

PROJECT MANUAL

FOR

SW HUNTOON STREET BEFORE PROJECT SANITARY IMPROVEMENTS

**CITY PROJECT NO.
291130.02**

CITY OF TOPEKA, KANSAS

**BARTLETT & WEST
1200 SW EXECUTIVE DR
TOPEKA, KS 66615
(785)-272-2252**

**ENGINEER PROJECT NO. 21157.006
JANUARY 2026**

BID SET

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PROJECT MANUAL FOR:

SW HUNTOON SANITARY BEFORE PROJECT SANITARY IMPROVEMENTS
CITY OF TOPEKA, KANSAS

CITY PROJECT NO. 291130.02

ENGINEER'S PROJECT NO. 21157.006

BID SET

	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Kansas.</p> <p>Ethan P. Meyer, P.E.</p> <p>License No. PE29115</p> <p>My renewal date is 04/30/2027</p> <p>Pages or sheets covered by this seal:</p> <p>Division 01, 02, 31, 33</p>
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BARTLETT & WEST
1200 SW EXECUTIVE DR
TOPEKA, KS 66615

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PROJECT MANUAL

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INVITATION TO BID

1. **CITY OF TOPEKA PROJECT:** SW Huntoon Street Project Sanitary Improvements 291130.02
2. **BIDS RECEIVED UNTIL:** 2:00 P.M., Local Time, 4/9/2026,
electronically using the Topeka Vendor Access website:
<https://cityoftopakaks.tylerportico.com/va/vendor-access/bids> or by delivering physical hard copies
prior to Closing at the office of the Contracts & Procurement Division, City Hall, 215 SE 7th Street,
Room B60, Topeka, Kansas 66603.
3. **BID CLOSING:** Will be public following the receipt of bids at the office of the Contracts &
Procurement Division, City Hall, 215 SE 7th Street, Room B60, Topeka, Kansas 66603.
4. **DESCRIPTION OF MAJOR UNITS OF WORK:**
Project consists of CIPP rehabilitation of 6528 linear feet of gravity sewer, one point of gravity
sewer, abandonment of 6 sanitary sewer manholes, installation of 6 sanitary manholes, and
rehabilitation of 24 sanitary sewer manholes.
5. **DESIGN ENGINEER:** Bartlett & West Inc, 1200 Southwest Executive Dr Topeka KS 66615
(name and address)
6. **BID DOCUMENTS:** Electronic copies (PDF's) of the bid documents (plans and specifications) and
any addenda are available using the Topeka Vendor Access website. Register online at
<https://cityoftopakaks.tylerportico.com/va/vendor-access/registration> .
7. **BID SECURITY REQUIREMENTS:** All bids must be accompanied by a cashier's check or a bid
bond for not less than five percent (5%) of the amount bid (including alternates), made payable to the
City of Topeka, Kansas. The original bid security shall be provided to the office of Contracts and
Procurement before the 2:00 closing date.
8. **PRE-BID CONFERENCE:** A pre-bid conference will be held at N/A.
Representatives of the Design Engineer and Owner will be present to answer questions.
Attendance is N/A (mandatory or optional). If indicated as optional, attendance
is highly encouraged for bidders to attend in order to understand the expectations and details
involved in the project and contract.
9. **SUBMITTALS:** Bid submittal requirements are explained in Document 100: Instructions to
Bidders.
10. **BID QUESTIONS:** All questions **must** be submitted using the **Bid Question Submittal Form**
(Excel) included in the Bid Attachments. Bidders shall **download the form**, enter their questions
directly into the **Q# fields** (handwritten submissions will not be accepted), and **email the completed**
Excel file to procurement@topeka.org no later than **ten (10) days prior** to the bid closing date and
time, unless otherwise stated in the bid documents.

The email subject line shall read: **Bid Number ##### – Questions.**

If more than forty (40) questions are required, bidders may insert additional rows as needed. The
form must be submitted as an **MS Excel (.xls or .xlsx)** file.

Responses to questions will be issued by addendum and posted in the Bid Attachments as a **PDF** titled:

Bid Number ##### – Answers to Bid Question Submittal Form.

11. **Plan Holder List:** Contractors seeking to be included on the Plan Holders List **must** complete the **Plan Holders Information Form (Excel Worksheet)** included in the Bid Attachments. Contractors **shall download the form**, enter their **business name, contact name, phone number, and email address**, and **email the completed Excel file** to procurement@topeka.org no later than **ten (10) days** prior to the bid closing date, unless otherwise stated in the bid documents.

The email subject line shall read: **Bid Number ##### – Plan Holders Request.**

A **complete Plan Holders List** will be published in the Bid Attachments as a PDF titled:

Bid Number ##### – Plan Holders List.

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DOCUMENT 100 INSTRUCTIONS TO BIDDERS

1. Defined Terms.

Terms used in these Instructions to Bidders shall have the meanings assigned to them in the General Conditions. The term "Successful Bidder" means the lowest, qualified, responsible Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

2. Copies of Bidding Documents.

- 2.1. Complete sets of the Bidding Documents in the number and for the purchase sum, if any, stated in the Invitation may be obtained from the office designated in the Invitation to Bid.
- 2.2. Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Design Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.3. Owner and Design Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

3. Qualifications of Bidders.

To demonstrate qualifications to perform the Work, the apparent low Bidder must be prepared to submit within five days of Owner's request written evidence of the types set forth in the General or Supplementary Conditions, such as financial data, previous experience and evidence of authority to conduct business in the jurisdiction where the Project is located. Any information furnished pursuant to this section shall be deemed confidential and will not be disclosed by the Owner. Each Bid must contain evidence of Bidder's qualification to do business in the State of Kansas or covenant to obtain such qualification prior to award of the contract.

4. Examination of Contract Documents and Site.

- 4.1. Before submitting a Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the Work, (c) familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; and (d) study and carefully correlate Bidder's observations with the Contract Documents.
- 4.2. Reference is made to the Supplementary Conditions for the identification of those reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which have been relied upon by Engineer in preparing the Drawings and Specifications. Owner will make copies of such reports available to any Bidder requesting them. These reports are not guaranteed as to accuracy or completeness, nor are they part of the Contract Documents. Before submitting his Bid each Bidder will, at his own expense, make such additional investigations and tests as the Bidder may deem necessary to determine his Bid for performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

43. On request Owner will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of his Bid.

44. The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Supplementary Conditions, Specifications or Drawings.

45. The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this Article 4 and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms, and conditions for performance of the Work.

5. Interpretations.

All questions about the meaning or intent of the Contract Documents shall be submitted only through the City of Topeka's e-Procurement System at least 10 calendar days prior to the opening of Bids. All questions and answers will be posted to the Bid Event. Questions and answers that result in a material change to the scope of work or quantities will require issuance of an addendum. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

6. Bid Security.

61. Bid Security shall be made payable to Owner, in an amount of five percent of the Bidder's maximum Bid price (including alternates) and in the form of a certified or cashier's check or a Bid Bond issued by a Surety meeting the requirement of paragraph 5.1 of the General Conditions. All forms of Bid Security must be delivered in original form. Facsimile transmission of Bid Security documents will not be accepted.

62. The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required Contract Security, whereupon it will be returned; if the successful Bidder fails to execute and deliver the Agreement and furnish the required Contract Security within 10 days of the award of contract, Owner may annul the award and the Bid Security of that bidder will be forfeited to the Owner.

The Bid Security of any Bidder whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the seventh day after the "Effective date of the Agreement" (which term is defined in the General Conditions) or the forty-sixth day after the Bid opening, whichever is earliest. Bid Security of other Bidders will be returned within seven days of the Bid opening.

7. Contract Time.

The number of days within which or the date by which the Work is to be completed (the Contract Time) is set forth in the Agreement.

8. Liquidated Damages.

Provisions for liquidated damages are set forth in the Agreement.

9. Substitute Material and Equipment.

The Contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items.

Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the "Effective date of the Agreement". The procedure for submittal of any such application by Contractor and consideration by Engineer is set forth in paragraphs 6.7.1, 6.7.2 and 6.7.3 of the General Conditions which may be supplemented in the Specifications.

10. Subcontractors, etc.

10.1. The total amount of the work performed by all Subcontractors cannot exceed seventy percent (70%) of the Total Bid as reflected in Document 330.

10.2. Bidder must submit to Owner, as part of their Bid Form, a complete list of all Subcontractors and other persons and organizations (including those who will be furnishing the principal items of material and equipment) proposed to be used by the bidder to complete this project. Failure by the Bidder to provide this list with the cost amount for each Subcontractor shall render the bid nonresponsive. If the total amount of the work performed by all Subcontractors exceeds seventy (70%) of the Total Bid, the bid will be rejected. If requested by the Owner, the Successful Bidder shall submit to the owner, in writing, an experience statement with pertinent information as to similar projects and other evidence of qualifications for each such Subcontractor, person and organization listed on the Bid Form. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, other person or organization, either Owner or Engineer may before giving the award of contract, request the apparent Successful Bidder to submit an acceptable substitute without an increase in Bid Price. If the apparent Successful Bidder declines to make any such substitution, the contract shall not be awarded to such Bidder, but his declining to make any such substitution will not constitute grounds for sacrificing his Bid Security. Any Subcontractor, other person or organization so listed and to whom Owner or Engineer does not make written objection prior to the giving the award of contract, will be deemed acceptable to Owner and Engineer. Substitutions to this list of acceptable Subcontractors and other persons and organizations after the apparent Successful Bidder has been awarded a contract by the Owner will not be allowed without the written approval of the Owner or Engineer.

10.3. No Contractor shall be required to employ any Subcontractor, other person or organization against whom he has reasonable objection.

10.4. No Subcontractor who is on the Owner's "List of Suspended Contractors" as of the date of the opening of Bids may be employed by the Contractor on the project. A current list of suspended contractors may be obtained from the Contracts and Procurement Division.

11. Bid Form.

11.1. The Bid Form is included in this Project Manual. The Project Manual will be posted to the electronic Bid Event.

11.2. Bid Forms must be completed in the electronic Bid Event.

11.3. Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address shall be shown below the signature. Signature pages shall be submitted electronically as instructed in the Bid Event.

