respondent believes will be helpful to the City in evaluating the concepts.
2. Date: (As specified in the Procurement Schedule)
3. Format:
 - a. Proposed Variance List listed herein. Additional pages, outside of the table, can be utilized to further discuss major deviations.
 - b. Support Documentation
 - i. Page Format: 8-1/2" x 11" Sheets with Minimum 11-point font.
 - ii. Maximum page count: 20 pages (a front-and-back printed page shall count as two pages)

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION - NOT USED



DB 00435 – ALTERNATIVE TECHNICAL CONCEPTS (ATCS)

Project/Contract Numbers: 81001018/1715

Project Title: Wastewater Generator Project

Proposed Variance List by Respondent

[illegible]

SECTION 01110 – SUMMARY OF WORK

PART 1 GENERAL

1.01 LOCATION OF WORK

- A. The work of this Contract is located at various wastewater pumping stations.

1.02 SCOPE OF WORK

- A. The project Includes the completion of Design and build process. This scope of engineering services is based on installation/ commissioning/ testing of the stationary generators at 31 Pumping Facilities and at WSD Headquarters. Furnish all labor, materials, equipment and incidentals required for each facility in its entirety as shown on the Drawings and as specified herein for a fully functioning system within the project budget.
- B. The Work includes, but is not necessarily limited to, the following:
 - 1. Demolition and removal of existing equipment as indicated and necessary for the construction of the project.
 - 2. Design and Construction of emergency power using power generators and automatic transfer switches (ATS).
 - 3. Furnishing and installation of new generators and ATS and associated equipment including modifications to existing facility needed to accommodate the new equipment.
 - 4. Furnishing and installation of new ATS for the transfer of power from/to the utility from/to each generator.
 - 5. Furnishing and installation of new appurtenances as required for the installation of the generators. Appurtenances may include but not necessarily limited to concrete pads, fencing, and wall penetrations. All new equipment shall be within the facility fencing.
 - 6. Electrical modifications including demolition and replacement of existing electrical equipment, coordination with the electrical utility, and installation of Instrumentation and Controls for all new equipment as shown on the Drawings.
 - 7. Generators shall be monitored for operation and alarms via the existing SCADA system.
 - 8. Furnishing and installation of new generator fuel source, either natural gas or diesel. A Spire allowance will be provided for the design of the natural gas installations.
 - 9. Provide factory commissioning of all emergency power equipment.

1.03 WORK SEQUENCE

- A. Perform Work in sequence as indicated in the contract documents to ensure completion of the Work in the Contract Time. Completion dates of the various stages shall be in accordance with the approved construction schedule submitted by the Contractor or Design-Builder.

1.04 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit the use of the premises for his/her Work and for storage to allow for:
 - 1. Work by other agencies.
 - 2. Owner occupancy.
 - 3. Public use.
- B. Coordinate use of premises with Owner.
- C. Contractor shall assume full responsibility for security of all his/her and his/her subcontractors materials and equipment stored on the site.
- D. If directed by the Owner, move any stored items which interfere with operations of Owner or other contractors.
- E. Obtain and pay for use of additional storage or work areas if needed to perform the Work.

1.05 OWNER OCCUPANCY

- A. Owner will occupy premises during performance of the work for the conduct of his/her normal operations. Coordinate all construction operations with Owner to minimize conflict and to facilitate Owner usage.

1.06 CONSTRUCTION COORDINATION

- A. Contractor shall coordinate with the Owner regarding scheduling, sequence of work, and operation of each facility.

END OF SECTION



ADDENDUM NUMBER 03

Project/Contract Number 81001018/1715

Project Title Wastewater Generator Project

ISSUE DATE: January 23, 2025

Respondents are hereby notified that the Proposal and Contract Documents for the above project, for which Proposals are to be received on **February 13, 2025**, are amended as follows:

RFP Package

1. Modify Proposal Submission: January 30, 2025, with Proposal Submission: **February 13, 2025.**
2. Delete Form F-1. Project Design Criteria Generator Addendum 1 and replace with Form F-1. Project Design Criteria Generator Addendum 3.
3. Spire Allowance Clarification: Spire allowance shall be used for installation of a new gas line(s) from the utility right-of-way to the pumping station(s).
4. Add Spire reference drawing zip folders 1261-7304 - 684 White Aloe pumping station and __0401-0002 - 616-619 North Church Estates, West Side Effluent pumping stations

NOTE: Bidders must acknowledge receipt of this Addendum by listing the number and date, where provided, on the Bid Form - Document 00410.