11.4. Bids by partnerships must be executed in the partnership name and signed by a partner whose title must appear under the signature and the official address of the partnership must be shown below the signature. Signature pages shall be submitted electronically as instructed in the Bid Event.

11.5. All names must be typed or printed below the signature, unless instructed in the electronic Bid Event.

11.6. The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form). Signed Addenda forms shall be uploaded to the Bid Event by the bidder.

11.7. The address to which communications regarding the Bid are to be directed must be shown, if different than that required above.

12. Submission of Bids.

12.1. Bids shall be submitted only through the City of Topeka's e-Procurement System.

12.2. Bids shall be submitted at or before the stated time of closing. Bids received after the closing time indicated in the Invitation to Bid will be rejected.

The City attempts to maintain continuous access to the supplier portal. However, from time to time, Bidder understands that access may be interrupted or prevented due to maintenance, site problems, Internet problems, or problems experienced by the user due to Bidder's computer system. Bidder acknowledges that City makes no warranties that the supplier portal will be uninterrupted or error-free. Regardless of the source of any problem, Bidder acknowledges that it is Bidder's sole responsibility to ensure that its bid is timely received. Because of the discrepancies inherent in timing mechanisms (e.g. cell phone, computers, mobile devices), Bidder acknowledges that the bid time will be determined based upon the time indicated on the City server for the Strategic Sourcing application. If Bidder does not submit its bid at or before the time indicated on the City server for the strategic source application, the bid will be electronically rejected by the Strategic Sourcing application as untimely.

Bidder acknowledges that the City shall not be liable for any direct, indirect, incidental, special, consequential or exemplary damages, including but not limited to, damages for loss of profits, goodwill, use, data or other intangible losses resulting from: (i) the use or the inability to use the supplier portal; (ii) unauthorized access to or alteration of the user's transmissions or data; or (iii) any other matter relating to the supplier portal.

12.3. Bids will not be accepted from any Contractor who is on the Owner's "List of Suspended Contractors" as of the date of the Opening of Bids. Bids received from suspended Contractors will automatically be rejected and returned unopened.

12.4. Bids that do not conform to the Affirmative Action and Notification of MBE and WBE requirements shall be deemed non-responsive and will not be accepted in accordance with paragraphs 23 and 24 of this Instructions To Bidders.

13. Modification and Withdrawal of Bids.

13.1. Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

13.2. If, within twenty-four hours after Bids are opened, any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of his Bid, Owner may, at its sole discretion, allow that bidder to withdraw his Bid and the Bid Security will be returned.

14. Opening of Bids.

Bids will be opened publicly and read aloud.

15. Bids to Remain Open.

All Bids shall remain open for sixty (60) days after the day of the bid opening, but Owner may, in his sole discretion, release any Bid and return the Bid Security prior to that date.

16. Award of Contract.

16.1. Owner reserves the right to reject any and all Bids, to waive any and all informalities and to negotiate contract terms with the Successful Bidder within the limitations of the Code of the City of Topeka. Owner reserves the right to reject all nonconforming, nonresponsive or conditional Bids. Discrepancies in the indicated multiplication of unit prices and quantities shall be resolved in favor of the correct multiplication based on the unit prices indicated. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

16.2. In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements and alternates and unit prices if requested in the Bid forms. It is Owner's intent to accept alternates (if any are accepted) in the order in which they are listed in the Bid form but Owner may accept them in any order or combination.

16.3. Owner may consider the qualifications, experience and financial ability of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work as to which the identity of Subcontractors and other persons and organizations must be submitted as provided in the General Conditions. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by Owner.

16.4. Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

16.5. If the contract is to be awarded it will be awarded to the lowest Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Owner.

16.6. If the contract is to be awarded, Owner will notify the Successful Bidder within thirty days after the day of the Bid opening.

17. Performance and Other Bonds.

Paragraph 5.1 of the General Conditions sets forth Owner's requirements as to performance and other Bonds. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by the required Contract Security.

18. Signing of Agreement.

When Owner notifies the Successful Bidder of the award of contract, it will be accompanied by at least three unsigned counterparts of the Agreement and all other Contract Documents. Within ten days thereafter Contractor shall sign and deliver all counterparts of the Agreement to Owner with all other Contract Documents attached. The Contractor shall also submit certificates of insurance in accordance with paragraph 2.1 of the General Conditions and an estimated construction schedule in accordance with paragraph 2.6 of the General Conditions with the executed Agreement. Within ten days thereafter Owner will deliver all fully signed counterparts to Contractor.

19. Sales Taxes.

19.1. For all projects, payment of Kansas State Sales Tax or Compensating (Use) tax is not necessary and should not be included in unit prices bid for materials to be incorporated in the work. The City of Topeka will furnish an exemption certificate (including exemption certificate number) obtained from the Sales and Compensating Tax Division of the Department of Revenue of the State of Kansas to the Contractor, Subcontractor or repairmen making purchases of any tangible personal property to be incorporated in this project. The Contractor, Subcontractor or repairmen must furnish all suppliers with a copy of the properly executed exemption certificate secured for this project. He may reproduce as many copies of the certificate as he may need.

20. State Registration of Out-of-State Contractors.

Bidders are advised that K.S.A. 79-1008, 79-1009 requires the registration of out-of-state contractors with the Director of Revenue for collection of tax.

21. Non-Resident Bidders.

Attention is directed to Section 16-113 and 16-114 of the Kansas Statutes Annotated which requires that any Non-Resident Contractor who undertakes the construction of any public improvement to be paid for out of public funds, must appoint in writing and file with the Kansas Secretary of State, some person (resident in Shawnee County, Kansas) on whom service may be had in any civil action which may arise out of such contractual relation.

22. Equal Employment Opportunity.

It is the policy of the City of Topeka, Kansas to require that all contracts of the City and its agencies include specific provisions to ensure equal employment opportunity ~~and that all Contractors provide evidence of the adoption of an affirmative action program.~~ To comply with these requirements, all persons wishing to enter into a contract with the City shall abide by the following conditions:

22.1. Comply with K.S. A. 44-1030 requiring that:

- a. The Contractor shall observe the provisions of the Kansas act against discrimination and shall not discriminate against any person in the performance of work under the present contract because of race, religion, color, sex, physical handicap unrelated to such person's ability to engage in the particular work, national origin or ancestry;
- b. In all solicitations or advertisements for employees, the Contractor shall include the phrase, "equal opportunity employer," or a similar phrase to be approved by the commission;

- c. If the Contractor fails to comply with the manner in which the Contractor reports to the commission in accordance with the provisions of K.S.A. 44-1031, the Contractor shall be deemed to have breached the present contract and it may be cancelled, terminated or suspended, in whole or in part, by the Owner;
- d. If the Contractor is found guilty of a violation of the Kansas act against discrimination under a decision or order of the commission which has become final, the Contractor shall be deemed to have breached the present contract and it may be cancelled, terminated or suspended, in whole or in part, by the Owner; and
- e. The Contractor shall include the provisions of paragraphs (a) through (d) inclusively of this subsection 22.1. in every sub-contract or purchase order so that such provisions will be binding upon such Subcontractor or vendor.

22.2. Guarantee that during the performance of any City contract or agreement the Contractor, Subcontractor, vendor, or supplier of the City shall comply with all provisions of the Civil Rights Act of 1964, The Equal Employment Opportunity Act of 1972, ~~Executive Order 11246~~, Age Discrimination in Employment Act of 1967, ~~Part 20 Title 41 of the Code of Federal Regulations~~, Rehabilitation Act of 1973, ~~City Ordinance No. 14218~~ and/or any laws, regulations or amendments as may be promulgated thereunder.

23. Affirmative Action Program.

All persons seeking to enter into a contract with the City of Topeka shall submit in writing to the Contracts and Procurement Division-Contract Compliance an affirmative action program. Such program shall be approved and on file with the Contracts and Procurement Division-Contract Compliance prior to the bid opening. Failure to maintain an approved affirmative action program on file prior to the bid opening shall deem the bid non-responsive and it will not be accepted.

An Affirmative Action program means a positive program designed to ensure that a good faith effort will be made to employ applicants and to treat employees equally without regard to their race, sex, religion, color, national origin, age, ancestry or handicap. An affirmative action program shall include, where applicable, but not be limited to, the following: recruitment, recruitment advertising, employment, upgrading, promotion, demotion, transfer, lay-off, termination, rates of pay, other terms or conditions of employment, selection for training, and apprenticeship. It shall include goals, methodology and a timetable for implementation of the program, when appropriate. Goals for participation on City projects shall be 9% minority and 6.9% female. All Subcontractors performing work to fulfill all or any part of a General Contractor's obligation are subject to these affirmative action provisions. General Contractors shall be responsible for ensuring compliance by their Subcontractors.

Any person who so desires may file an affirmative action program annually which shall apply to all bids which such person shall make during the calendar year next succeeding the date of such filing. However, annual submission of the affirmative action program shall not excuse any person from submission of a work force analysis or other requirements for utilization of minority and/or female employees in a work force either concurrently with or prior to any contract bid or proposal. Any annual submission shall be subject to review by the Contracts and Procurement Division-Contract Compliance and shall be amended at such time and in such manner as the Contracts and Procurement Division-Contract Compliance may require.

24. Notification of Minority Business Enterprises (MBE) and Women Business Enterprises (WBE). It is the policy of the City of Topeka that minority and women business enterprises shall have the opportunity to participate in the performance of contracts and subcontracts. The Contractor shall take the necessary steps, as herein established, to ensure that MBE's and WBE's have the opportunity to compete for and perform subcontract work. In this regard, the Contractor shall demonstrate a good faith effort by any one of the following methods:

- a. Complete and submit the Notification of Available Subcontract Work form, Document No. 840, ten (10) days prior to the bid opening.

If a portion of the work on this project is to be subcontracted, the bidder shall submit the Notification of Available Subcontract Work form so as to be received by the Contracts and Procurement Division-Contract Compliance, City Hall, 215 E. 7th Street, Topeka, Kansas 66603, ten (10) days prior to the bid opening date. A bidder shall certify the timely delivery of the form either by hand delivery or by fax signed by an authorized employee of the Contracts and Procurement Division-Contract Compliance. Once the Notification of Available Subcontract Work forms are received by the Contracts and Procurement Division-Contract Compliance, they will be mailed to interested minority and women owned businesses as notification of subcontracting opportunities.

- b. Demonstrate a good faith effort to offer minority and women business enterprises an opportunity to compete for subcontracts.

A bidder may satisfy the requirements of this section by presenting documentation that demonstrates good faith efforts to notify MBE's and WBE's of available subcontracting opportunities on the project being bid. Such documentation may include, but not be limited to the following: advertisement in general circulation, trade associations, or minority focus media of subcontracting opportunities, written notices to MBE's and WBE's soliciting their participation in the contract, and evidence of efforts to negotiate with MBE's or WBE's to perform work under this contract.

- c. Demonstrate participation by minority and/or women business enterprises as subcontractors on the project.

A bidder may satisfy the requirements of this section by submitting documentation of MBE and/or WBE participation as subcontractors on the project comparable to the known availability of qualified MBE's and WBE's.

For purposes of assessing this section, the successful contractor shall be required, upon request, to submit names and addresses of minority owned and women owned businesses that are subcontractors, a description of the work to be performed, and an aggregate dollar amount of participation by each named MBE and WBE subcontractor.

25. Wage Rates.

The Wage Rate Determination included in this Project Manual, Document No. 850, will be applicable to the project *only if state or federal law requires payment of wages higher than the minimum wage. If Document No. 850 Wage Rate Determination is not included in the Project Manual, then Davis Bacon wages shall not be required for the project.* These wages must be paid unconditionally to each class of worker for the duration of the project, unless they are changed by Addendum. The Wage Rate Determination shall be accounted for when preparing the bid. If your company pays fringe benefits to approved plans, funds or programs, it is necessary that verification of payment of these benefits be made to the Contracts and Procurement Division-Contract Compliance with the first payroll. Any

company not affiliated with an approved plan, fund or program must pay both the base pay and all fringe benefits to each employee in cash. Any worker who works more than 40 hours a week must be paid 1 ½ times the base pay plus all fringe benefits.

Certified payrolls must be submitted on a weekly basis by the prime contractor and all his subcontractors to the Contracts and Procurement Division-Contract Compliance. Failure to do so will result in any payment being withheld until the prime contractor and all his subcontractors are in compliance with this section. A report must be submitted for every week until the job is complete even if no work is performed, fill out a payroll report, sign it and write across it "No Work Performed This Week".

Final payment on this project will not be released until all information has been correctly submitted to the Contracts and Procurement Division-Contract Compliance. The Contractor shall be responsible for the submittal of all Subcontractors' wage determination information.

26. Standard Technical Specifications.

This project shall be subject to the applicable sections of the "Standard Technical Specifications" of the City of Topeka, Kansas, latest edition with any addenda thereto, except as modified or supplemented by specifications contained in this Project Manual.

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**DOCUMENT 101
MODIFICATIONS TO INSTRUCTIONS TO BIDDERS**

These modifications to the Instruction to Bidders amend or supplement the Instruction to Bidders, Document 100, of this Project Manual, as listed below. All provisions which are not so amended or supplemented shall remain in full force and effect.

SECTION 1 – DEFINED TERMS.

1. Add the following two sentences:

The term "Bidding Documents" includes Documents 020, 100, 101, 330, 840 and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

The term "Bidder" shall be interpreted to mean one who submits a Bid directly to the Owner, as distinct from a sub-bidder who submits a Bid to the Bidder.

SECTION 3 - QUALIFICATIONS OF BIDDERS.

1. Add the following sentence to the end of paragraph 3.0.

Owner may request that the apparent low Bidder to furnish the following information as written evidence of Bidder's qualifications to perform the Work.

2. Add the following new paragraphs after paragraph 3.0.

3.1 Bank references.

3.2 Name of Bonding Company and name and address of agent.

3.3 Statement of Financial Condition, including Contractor's latest regular dated financial statement or balance sheet which must contain the following items:

Current Assets: (Cash, joint venture accounts, accounts receivable, notes receivable, accrued interest on notes, deposits and materials and prepaid expenses), net fixed assets and other assets.

Current Liabilities: (Accounts payable, notes payable, accrued interest on notes, provisions for income taxes, advances received from owners, accrued salaries, accrued payroll taxes), other liabilities and capital (capital stock, authorized and outstanding shares par values, earned surplus).

Date of statement or balance sheet.

Name of firm preparing statement.

- 3.4 List of Similar Projects: Owner's name, address and phone number; date of completion; and contract amounts that have been completed by Contractor's organization in the past five years.

SECTION 4 - EXAMINATION OF CONTRACT DOCUMENTS AND SITE.

1. Replace Paragraph 4.1 in its entirety with the following:
 - 4.1. Before submitting a Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the Work, (c) familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify Engineer of all conflicts, errors, or discrepancies in the Contract Documents.

SECTION 11 – BID FORM.

1. Add the following Paragraph 11.8 after Paragraph 11.7:
 - 11.8. Bid Pricing. The Total Bid Price (sum of all payment items) shall be based on the Work as indicated on the Drawings and as specified herein. The Standard General Conditions, Supplementary Conditions and items in the general requirements of the Drawings and Specifications which are not listed as bid items in Article 4 of the Bid Form, are, in general, applicable to more than one listed work item, and no separate work item is provided. Include the cost of work not listed but necessary to complete the project designated in the contract documents in its entirety in the various listed work items of the Bid Form.

SECTION 12 – SUBMISSION OF BIDS.

1. Add the following Paragraph 12.a before Paragraph 12.1:
 - 12.a. Document 840 – Notification of Available Subcontract Work, shall be submitted to Contracts and Procurement Division – Contract Compliance ten (10) days prior to the bid opening as specified in paragraph 24.a of the Instructions to Bidders.

2. Add the following Paragraph 12.5 after Paragraph 12.4:

12.5 The following completed documents shall be submitted with the Bid. Any Bids received from Bidders that do not contain all documents shall be deemed nonresponsive and will not be accepted.

- a. Bid Form (Document 330)
- b. Bid Security

SECTION 16 - AWARD OF CONTRACT.

1. Modify Paragraph 16.6 as follows: Delete "thirty" and replace it with "sixty".

SECTION 18 – SIGNING OF AGREEMENT.

1. Add the following to the end of the third sentence: "and as supplemented or modified by the conditions or specifications of the Contract Documents."

SECTION 26 – STANDARD TECHNICAL SPECIFICATIONS.

1. Add the following sentence:

In the event of any conflict between the terms, provisions, or requirements set forth in the Technical Specifications contained herein and the "Standard Technical Specifications" of the City of Topeka, Kansas, latest edition, the terms, provisions, or requirements of the "Standard Technical Specifications" of the City of Topeka, Kansas, latest edition shall govern to the extent of the conflict.

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Bartlett & West

**DOCUMENT 530A
DAYS CERTAIN
AGREEMENT**

THIS AGREEMENT is dated as of _____, by and between the City of Topeka (hereinafter called Owner) and _____ (hereinafter called Contractor).

Owner and Contractor in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. Work.

Contractor shall complete all Work as specified or indicated in the Contract Documents. The Project for which the Work under the Contract Documents is to be performed is: _____
291130.02_SW Huntoon Street Before Project Sanitary Improvements

Article 2. Engineer.

The project has been designed by Bartlett & West, Inc.
The Design Engineer is hereinafter designated as the Engineer and is to act as Owner's representative, assume all duties and responsibilities and have the rights and authority assigned to Engineer in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. Contract Time.

3.1. The actual Contract Time will commence on and be completed by the dates set forth on the Start Work Order, signed by Contractor and City of Topeka Project Manager. Any issuance by Owner of Stop Work Order, or Resume Work Order, or Revised Start Work Order will control Contract Time as defined herein.

3.2 The Contract Time is estimated to commence with an issuance of a Work Order by the Owner on or about June 1st, 2026, provided the Contractor complies with the required submittal times for the executed Agreement and its counterparts, and be substantially completed on or before November 15th, 2026, and completed and ready for final completion and payment in accordance with paragraph 14.13 of the General Conditions on or before December 10th, 2026. Said dates are subject to revision and will be controlled by the issuance by Owner of Stop Work Order, or Resume Work Order, or Revised Start Work Order.

3.3. Incentive-Disincentive Provision. The project will result in significant adverse impact to the traveling public in the form of increased time and cost to negotiate detours around the project location. Therefore, an incentive-disincentive provision shall be applicable to the Contract Time stipulated for substantial completion in paragraph 3.1. Substantial Completion, for the purposes of this incentive-disincentive provision is specifically defined in the Supplementary Conditions.

3.3.1. The Contractor will receive an incentive payment of \$0 per day for each day or part thereof that the project is substantially complete prior to 12:00 mid-night on the date stipulated for substantial completion in paragraph 3.1. The incentive payments will be made up to a maximum limit of \$0 for a maximum of 0 days prior to the date of substantial completion.

3.3.2. The Contractor will be assessed as a disincentive the per day amount stipulated in paragraph 3.3.1 above for each day or part thereof that the project is not substantially complete by 12:00 mid-night on the date stipulated for substantial completion in paragraph 3.2. The disincentive assessment will continue until the Engineer notifies the Owner of substantial completion in accordance with the provisions of paragraph 14.8 of the General Conditions. The Owner may deduct the total accrued disincentive assessment from the final payment due to the Contractor if sufficient monies are available. Otherwise, the Contractor shall pay to the Owner the total accrued disincentive assessment.

3.4. Extensions of Time. This paragraph replaces paragraph 12.2 of the General Conditions.

3.4.1. No extension of Contract Time beyond the date stipulated for substantial completion in paragraph 3.1 shall be considered for reasons including, but not limited to, variations between actual and bid quantities, availability of materials and equipment, abnormal weather conditions, addition of extra work contiguous with the project and normal coordination with the work of others.