Form F-1. Project Design Criteria
Project Number 81001018/1715
Project Title WW Backup Generators

Criterion	Fixed (F)/ Indicative (I) / Indicative Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Generator Design Parameters					
Run time	IP	12	hrs		
Attenuation (if residential)	Per City Ordinance	55	dB		
Natural Gas Piping Materials of Construction	I	Section 15200.150CS - Carbon Steel	-		
Fuel Gas elevation (above grade)		2'-6" to 4'-0"	ft-in		
Tank Material of Construction		Carbon Steel	-		
Warranty Length	I	2	years		
Electrical Feed Location		Bottom Feed	-		
Enclosure Type		NEMA 4X	-		
Oil spill Containment					
Fuel tank Size					
How to fuel					
Safety					
Maintenance	IP	Weekly exercising -30	minutes		
Manufacturer	IP	MTU generators from Central Power			
Flood Plain		500 Year			
Site #600 (Southwest Boulevard Flood Pumping Station)					
Facility Location		New equipment shall be placed on a new platform			
Zoning Location (Residential, Industrial, Commercial)		39°04'37.2"N 94°36'07.6"W			
Number of Existing Generators on-Site	F	Industrial			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	None			
Voltage out	F	Parallel			
Generator - Fuel Source	IP	Match Existing	kV		
		Natural Gas	-		
Site #601 (25th Street Flood Pumping Station)					
Facility Location		39°04'59.7"N 94°36'08.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #603 (Broadway Flood Pumping Station)					
Facility Location		39°06'39.5"N 94°35'18.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #604 (N. Downtown Airport Flood Pumping Station)					
Facility Location		39°08'06.3"N 94°35'18.7"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage out	F	Match Existing	kV		

Criterion	Fixed (F)/ Indicative (I) / Indicative Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Generator - Fuel Source	IP	Natural Gas			
Site #606 (Gillis Flood Pumping Station)					
Facility Location		39°07'02.5"N 94°34'23.5"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #607 (Lydia Flood Pumping Station)					
Facility Location		39°07'10.3"N 94°34'05.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #608 (Prospect Flood Pumping Station)					
Facility Location		39°07'36.9"N 94°33'00.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #609 (Milwaukee Flood Pumping Station)					
Facility Location		39°08'28.5"N 94°31'48.3"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #610 (Trumom Flood Pumping Station)					
Facility Location		39°08'28.6"N 94°29'23.5"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #612 (Blue Banks Flood Pumping Station)					
Facility Location		39°07'09.8"N 94°29'22.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #616 (Westside Effluent Pumping Station)					
Facility Location		39°06'32.9"N 94°36'14.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #619 (North Church Estates Pumping Station)					
Facility Location		39°13'25.0"N 94°28'18.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #632 (New Second Creek Pumping Station)					
Facility Location		39°18'38.9"N 94°38'44.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #637 (South Airport Relief Wells)					
Facility Location		39°06'50.2"N 94°35'49.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #642 (Wildwood West Pumping Station)					
Facility Location		39°15'11.8"N 94°42'18.2"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #643 (KCI Industrial Pumping Station)					
Facility Location		39°16'30.8"N 94°41'06.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #652 (Buckeye Creek Pumping Station)					
Facility Location		39°09'10.8"N 94°31'00.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #661 (Turkey Creek Pumping Station)					
Facility Location		39°09'07.8"N 94°36'24.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #676 (South Airport Pumping Station)					
Facility Location		39°06'50.2"N 94°35'48.3"W			

Criterion	Fixed (F)/ Indicative (I) / Indicative Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #677 (Lawndale Pumping Station)					
Facility Location		38°54'38.6"N 94°31'30.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #682 (Lake Waukomis Pumping Station)					
Facility Location		39°14'09.5"N 94°38'43.2"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #684 (White Alice Pumping Station)					
Facility Location		39°12'29.9"N 94°40'18.6"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #686 (Brush Creek and Prospect Pumping Station)					
Facility Location		39°02'30.6"N 94°33'17.5"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #688 (Harlem Pumping Station)					
Facility Location		39°07'07.1"N 94°34'58.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #692 (83rd Street Pumping Station)					
Facility Location		38°58'47.8"N 94°32'15.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #694 (Mace Road Pumping Station)					
Facility Location		39.2308, -94.6776			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #695 (Haste Woods Pumping Station)					
Facility Location		39°13'29.6"N 94°38'29.6"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	I	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	I	Match Existing	kV		
Generator - Fuel Source	IB	Natural Gas	-		
Site #699 (Kemper Flood Pumping Station)					
Facility Location		39.090471, -94.606719			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #693 (Birmingham Pumping Station)					
Facility Location		39°10'26.6"N 94°26'42.7"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #718 (Rocky Branch Pumping Station)					
Facility Location		39°20'11.4"N 94°34'28.9"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	1			
Existing Generation On-Site	F	500W			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #720 (Fishing River Pumping Station)					
Facility Location		39°18'34.6"N 94°26'44.2"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #746 (KCI Deicing Treatment)					
Facility Location		39°18'10.3"N 94°42'50.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	I	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	I	Match Existing	kV		
Generator - Fuel Source	IB	Natural Gas	-		
Site #856 (4800 KC Water HQ)					
Facility Location		39°00'50.0"N 94°31'50.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	1			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage_out	F	Match Existing	kV		