3.4.2. If the Contractor believes that any item of Work or event has unreasonably delayed or prevented Contractor's progress and ability to substantially complete the Work within the stipulated time, Contractor may make a claim therefor in accordance with paragraph 12.1 of the General Conditions.

3.5. Liquidated Damages. Owner and Contractor recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not complete and ready for final payment by the date specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner according to the following schedule:

Contract Amount	Substantial Completion Liquidated Damages	Final Completion Liquidated Damages
\$0 to \$25,000	\$150	\$150
\$25,001 to \$50,000	\$250	\$250
\$50,001 to \$100,000	\$400	\$400
\$100,001 to \$500,000	\$750	\$750
\$500,001 to \$1,000,000	\$1,250	\$750
\$1,000,001 to \$1,500,000	\$2,000	\$1,250
\$1,500,001 to \$2,000,000	\$2,500	\$1,500
\$2,000,001 to \$5,000,000	\$3,000	\$2,000
\$5,000,001 to \$10,000,000	\$5,000	\$3,000
\$10,000,001 and up	\$7,000	\$4,000

For each day that expires after the time specified in paragraph 3.2 for Substantial and Final Completion. The Owner may deduct the total accrued liquidated damages from the final payment due to the Contractor.

Article 4. Contract Price.

Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents in current funds as per the Contractor's Bid, which is attached as an exhibit to this Agreement.

Article 5. Payment Procedures.

Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

5.1. Progress Payments. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment as recommended by Engineer within thirty-five (35) days following the end of the period for which payment is being requested, provided the application for payment is submitted within seven (7) days following the end of the period. Periods shall end the 15th of each month. All progress payments will be based on the number of units or estimated percentage of the Work completed in accordance with paragraph 14.1 of the General Conditions.

5.1.1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as Engineer shall determine, or Owner may withhold, in accordance with paragraph 14.7 of the General Conditions.

(1) 90% of Work completed. If the project has been 50% completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer upon written request by the Contractor, Owner, may determine that as long as the character and progress of the Work remain satisfactory to them, that the retainage on account of Work completed be reduced

or eliminated. Reduction or elimination of the retainage will be at the sole discretion of the Owner.

- (2) 50% of materials and equipment not incorporated in the Work (but delivered, suitably stored and accompanied by documentation satisfactory to Owner as provided in paragraph 14.2 of the General Conditions).

5.1.2. Upon Substantial Completion, in an amount sufficient to increase total payments to Contractor to 95% of the Contract Price, less such amounts as Engineer shall determine, or Owner may withhold, in accordance with paragraph 14.7 of the General Conditions.

5.2. Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, including timely submission of an Application for Final Payment, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said paragraph 14.13. Contractor agrees that failure to timely submit a Final Application for Payment pursuant to paragraph 14.13(a) will result in forfeiture of any remaining amounts due.

5.3. Interest. All monies not paid when due hereunder shall not bear interest.

Article 6. Contractor's Representations.

In order to induce Owner to enter into this Agreement, Contractor represents that he fully complies with the requirements stated in paragraphs 3b. through 3g. of the Bid Form, which is attached as an exhibit to this Agreement.

Article 7. Contract Documents.

The Contract Documents which comprise the entire agreement between Owner and Contractor concerning the Work consist of the following:

- 7.1. This Agreement.
- 7.2. Performance and other Bonds contained in this Project Manual.
- 7.3. Work Order.
- 7.4. General Conditions contained in this Project Manual.
- 7.5. Supplementary Conditions contained in this Project Manual, if any.
- 7.6. The City of Topeka Standard Technical Specifications for Sewers, Streets, Sidewalks and Miscellaneous Construction of the City of Topeka, Kansas, current edition, with any addenda thereto.
- 7.7. Specifications contained in this Project Manual, if any.
- 7.8. Project Drawings, bearing the following title: SW Huntoon Street Before Project Sanitary Improvements
- 7.9. Addenda _____ to _____, inclusive.

7.10. Contractor's Bid, including all attachments to Bid, which is attached as an exhibit to this Agreement.

7.11. Equal Employment Opportunity and Affirmative Action Program requirements stated in the Instructions to Bidders.

7.12. Notification of Minority and Women Business Enterprises requirements stated in the Instructions to Bidders.

7.13. Wage Rate Determination will only be inserted if wage rates are required by state or federal law (where the state or federal funding source) requires the City to enforce wage rates for project.

7.14. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Change Orders and other documents amending, modifying, or supplementing the Contract Documents pursuant to paragraphs 3.4 and 3.5 of the General Conditions.

There are no Contract Documents other than those listed above in this Article 7. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.4 and 3.5 of the General Conditions.

Article 8. Suspension of Contractor.

8.1. Contractor will be placed on Owner's "List of Suspended Contractors" for a period of time from the date of written notification by Owner if Contractor fails to perform in accordance with specific provisions stated in paragraph 8.2 of this Article 8. The period of Suspension shall be established as follows:

First Suspension - 1 year

Second Suspension - 2 years

Third Suspension - Permanent

During the period of suspension, the Contractor will not be permitted to submit a bid to Owner to perform Work either directly or indirectly or as a subcontractor.

8.2. The Contractor shall be suspended upon written notification by Owner:

8.2.1. If Contractor exceeds the Contract Times for substantial completion or final payment as indicated in paragraph 3.1, plus any extensions thereof made in accordance with Article 12 of the General Conditions, by more than ten (10) days or 15%, whichever is greater, or

8.2.2. Upon occurrence of any of the events stated in paragraph 15.2 of the General Conditions.

8.2.3. If Contractor fails to complete any outstanding "One-Year Correction Period" work, as defined in paragraph 13.12 of the General Conditions, on previously completed projects within 90 calendar days of written notification by the Owner, the Contractor will be placed on Owners "List of Suspended Contractors", as defined in

paragraph 8.1, Article 8. Suspension of Contractor, and shall remain suspended until such time as the corrective work has been certified as complete in writing by the Owner.

Article 9. Miscellaneous.

9.1. Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

9.2. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3. Owner and Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement in triplicate. One counterpart each has been delivered to Owner, Contractor and Design Engineer. All portions of the Contract Documents have been signed or identified by Owner and Contractor or by Design Engineer on their behalf.

CITY OF TOPEKA, KANSAS

CONTRACTOR LEGAL NAME

Robert M. Perez, Ph.D., City Manager

Authorized Signer

ATTEST:

Brenda Younger, City Clerk

APPROVED AS TO FORM AND LEGALITY	
DATE _____	BY _____

C&P DIRECTOR _____

DOCUMENT 700

GENERAL CONDITIONS

FOR

CITY OF TOPEKA

DEPARTMENT OF PUBLIC WORKS

CONSTRUCTION PROJECTS

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS

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:

Addenda - Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the bidding documents or the Contract Documents.

Agreement - The written agreement between Owner and Contractor covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment - A form acceptable to the Engineer which is to be used by Contractor in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Bid - The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bonds - Bid, performance and payment bonds and other instruments of security.

Change Order - A document recommended by Engineer, which is signed by Contractor and Owner and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

City Engineer - The City Engineer of the City of Topeka or authorized representatives of the Engineering Division or the Utilities Department of the City of Topeka.

Contract Documents - The Agreement, Addenda (which pertain to the Contract Documents), Contractor's Bid (including documentation accompanying the bid and any post-Bid documentation submitted prior to the Award of contract) the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all amendments, modifications and supplements issued pursuant to paragraphs 3.4 and 3.5 on or after the Effective Date of the Agreement.

Contract Price - The moneys payable by Owner to Contractor under the Contract Documents as stated in the Agreement.

Contract Time - The number of days or the date stated in the Agreement for the completion of the Work.

Contractor - The person, firm or corporation with whom Owner has entered into the Agreement.

Defective - An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or 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 Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with paragraph 14.8 or 14.10).

Design Engineer - The person, firm or corporation responsible for the design of the project and named as such in the Agreement.

Drawings - The drawings which show the character and scope of the work to be performed and which have been prepared or approved by Engineer and are referred to in the Contract Documents.

Effective Date of the Agreement - The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

Engineer - The Engineer shall be either the Design Engineer or the City Engineer as designated in the Agreement.

Field Order - A written order issued by Engineer which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Time unless subsequently agreed to by Change Order.

Final Acceptance - The date when the Owner accepts in writing that the construction of the project is complete in accordance with the Contract Documents such that the entire project can be utilized for the purposes for which it is intended and Contractor is entitled to final payment.

Final Completion - The date when the construction of the project is complete and all identified incomplete or defective items of work have been corrected to the satisfaction of the Engineer.

Force Account Work - Work authorized and approved by the Owner to be paid on the basis of actual cost in accordance with paragraphs 11.4 through 11.7.

Contracts and Procurement Division-Contract Compliance - The Contracts and Procurement Division-Contract Compliance, and their authorized representatives, acting within the authority delegated to them.

Laws and Regulations; Laws or Regulations - Laws, rules, regulations, ordinances, codes and/or orders.

Owner - The City of Topeka, Kansas with whom Contractor has entered into the Agreement and for whom the Work is to be provided.

Partial Utilization - Placing a portion of the Work in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion for all the Work.

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.

Project Representative - The authorized representative of Engineer who is assigned to the site or any part thereof.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for Contractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by Contractor to illustrate material or equipment for some portion of the Work.

Specifications - The City of Topeka Standard Technical specifications or the portion 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.

Subcontractor - An individual, firm or corporation having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion - The Work (or a specified part thereof) has progressed to the point where, in

the opinion of Engineer as evidenced by Engineer's notice 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; or if there be no such certificate issued, when final payment is due in accordance with paragraph 14.13. The terms "Substantially Complete" and "Substantially Completed" as applied to any Work refer to Substantial Completion thereof.

Supplementary Conditions - The part of the Contract Documents which amends, modifies or supplements these General Conditions, other provisions of the Contract Documents, the Standard Technical Specifications or the Drawings.

Supplier - A manufacturer, fabricator, supplier, distributor, materialman or vendor.

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, sewage and drainage removal, traffic or other control systems or water.

Unit Price Work - Work to be paid for on the basis of unit prices.

Work - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

Work Change Directive - A written directive to Contractor, issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.22. A Work Change Directive may not change the contract Price or the Contract time, 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 parties as to its effect, if any, on the Contract Price or Contract Time as provided in paragraph 10.2.

Work Order - A written notice given by Owner to Contractor fixing the date on which the Contract Time will commence to run and on which Contractor shall start to perform Contractor's obligations under the Contract Documents.

ARTICLE 2 - PRELIMINARY MATTERS

Delivery of Bonds, Evidence of Insurance and Licenses:

2.1. When Contractor delivers the executed Agreements to Owner, Contractor shall also deliver to Owner such Bonds as Contractor may be required to furnish in accordance with paragraph 5.1. Contractor shall also deliver with the executed Agreements certificates of insurance which Contractor is required to purchase and maintain in accordance with paragraphs 5.3 through 5.7. All Certificates of Insurance shall utilize the ACORD 25-S form, most recent revision date. Further Contractor shall deliver all Licenses required in accordance with paragraph 6.13.

Copies of Documents:

2.2. Owner shall furnish to Contractor up to eight (8) copies (unless otherwise specified in the Supplementary Conditions) of the Contract documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction. The deposit check for Plans of the successful bidder will be retained.

Commencement of Contract Time:

2.3. The Contract Time will commence to run on the day indicated on the Work Order. A Work Order may be issued at any time within thirty days after the Effective Date of the Agreement. In no event will the Contract time commence to run later than the seventy-fifth day after the day of bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

Starting the Project:

2.4. Contractor shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract time commences to run, unless otherwise authorized in writing.

Before Starting Construction:

2.5. Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby; however, Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error or discrepancy in the Contract Documents, unless Contractor had actual knowledge thereof or should reasonably have known thereof.

Schedule Requirements:

2.6.1. The Contractor shall submit, with the executed Agreement and Contract Documents, a schedule of proposed construction operations which is acceptable to the Owner for any project with a substantial completion time greater than 60 days or with a calendar date completion time as defined in paragraph 3.1 of the Agreement; however, on any project for which more than one pay estimate will be submitted, a schedule of proposed construction operations shall be submitted. The schedule shall comply with all provisions of this specification. The schedule shall be a bar graph type schedule which identifies the target starting and completion dates for each bid item of the Work. The schedule shall indicate completion of the various parts of the Work and the total project within the times called out in the Agreement.

The schedule will be used to monitor the performance of the Contractor and shall be monitored and updated monthly or more frequently if deemed necessary by the Engineer during the course of the project. Contractor shall submit the updated and/or revised project schedule with the monthly pay estimate in accordance with paragraph 14.2. Should the Work fall significantly (20%) behind schedule, the Contractor shall submit a revised schedule detailing corrective measures to be taken to complete the project within the time limits specified in the Agreement. Owner may require Contractor to add to his equipment or construction forces, as well as increase the working hours, if operations fall behind schedule at any time during the construction period. Owner may require Contractor to reimburse Owner for all costs, including charges of Engineer and Owner's professional consultants, caused by any increase in Contractor's allowable working hours as defined below. Owner may deduct such costs from any payment due Contractor.

The following requirements shall be taken into consideration in preparing the schedule of construction operations: No Work shall be done between the hours of 8:00 p.m. and 6:00 a.m., nor on Saturdays, Sundays, or legal holidays, without permission of Owner, except such Work as may be necessary for the proper care, maintenance, and protection of the Project, or in the case of an emergency. Such permission may be granted or denied at the complete discretion and convenience of the Owner and, if granted, may be revoked at any time if the Contractor fails to maintain adequate equipment and supervision for the proper prosecution and control of the Work and all operations performed thereunder, or if the Contractor fails to comply with any conditions of the Owner's authorization.

2.6.2. The Contractor shall submit to the Engineer, prior to the date of the Preconstruction Conference, a schedule of Shop Drawing submissions which shall include the items of materials and equipment for which shop drawings are required by the specifications. For each required shop drawing, the date shall be given for intended submission of the drawing to Engineer for review and the date required for its return to avoid delay in any activity beyond the scheduled start date. Sufficient time shall be allowed for initial review, correction and resubmission, and final review of all shop drawings. In no case will a schedule be acceptable which allows less than 15 days for each review by Engineer.

2.6.3. Before any Work at the site is started, Contractor shall deliver to Owner certificates of insurance (and other evidence of insurance requested by Owner) which Contractor is required to purchase and maintain in accordance with paragraphs 5.3 through 5.7.

Preconstruction Conference:

2.7. Within twenty days after the Effective Date of the Agreement, but before Contractor starts the Work at the site, a conference attended by Contractor, Engineer and others as appropriate will be held to discuss the schedules referred to in paragraph 2.6, to discuss procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish a working understanding among the parties as to the Work. The Contractor's representative shall be the resident superintendent or an individual fully qualified and knowledgeable of the Contractor's field operations.

Contracts and Procurement Division-Contract Compliance representatives will be present at the preconstruction conference to discuss with the Contractor duties and obligations arising from Equal Employment Opportunity, Affirmative Action, requirements of local labor utilization, payment of the current Wage Determinations, and other matters coming within the purview of the Contracts and Procurement Division-Contract Compliance.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

3.1. The Contract Documents comprise the entire agreement between Owner and Contractor concerning 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 all applicable laws and ordinances.

3.2. 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 as being required to produce the intended result will be supplied whether or not specifically called for.

3.3. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, 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 Effective Date of the Agreement if there were no Bids). However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of Owner, Contractor or Engineer, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to Engineer, or any of Engineer'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 contrary to the provisions of paragraph 9.15 or 9.16. Clarifications

and interpretations of the Contract Documents shall be issued by Engineer as provided in paragraph 9.4.

3.4. If, during the performance of the Work, Contractor finds a conflict, error or discrepancy in the Contract Documents, Contractor shall so report to Engineer in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from Engineer; however, Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof or should reasonably have known thereof.

Amending and Supplementing Contract Documents:

3.5. 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:

3.5.1. A Change Order (pursuant to paragraph 10.4),

or

3.5.2. A Work Change Directive (pursuant to paragraph 10.1).

As indicated in paragraphs 11.2 and 12.1, Contract Price and Contract Time may only be changed by a Change Order.

3.6. In addition, 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:

3.6.1. A Field Order (pursuant to paragraph 9.5),

3.6.2. Engineer's approval of a Shop Drawing or sample (pursuant to paragraphs 6.26 and 6.27), or

3.6.3. Engineer's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.7. Neither Contractor nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with Owner shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of Design Engineer; and they shall not reuse any of them on extensions of the Project or any other project without written consent of Owner and Design Engineer and specific written verification or adaptation by Design Engineer.

ARTICLE 4 - AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; CONSTRUCTION LAYOUT

Availability of Lands:

4.1. Owner shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of Contractor. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by Owner, unless otherwise provided in the Contract Documents. Temporary easements will be provided to accommodate normal construction methods and the Contractor may be required to protect designated structures or vegetation from damage. The Contractor may provide additional lands required for temporary construction facilities and storage of materials and equipment at his own expense. Evidence, in writing, of permission to occupy or use areas outside the limits of public right-of-way or easements provided by the Owner shall be supplied to the Engineer. If Contractor believes that any delay in Owner's furnishing these lands, rights-of-way or easements entitles Contractor to an extension of the Contract Time, Contractor may make a claim therefor as provided in Article 12.

Physical Conditions:

4.2.1. Explorations and Reports: Reference is made to the Supplementary Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by Design Engineer in preparation of the Contract Documents. These reports are not guaranteed as to accuracy or completeness, nor are they part of the Contract Documents. Contractor shall have full responsibility with respect to subsurface conditions at the site.

4.2.2. Existing Structures: Reference is made to the Supplementary Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3) which are at or contiguous to the site that have been utilized by the Design Engineer in preparation of the contract Documents. Contractor may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for Contractor's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, Contractor shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3. Report of Differing Conditions: If Contractor believes that:

4.2.3.1. Any technical data on which Contractor is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2. Any physical condition uncovered or revealed at the site differs materially from that indicated, reflected or referred to in the Contract Documents,

Contractor shall, promptly after becoming aware thereof and before performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.22), notify Owner and Engineer in writing about the inaccuracy or difference.

4.2.4. Engineer's Review: Engineer will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

4.2.5. Possible Document Change: If Engineer concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract documents is required, a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6. Possible Price and Time Adjustments: In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to any such inaccuracy or difference. If Owner and Contractor are unable to agree as to the amount or length thereof, a claim may be made therefor as provided in Articles 11 and 12.

Physical Conditions - Underground Facilities:

4.3.1. 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 Owner or Design Engineer by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. Owner and Design Engineer shall not be responsible for the accuracy or completeness of any such information or data; and,

4.3.1.2. Contractor shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for the safety and protection thereof as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2. Not Shown or Indicated. If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which Contractor could not reasonably have been expected to be aware of, Contractor shall promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.22), identify the Owner of such Underground Facility and give written notice thereof to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and which Contractor could not reasonably have been expected to be aware of. If the parties are unable to agree as to the

amount or length thereof, Contractor may make a claim therefor as provided in Articles 11 and 12.

Reference Points:

4.4.1 Engineer shall provide engineering surveys to establish reference points and benchmarks for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall protect and preserve the established reference points and benchmarks and shall make no changes or relocations without the prior written approval of Engineer. Contractor shall report to Engineer whenever any reference point 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 by professionally qualified personnel.

4.4.2. The Contractor shall protect from physical disturbance all monuments and benchmarks of the City, County, State or Federal Government without the prior written approval of the Owner or until they have been removed, witnessed or otherwise disposed of by the Engineer.