ADDENDUM NUMBER 04

Project/Contract Number 81001018/1715

Project Title Wastewater Generator Project

ISSUE DATE: January 30, 2025

Respondents are hereby notified that the Proposal and Contract Documents for the above project, for which Proposals are to be received on **February 13, 2025**, are amended as follows:

RFP Package

1. Delete Form F-1. Project Design Criteria Generator Addendum 3 and replace with Form F-1. Project Design Criteria Generator Addendum 4.
2. Add Tech Proposal Checklist rev.xlsx. Completed checklist shall be included in the submitted proposal.

NOTE: Bidders must acknowledge receipt of this Addendum by listing the number and date, where provided, on the Bid Form - Document 00410.

Form F-1. Project Design Criteria Addendum 4
Project Number 81001018/1715
Project Title WW Backup Generators

Criterion	Fixed (F)/ Indicative (I) / Indicative Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Generator Design Parameters					
Run Time	IP	12	hrs		
Attenuation (if residential)	Per City Ordinance	55	dB		
Natural Gas Piping Materials of Construction	I	Section 15200-1500S - Carbon Steel			
Fuel cap elevation (above grade)		2'-6" to 4'-0"	ft-in		
Tank Material of Construction		Carbon Steel	-		
Warranty Length	I	2	years		
Electrical Feed Location		Bottom Feed			
Enclosure Type		NEMA 4X	-		
Oil spill Containment					
Fuel tank Size					
How to fuel					
Safety					
Maintenance	IP	Weekly exercising -30	minutes		
Manufacturer	IP	MTU generators from Central Power			
Flood Plain		500 Year			
Site #600 (Southwest Boulevard Flood Pumping Station)					
		New equipment shall be placed on a new platform			
Facility Location		39°04'37.2"N 94°36'07.6"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #601 (25th Street Flood Pumping Station)					
Facility Location		39°04'59.7"N 94°36'08.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #603 (Broadway Flood Pumping Station)					
Facility Location		39°06'39.5"N 94°35'18.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #604 (N. Downtown Airport Flood Pumping Station)					
Facility Location		39°08'06.3"N 94°35'18.7"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		

Criterion	Fixed (F) / Indicative (I) / Indicative Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Generator - Fuel Source	IP	Natural Gas	-		
Site #606 (Gillis Flood Pumping Station)					
Facility Location		39°07'02.5"N 94°34'23.5"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out		Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #607 (Lytle Flood Pumping Station)					
Facility Location		39°07'10.3"N 94°34'05.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #608 (Prospect Flood Pumping Station)					
Facility Location		39°07'36.9"N 94°33'00.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #609 (Milwaukee Flood Pumping Station)					
Facility Location		39°08'28.5"N 94°31'48.3"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #610 (Husum Flood Pumping Station)					
Facility Location		39°09'38.4"N 94°30'23.5"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	I	None			
Existing Generation On-Site	I	None			
Existing Feed Configuration	I	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #612 (Blue Banks Flood Pumping Station)					
Facility Location		39°07'09.8"N 94°29'32.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #616 (Westside Effluent Pumping Station)					
Facility Location		39°06'32.9"N 94°36'14.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #619 (North Church Estates Pumping Station)					
Facility Location		39°13'25.0"N 94°28'18.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #632 (New Second Creek Pumping Station)					
Facility Location		39°18'38.9"N 94°30'44.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #637 (South Airport Relief Wells)					
Facility Location		39°06'50.2"N 94°35'49.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #642 (Wildwood West Pumping Station)					
Facility Location		39°15'11.8"N 94°42'18.2"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #649 (ICI Industrial Pumping Station)					
Facility Location		39°16'30.8"N 94°41'06.4"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #652 (Buckeye Creek Pumping Station)					
Facility Location		39°09'10.8"N 94°31'00.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #661 (Turkey Creek Pumping Station)					
Facility Location		39°05'07.8"N 94°36'24.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #676 (South Airport Pumping Station)					
Facility Location		39°06'50.7"N 94°35'48.3"W			