Construction Layout:

4.5. When there is no bid item for contractor provided staking, the City Engineer or the Design Engineer, as designated at the pre-construction conference, will provide construction layout (staking) of all improvements at no cost to the Contractor. The Contractor shall be responsible for scheduling staking and shall provide the Engineer with at least 48 hours notice prior to the time staking is required. The Contractor must satisfy himself as to the meaning of all stakes and marks prior to start of any construction activity based on those stakes. The Engineer assumes no liability for stakes that are misinterpreted by the Contractor or are damaged due to any activity. Once stakes are set and marked, it is the Contractor's responsibility to preserve them from all types of damage, and in the event of his failure to do so, he shall pay the Engineer to reset the stakes.

ARTICLE 5 - BONDS AND INSURANCE

Performance and Other Bonds:

5.1. Contractor shall furnish performance and payment Bonds, each in an amount equal to the Contract Price as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as otherwise provided by Law or Regulation or by the Contract Documents. The performance bond shall acknowledge the one year correction period in accordance with the requirements of Article 13. All Bonds shall be in the forms prescribed by Law or Regulation or by the Contract Documents and be executed by such sureties who are 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 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

5.2. If the surety on any Bond furnished by Contractor is declared a 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 requirements of paragraph 5.1, Contractor shall within five days thereafter substitute another Bond and Surety, both of which must be acceptable to Owner.

Contractor's Liability Insurance:

5.3. Contractor shall purchase and maintain such commercial general liability and other insurance as is appropriate for the Project and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance and furnishing of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed or furnished by Contractor, by any Subcontractor, 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:

5.3.1. Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts, as per state and federal statutory requirements.

5.3.2. Employers Liability Insurance covering claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees with a \$500,000.00 each person, limit.

5.3.3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

5.3.4. Claims for property damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom;

5.3.5. Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and

5.3.6. The commercial general liability insurance required under paragraphs 5.3.3 through 5.3.5 shall have the following specific coverages:

(1) General Liability:

1.	Each Occurrence	\$1,000,000
2.	Personal and Advertising Injury	\$1,000,000
3.	Products and Completed Operations Aggregate	\$1,000,000
4.	General Aggregate	\$2,000,000
5.	Rented Premises	\$ 100,000
6.	Medical Expenses	\$ 5,000

(2) Excess Liability:

Bodily Injury and Property Damage Combined:

\$1,000,000 Each Occurrence
\$1,000,000 Annual Aggregate

The commercial general liability insurance shall include completed operations insurance. Property Damage liability insurance shall be provided with coverages for explosion, collapse and underground hazards, where applicable. The Owner shall be named as an additional insured on the Contractor's general liability policy.

(3) Automobile Liability:

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. Coverages for hired car and employee non-owned auto liability shall also be provided. The coverage limits shall be:

Combined Single Limit for Each Occurrence	\$1,000,000
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(4) Contractual Liability Insurance:

5.4. The commercial general liability insurance required by paragraph 5.3 will include contractual liability insurance applicable to Contractor's obligations under the Contract Documents.

(5) Property Insurance:

5.5. Contractor shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as required by Laws and Regulations) for all projects which include construction of or modification to above ground structures. This insurance shall include the interests of Owner, Contractor and Subcontractors all of whom shall be listed as insured or additional insured parties, shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance, Contractor shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.

5.6. Contractor shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by Laws and Regulations which will include the interests of Owner, Contractor and Subcontractors all of whom shall be listed as insured or additional insured parties.

Owners Liability Insurance:

5.7. Contractor, at his sole expense, shall purchase Owner's Protective Liability Insurance and provide owner with the original policy. This insurance shall be maintained in full force and effect for the duration of the Contract by Contractor and shall name the Owner as the named Insured. This insurance shall have the following limits:

Each Occurrence	\$1,000,000
General Aggregate	\$1,000,000

This insurance shall protect Owner against any and all claims and liabilities for injury to or death of persons, or damage to property caused in whole or in part by, or alleged to have been caused in whole or in part by, the negligent acts or omissions of Contractor or Subcontractors or any agent, servant, worker or employee of Contractor or Subcontractor arising from the operations or Work for the project.

Notice of Cancellation:

5.8. All of the policies of insurance so required to be purchased and maintained (or the certificates) in accordance with paragraphs 5.3 through 5.7 shall contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty (30) days prior written notice has been given to Owner. All such insurance shall remain in effect until final payment and at all times thereafter when Contractor may be correcting, removing or replacing defective Work in accordance with paragraph 13.12. In addition, Contractor shall maintain such completed operations insurance for one year after final payment and furnish Owner with evidence of continuation of such insurance at final payment.

Receipt and Application of Proceeds:

5.9. Any insured loss under the policies of insurance required by paragraphs 5.5 and 5.6 will be adjusted with Owner and made payable to Owner as trustee for the insured, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.12, Owner shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order.

5.10. Owner as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as trustee shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If required in writing by any party in interest, Owner as trustee shall, upon the occurrence of an insured loss, give bond for the proper performance of such duties.

Acceptance of Insurance:

5.11. If Owner has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by Contractor in accordance with paragraphs 5.3 through 5.7 on the basis of its not complying with the Contract Documents, Owner shall notify Contractor in writing thereof within thirty days of the date of delivery of such certificates to Owner in accordance with paragraph 2.1. Contractor shall provide to Owner such additional information in respect of insurance provided by Contractor as Owner may reasonably request. Failure by Owner to give any such notice of objection within the time provided shall constitute acceptance of such insurance purchased by Contractor as complying with the Contract Documents.

Partial Utilization - Property Insurance:

5.12. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the 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 lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. Contractor shall supervise 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. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but Contractor shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.2. Contractor shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the site and shall have authority to act on behalf of Contractor. All communications given to the superintendent shall be as binding as if given to Contractor.

Labor, Materials and Equipment:

6.3. Contractor shall provide competent, suitably qualified personnel to perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during the allowable working hours as defined in paragraph 2.6.1. Contractor will not permit overtime work or the performance of

Work on Saturday, Sunday or any legal holiday without Engineer's prior consent.

6.4. Unless otherwise specified in the Supplementary Conditions, Contractor shall furnish and assume full responsibility for all 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.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to Engineer 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 9.15 or 9.16.

6.5.1. Salvaged Materials. All materials designated for salvage during the progress of the Work and or specified to be reused in new construction, shall remain the property of the Owner. Salvaged materials shall be delivered and neatly piled at any point within the City Limits which is designated by the Owner or Engineer. Transportation and handling shall be at the Contractor's expense. Salvaged materials will be considered to be in the custody of the Contractor, and he will be held responsible for their care and protection and must cover any losses resulting from damage, theft, or misappropriation while they remain on the job site or while en route to the place of storage.

6.5.2. Storage of Materials. All materials delivered to and stored on the project site shall be neatly placed to minimize obstruction and allow for convenient inspection. No materials or equipment shall be stored within five (5) feet of fire hydrants or trees which are to be protected. All fire hydrants shall remain readily accessible to the Fire Department throughout the project unless otherwise approved by the Owner.

Adjusting Progress Schedule:

6.6. Contractor shall submit to Engineer for acceptance as defined in paragraph 2.6.1, any adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any other provisions of the Contract Documents applicable thereto.

Substitutes of "Or-Equal" Items:

6.7.1. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by Engineer if sufficient information is submitted by Contractor to allow Engineer to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by Engineer will include the following. Requests for review of substitute items of material and equipment will not be accepted by Engineer from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall make written application to Engineer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish at Contractor's expense additional data about the proposed substitute.

6.7.2. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to Engineer, if Contractor submits sufficient information to allow Engineer to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by Engineer will be similar to that provided in paragraph 6.7.1. as applied by Engineer.

6.7.3. Engineer will be allowed a reasonable time within which to evaluate each proposed substitute. Engineer will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without Engineer's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing.

Concerning Subcontractors, Suppliers and Others:

6.8.1. Contractor shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to Owner and Engineer as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom Owner or Engineer may have reasonable objection. Contractor shall have the ability to substitute a Subcontractor which is not adequately performing Work provided the Owner and Engineer consent to the substitution. Further, Contractor shall not be entitled to an increase in Contract Time or Contract Price for substitution of a Subcontractor. Contractor shall not employ any Subcontractor who does not possess the licenses necessary to furnish the Work or who is on the Owner's "List of Suspended Contractors" at the date of the Opening of Bids. Contractor shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom Contractor has reasonable objection.

6.8.2. If the Owner requests the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to Owner in advance of the specified date prior to the Effective Date of the Agreement for acceptance by Owner and Engineer and if Contractor has submitted a list thereof in accordance with said request, Owner's or Engineer's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case Contractor shall submit an acceptable substitute. No acceptance by Owner or Engineer of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

6.8.3. The total amount of the work performed by Subcontractors shall not exceed seventy (70) percent of the total Contract Price as determined based on the units of work to be performed by Subcontractors at the actual unit prices contained in the Agreement. The determination of the amount of work to be performed by the Subcontractors shall be made at the time of bid evaluation and award. For the purposes of this paragraph 6.8.3, "work" shall include all services, labor, equipment and materials associated with each specific item of the contract. The purchase of materials by the Contractor for use by Subcontractors in completing the project shall not be credited toward the amount of work performed by the Contractor. If Engineer has reason to believe that any unit price contained in the agreement does not represent a reasonable price for the Work involved with the specific item, Contractor shall furnish full documentation of the unit price(s) determination in accordance with the provisions of paragraphs 11.4, 11.5 and 11.6. If deemed necessary by the Engineer, the unit price shall be adjusted, the purposes of determining subcontractor participation only, based on a determination of costs in accordance with paragraphs 11.4, 11.5 and 11.6. If specific units of Work involve more than one Subcontractor, Contractor shall provide documentation which enables Engineer to determine the portion of the unit price attributable to each Subcontractor. If it is determined during the course of the Work that the aggregate amount of the work being performed by subcontractors exceeds seventy (70) percent of the Contract Price, Contractor shall take appropriate actions to comply with the requirements of this paragraph 6.8.3.