Criterion	Fixed (F) / Indicative (I) / Indicative Preferred (IP)	Proposed Value	Unit	Manufacturer and Model in Base Bid	Identify deviation from and location of supporting justification in Technical Proposal
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #677 (Lowndale Pumping Station)					
Facility Location		38°54'38.67"N 94°31'30.17"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #682 (Lake Waukegan Pumping Station)					
Facility Location		39°14'09.5"N 94°38'43.2"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #684 (White Alice Pumping Station)					
Facility Location		39°12'39.9"N 94°40'18.6"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #686 (Brush Creek and Prospect Pumping Station)					
Facility Location		39°02'30.6"N 94°33'17.5"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #688 (Harlem Pumping Station)					
Facility Location		39°07'07.1"N 94°34'58.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #692 (83rd Street Pumping Station)					
Facility Location		38°58'47.87"N 94°32'15.1"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #694 (Mace Road Pumping Station)					
Facility Location		39.2308, -94.6776			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #697 (Histe-Woods Pumping Station)					
Facility Location		39°12'39.9"N 94°38'39.6"W			
Zoning Location (Residential, Industrial, Commercial)		Residential			
Number of Existing Generators on-Site	L	None			
Existing Generation On-Site	L	None			
Existing Feed Configuration	L	Parallel			
Voltage - out	L	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #699 (Kemper Flood Pumping Station)					
Facility Location		39.090471, -94.606719			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #693 (Birmingham Pumping Station)					
Facility Location		39°10'26.6"N 94°26'42.7"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas	-		
Site #718 (Rocky Branch Pumping Station)					
Facility Location		39°20'11.47"N 94°34'38.9"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	1			
Existing Generation On-Site	F	500KW			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas			
Site #720 (Fishing River Pumping Station)					
Facility Location		39°18'34.6"N 94°26'44.2"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	None			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas			
Site #746 (KCI Dairies Treatment)					
Facility Location		39°18'40.1"N 94°42'59.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	L	None			
Existing Generation On-Site	L	None			
Existing Feed Configuration	L	Parallel			
Voltage - out	L	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas			
Site #856 (ABNO KC Water HQ)					
Facility Location		39°00'50.0"N 94°31'50.8"W			
Zoning Location (Residential, Industrial, Commercial)		Industrial			
Number of Existing Generators on-Site	F	1			
Existing Generation On-Site	F	None			
Existing Feed Configuration	F	Parallel			
Voltage - out	F	Match Existing	kV		
Generator - Fuel Source	IP	Natural Gas			

Tech Proposal Checklist

Included in Scope	Priority	Site Number and Name	Natural Gas
		Site #600 (Southwest Boulevard Flood Pumping Station)	
		Site #601 (25th Street Flood Pumping Station)	
		Site #603 (Broadway Flood Pumping Station)	
		Site #604 (N. Downtown Airport Flood Pumping Station)	
		Site #606 (Gillis Flood Pumping Station)	
		Site #607 (Lydia Flood Pumping Station)	
		Site #608 (Prospect Flood Pumping Station)	
		Site #609 (Milwaukee Flood Pumping Station)	
		Site #612 (Blue Banks Flood Pumping Station)	
		Site #616 (Westside Effluent Pumping Station)	
		Site #619 (North Church Estates Pumping Station)	
		Site #632 (New Second Creek Pumping Station)	
		Site #637 (South Airport Relief Wells)	
		Site #642 (Wildwood West Pumping Station)	
		Site #643 (KCI Industrial Pumping Station)	
		Site #652 (Buckeye Creek Pumping Station)	
		Site #661 (Turkey Creek Pumping Station)	
		Site #676 (South Airport Pumping Station)	
		Site #677 (Lawndale Pumping Station)	
		Site #682 (Lake Waukomis Pumping Station)	
		Site #684 (White Aloe Pumping Station)	
		Site #686 (Brush Creek and Prospect Pumping Station)	
		Site #688 (Harlem Pumping Station)	
		Site #692 (83rd Street Pumping Station)	
		Site #693 (Birmingham Pumping Station)	
		Site #694 (Mace Road Pumping Station)	
		Site #699 (Kemper Flood Pumping Station)	
		Site #718 (Rocky Branch Pumping Station)	
		Site #720 (Fishing River Pumping Station)	
		Site #856 (4800 KC Water HQ)	

[illegible]



ADDENDUM NUMBER 05

Project/Contract Number 81001018/1715

Project Title Wastewater Generator Project

ISSUE DATE: February 12, 2025

Respondents are hereby notified that the Proposal and Contract Documents for the above project, for which Proposals are to be received on **February 18, 2025**, are amended as follows:

RFP Package

1. Modify Proposal Submission: February 13, 2025, with **Proposal Submission: February 18, 2025**
2. Modify Proposal by removing all instances of Site #616 (Westside Effluent Pumping Station).

NOTE: Bidders must acknowledge receipt of this Addendum by listing the number and date, where provided, on the Bid Form - Document 00410.