6.9. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with Contractor just as contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of Owner or Engineer to pay or to see to the payment of any monies due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.11. All Work performed for Contractor by a Subcontractor will be pursuant to an appropriate agreement between Contractor and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Contractor shall pay each Subcontractor a just share of any insurance moneys received by Contractor on account of losses under policies issued pursuant to paragraphs 5.5 and 5.6.

Patent Fees and Royalties:

6.12. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents. Contractor shall indemnify and hold harmless Owner and Engineer and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorney's fees and court costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Licenses and Permits:

6.13.1. Contractor shall obtain and keep in effect all licenses necessary for furnishing and performance of the Work. Contractor shall furnish Owner with a copy of all required licenses.

6.13.2. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all other construction permits and licenses specifically including all permits required for work in highways, railroads and regulation of other governmental agencies. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or if there are no Bids, on the Effective Date of the Agreement. Contractor shall pay all charges of utility owners for connections to the Work, and Owner shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations:

6.14.1. Contractor shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations. Specifically, the Contractor shall observe all applicable provisions of K.S.A. 44-201 and any amendments thereto in effect as of the Effective Date of Agreement.

6.14.2. If Contractor observes that the Specifications or Drawings are at variance with any Laws or Regulations, Contractor shall give Engineer prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in

paragraph 3.4. If Contractor performs any Work knowing or having reason to know that it is contrary to such Laws or Regulations, and without such notice to Engineer, Contractor shall bear all costs arising therefrom; however, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Taxes:

6.15. For all projects, payment of the Kansas State Sales Tax or Compensating Tax is not required. The City of Topeka will furnish an exemption certificate (including exemption certificate number) obtained from the Sales and Compensating Tax Division, of the Department of Revenue of the State of Kansas to the Contractor, Subcontractor or repairman making purchases of any tangible personal property to be incorporated in this project. The Contractor, Subcontractor or repairman must furnish all suppliers with a copy of the properly executed exemption certificate secured for this project. He may reproduce as many copies of the certificate as he may need.

Use of Premises:

6.16. Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against Owner or Engineer by any such owner or occupant because of the performance of the work, Contractor shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim at law. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner and Engineer harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court costs) arising directly indirectly or consequentially out of any action, legal or equitable, brought by any such other party against Owner or Engineer to the extent based on a claim arising out of Contractor's performance of the Work.

6.17. During the progress of the Work, Contractor shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, Contractor shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by Owner. Contractor shall restore to original condition all property not designated for alteration by the Contract Documents

6.18. Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Documents On-Site:

6.19. Contractor shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order. These documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference.

Safety and Protection:

6.20. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. All employees on the Work and other persons and organizations who may be affected thereby;

6.20.2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

Contractor shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier or any other 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, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Design Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor). Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.21. Contractor shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be Contractor's superintendent unless otherwise designated in writing by Contractor to Owner.

Emergencies:

6.22. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Engineer or Owner, is obligated to act to prevent threatened damage, injury or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work

or variations from the Contract Documents have been caused thereby. If Engineer determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Work Change Directive or Change Order will be issued to document the consequences of the changes or variations.

Shop Drawings and Samples:

6.23. After checking and verifying all field measurements, Contractor shall submit to Engineer for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.6.2), or for other appropriate action if so indicated in the Supplementary Conditions, five copies (unless otherwise specified) of all Shop Drawings, which will bear a stamp or specific written indication that Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as Engineer may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable Engineer to review the information as required.

6.24. Contractor shall also submit to Engineer for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

6.25.1. Before submission of each Shop Drawing or sample Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

6.25.2. At the time of each submission, Contractor shall give Engineer specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

6.26. Engineer will review and approve with reasonable promptness Shop Drawings and samples, but Engineer's review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make corrections required by Engineer, and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.27. Engineer's review and approval of Shop Drawings or samples shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has in writing called Engineer's attention to each such variation at the time of submission as required by paragraph 6.25.2 and Engineer has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by Engineer relieve Contractor from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 6.25.1.

6.28. Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to Engineer's review and approval of the pertinent submission will be the sole expense and responsibility of Contractor.

Continuing the Work:

6.29. Contractor shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as Contractor and Owner may otherwise agree in writing.

Indemnification:

6.30. To the fullest extent permitted by Laws and Regulations Contractor shall indemnify and hold harmless Owner and Engineer and their consultants, agents and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court costs) arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of Contractor, any Subcontractor, 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, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by Law and Regulations regardless of the negligence of any such party.

6.31. In any and all claims against Owner or Engineer or any of their consultants, agents or employees by any employee of Contractor, any Subcontractor, 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 6.30 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or any such Subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

6.32. The obligations of Contractor under paragraph 6.30 shall not extend to the liability of Engineer, Engineer's consultants, agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, design or specifications.

Coordination with Utilities.

6.33. The Contractor shall notify in writing responsible representatives of public utilities, railroads, or any other facilities or property that will be affected by his operations. Such notice shall be given in a timely manner before beginning work. The Contractor shall thereafter coordinate his work with the work necessary to protect or relocate such utilities, property or facilities, and cooperate to the fullest extent to avoid damage or service interruptions. For obtaining underground utility locations, the Contractor shall utilize the Kansas One-Call service or other appropriate entity

Public Convenience.

6.34. The Contractor shall notify owners of adjacent property and cooperate with them in the protection of their property. Access to driveways, houses and buildings, and temporary approaches and crossings of streets and sidewalks shall be provided, unless otherwise directed by the Engineer, and kept in good condition.

Traffic Control.

6.35. The Contractor shall comply with all pertinent requirements set forth in the drawing "Typical Traffic Control Through Construction Areas", of the Contract Documents, and as directed by the Engineer. The Contractor shall obtain approval of traffic control devices and methods from the City of Topeka Traffic Engineer at least three (3) days prior to beginning work. All barricades, signs, lights and traffic control devices of any nature shall conform with current requirements of the "Manual on Uniform Traffic Control Devices for Streets and Highways."

Emergency Project Identification:

6.36. The Contractor, at the discretion of the Engineer, shall erect in a prominent place on the project a legible sign printed in letters and figures not less than three (3) inches high, showing the name of the Contractor, his Topeka address, and the phone numbers of responsible personnel for day or night emergency contact.

Relations Between Contractor and Labor:

6.37. The Contractor and any Subcontractors shall take ~~affirmative~~ action to insure that employees are treated without regard to their race, religion, creed, color, sex, physical handicaps (which is unrelated to the ability to perform a particular job or occupation), national origin, ancestry or age. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruiting or recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor and any Subcontractors shall agree to post, in a conspicuous place available to employees and applicants for employment, notices to be provided by the Contracts and Procurement Division-Contract Compliance setting forth the provisions of this paragraph.

The Contractor or any Subcontractor shall provide all Affirmative Action Information including an Affirmative Action Program, weekly payroll schedules, and other documentation as may be specified in this Project Manual, necessary to implement the construction compliance requirements of the United States Government and ordinances of the City of Topeka, Kansas. It shall be no excuse that the employer has a collective bargaining agreement with any union providing for exclusive referral or approval systems that such Affirmative Action Information was not provided.

The failure of the Contractor or any Subcontractor to comply with non-discrimination requirements of this Specification shall be grounds for cancellation, termination or suspension of the Contract in whole or in part by the Owner and the Contractor or Subcontractor may be declared ineligible for further Contracts with the Owner until satisfactory proof of intent to comply shall be accepted by the Owner.

Wage Rates:

6.38. The wage rate for employees of a Contractor or Subcontractor shall not be less than the minimum wage prescribed by federal or state law unless higher compensation is required by federal or state law.

Sanitary Conveniences:

6.39. The Contractor shall provide all necessary privy accommodations for the use of his employees and shall maintain the same in a clean and sanitary condition. He shall not create or permit any nuisance to the public or to residents in the vicinity of the work.

ARTICLE 7 - OTHER WORK

Related Work at Site:

7.1. Owner may perform other work related to the Project at the site by Owner's own forces, have other work performed by utility owners or let other direct contracts therefor which may contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Supplementary Conditions, written notice thereof will be given to Contractor prior to starting any such other work; and, if Contractor believes that such performance will involve additional expense to Contractor or requires additional time and the parties are unable to agree as to the extent thereof, Contractor may make a claim therefor as provided in Articles 11 and 12. If the Work of others is identified in the Supplementary Conditions or elsewhere in the Contract Documents, coordination with said Work shall be considered a requirement of this project and as such Contractor shall not be entitled to an extension of Contract Time or Price for coordination with the Work of others.

7.2. Contractor shall afford each utility owner and other Contractor who is a party to such a direct contract (or Owner, if Owner is performing the additional work with Owner'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 work, and shall properly connect and coordinate the Work with theirs. Contractor shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. Contractor 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 Engineer and the others whose work will be affected.

7.3. If any part of Contractor's Work depends for proper execution or results upon the work of any such other contractor or utility owner (or Owner), Contractor shall inspect and promptly report to Engineer in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. Contractor's failure so to report will constitute an acceptance of the other work as fit and proper for integration with Contractor's Work except for latent or non-apparent defects and deficiencies in the other work.

Coordination:

7.4. If Owner contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Supplementary Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Supplementary Conditions. Unless otherwise provided in the Supplementary Conditions, neither Owner nor Engineer shall have any authority or responsibility in respect of such coordination.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.1. Owner shall issue all communications to Contractor through Engineer.

8.2. In case of termination of the employment of Engineer, Owner shall appoint an engineer against whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.3. Owner shall furnish the data required of Owner under the Contract Documents promptly and shall make payments to Contractor promptly after they are due as provided in paragraphs 14.4 and 14.13.

8.4. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1, 4.4 and 4.5. Paragraph 4.2 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions at the site and in existing structures which have been utilized by Design Engineer in preparing the Drawings and Specifications.

8.5. Owner is obligated to execute Change Orders as indicated in paragraph 10.4.

8.6. Owner's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.7. In connection with Owner's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with Owner's right to terminate services of Contractor under certain circumstances.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

Owner's Representative:

9.1. Engineer will be Owner's representative during the construction period. The Engineer for these purposes may be either the Design Engineer or the City Engineer as designated in the Agreement. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of Owner and Engineer.

Visits to Site:

9.2. Engineer will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform to the Contract Documents.

Project Representation:

9.3. Engineer will furnish a Project Representative to assist Engineer in observing the performance of the Work. The Project Representative may be required by Engineer or Owner to provide full-time observation of the Work. The Project Representative is Engineer's Agent, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding his actions. The Project Representative's dealings in matters pertaining to the on-site Work shall in general be only with Engineer and Contractor, and dealings with subcontractors shall only be through or with the full knowledge of Contractor. Written communication with Owner will be only through or as directed by Engineer.

9.3.1 The Project Representative will:

- (1) Serve as Engineer's liaison with Contractor, working principally through Contractor's superintendent and assisting him in understanding the intent of the Contract Documents and assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-site operations.
- (2) As requested by Engineer, assist in obtaining from Owner additional details or information, when required at the job site for proper execution of the Work.
- (3) Conduct on-site observations and testing of the Work in progress to assist Engineer in determining if the Work is proceeding in accordance with the Contract Documents and that completed Work will conform to the Contract Documents.
- (4) Be responsible for the maintenance of record documents showing changes made during construction.

9.3.2 The duties and responsibilities and the authority of the Project Representative as Engineer's Agent during construction shall not exceed in any case those of the Engineer as Owner's representative during construction. Except on written instructions of Engineer, the Project Representative may not authorize any deviation from the Contract Documents or approve any substitute materials or equipment.

9.3.3 Specifically omitted from the Project Representative's duties are any review of the Contractor's safety precautions, or the means, methods, sequences or procedures required for the Contractor to perform the work but not relating to the final or completed Project. Omitted design or review services include, but are not limited to, shoring, scaffolding, underpinning, temporary retainment, excavations, and any erection methods and temporary bracing.

Clarifications and Interpretations:

9.4. Engineer will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as Engineer may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If Contractor believes that a written clarification or interpretation justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, Contractor may make a claim therefor as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner, and also on Contractor who shall perform the Work involved promptly. A Field Order may authorize a change in the Work which results in a minor change in the quantity of specific unit price items included in the Agreement. If Contractor believes that a Field Order justifies an increase in the Contract Price, other than minor variations in quantities for Unit Price items, or an extension of the Contract Time and the parties are unable to agree as to the amount or extent thereof, Contractor may make a claim therefor as provided in Article 11 or 12.

Rejecting Defective Work:

9.6. Engineer will have authority to disapprove or reject Work which Engineer believes to be defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7. In connection with Engineer's responsibility for Shop Drawings and samples, see paragraphs 6.23 through 6.28 inclusive.

9.8. In connection with Engineer's responsibilities as to Change Orders, see Articles 10, 11 and 12.

9.9. In connection with Engineer's responsibilities in respect of Applications for Payment, etc., see Article 14.

Determinations of Quantities:

9.10. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer written decisions thereon will be final and binding upon Owner and Contractor, unless, within ten days after the date of any such decision, either Owner or Contractor delivers to the other party to the Agreement and to Engineer written notice of intention to appeal from such a decision.

Decisions on Disputes:

9.11. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Time will be referred initially to Engineer in writing with a request for a formal decision in accordance with this paragraph, which Engineer will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered by the claimant to Engineer and the other party

to the Agreement promptly (but in no event later than fifteen days) after the occurrence of the event or after the end of the period of events giving rise thereto, and written supporting data will be submitted to Engineer and the other party within thirty days after such occurrence unless Engineer allows an additional period of time to ascertain more accurate data in support of the claim.

9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by Engineer pursuant to paragraphs 9.10 and 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by Owner or Contractor of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter.

Limitations on Engineer's Responsibilities:

9.13. Neither Engineer's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of Engineer to Contractor, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

9.14. 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 Engineer as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with 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 Engineer 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 9.15 or 9.16.

9.15. Engineer will not be responsible for Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and Engineer will not be responsible for Contractor's failure to perform or furnish the Work in accordance with the Contract Documents.

9.16. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

ARTICLE 10 - CHANGES IN THE WORK

10.1. Without invalidating the Agreement and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If Owner and Contractor are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Work Change Directive, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.4 and 3.5, except in the case of an emergency as provided in paragraph 6.22 and except in the case of uncovering Work as provided in paragraph 13.9.

10.4. Owner and Contractor shall execute appropriate Change Orders covering:

10.4.1. Changes in the Work which are ordered by Owner pursuant to paragraph 10.1, are required because of acceptance of defective Work under paragraph 13.13 or correcting defective Work under paragraph 13.14, or are agreed to by the parties;

10.4.2. Changes in the Contract Price or Contract Time which are agreed to by the parties; and

10.4.3. Changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by Engineer pursuant to paragraph 9.11; provided that, in lieu of executing 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 and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. 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 Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be Contractor's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11 - CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at his expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to Engineer promptly (but in no event later than fifteen days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within thirty days after such occurrence (unless Engineer allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by Engineer in accordance with paragraph 9.11 if Owner and Contractor cannot otherwise agree on the amount involved. Failure to submit a claim for an adjustment in the Contract Price in accordance with this paragraph 11.2. will invalidate said claim.

11.3. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1 through 11.9.3, inclusive).

11.3.2. By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2.1.)

11.3.3. On the basis of the cost of the Work or a Force Account (determined as provided in paragraphs 11.4 and 11.5) plus a Contractor's Fee for overhead and profit (determined as provided in paragraphs 11.6 and 11.7)

Cost of the Work:

11.4. The term Cost of the work means the sum of all costs necessarily incurred and paid by Contractor in the proper performance of the Work. Except as otherwise may be agreed to in writing by Owner, such costs 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 of the costs itemized in paragraph 11.5.

11.4.1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. 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' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by Owner.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services

required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

11.4.3. Payments made by Contractor to the Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from Subcontractors acceptable to Contractor and shall deliver such bids to Owner who will then determine, with the advice of Engineer, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as Contractor's Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.4.4. 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.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

11.4.5.2. 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 Contractor.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer and the costs of transportation, loading, unloading, installation, dismantling and removal thereof, all in accordance with 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. Equipment/machinery costs shall be apportioned to the actual time the equipment/machinery is in operation to perform the work. Down time or standby time shall not be charged to the Owner by the Contractor.

11.4.5.4. Any applicable taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

11.4.5.5. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.6. 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.

11.4.5.7. Cost of premiums for additional Bonds and insurance required because of changes in the Work.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnership and sole proprietorships), general manager, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by Contractor whether at the site or in Contractor's principal or a branch office for general administration of the work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4 - all of which are to be considered administrative costs covered by the Contractor's Overhead and Fee.

11.5.2. Expenses of Contractor's principal and branch offices other than Contractor's office at the site.

11.5.3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not Contractor is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by sub-paragraph 11.4.5.7 above).

11.5.5. Costs due to the negligence of Contractor, 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.

11.5.6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

Contractor's Fee:

11.6. The Contractor's Fee allowed to Contractor for overhead and profit shall be determined as follows:

11.6.1. A mutually acceptable fixed fee; or if none can be agreed upon,

11.6.2. A fee based on the following percentages of the various portions of the cost of the Work:

11.6.2.1. For costs incurred under paragraphs 11.4.1 and 11.4.2, the Contractor's Fee shall be fifteen percent;

11.6.2.2. For costs incurred under paragraphs 11.4.3 and 11.4.4 the Contractor's Fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a fee, the subcontractor fee for overhead and profit shall be fifteen percent;

11.6.2.3. No fee shall be payable on the basis of costs itemized under paragraph 11.4.5;

11.6.2.4. The amount of credit to be allowed by Contractor to Owner for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in Contractor's Fee by an amount equal to ten percent of the net decrease; and

11.6.2.5. When both additions and credits are involved in any one change, the adjustment in Contractor's Fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.4, inclusive.

Force Account Work:

11.7. Whenever a change in the Work and Contract Price are authorized to be done on the basis of a Force Account, the cost of said Work shall be paid for pursuant to the requirements of paragraphs 11.4 through 11.6 and this paragraph 11.7. The Contractor and the Engineer or his designated Project Representative shall compare and agree on all records for labor, material and equipment furnished on a daily basis. All applications for payment of Force Account Work shall be accompanied by fully documented and itemized breakdowns of all types of costs incurred together with supporting data. Supporting data shall include copies of all invoices for actual materials incorporated in the Work, equipment rentals, subcontractor itemized invoices, etc.

Cash Allowances:

11.8. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to Engineer. Contractor agrees that:

11.8.1. The allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.8.2. Contractor'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. No demand for additional payment on account of any thereof will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

Unit Price Work:

11.9.1. 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 prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. 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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer in accordance with

Paragraph 9.10.

11.9.2. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

11.9.3. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment if the total cost of a particular item of Unit Price Work amounts to five percent (5%) or more of the Contract Price based on the original bid and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than twenty percent (20%) from the bid quantity of such item indicated in the Agreement unless otherwise specified in the Supplementary Conditions. Contractor may make a claim for an increase in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the amount of any such increase.

ARTICLE 12 - CHANGE OF CONTRACT TIME

12.1 The Contract Time may only be changed by a Change Order or a Written Amendment. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the claim to the other party and to Engineer promptly (but in no event later than fifteen days) after the occurrence of the event or after the end of the period of events giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within thirty days after such occurrence (unless Engineer allows an additional period of time to ascertain more accurate data in support of the claim). All claims for adjustment in the Contract Time shall be determined by Engineer in accordance with paragraph 9.11 if Owner and Contractor cannot otherwise agree. Failure to submit a claim for an adjustment in the Contract Time in accordance with the requirements of this paragraph 12.1. will invalidate said claim.

12.2 The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of Contractor if a claim is made therefor as provided in this Article 12. Such delays shall include, but not be limited to, acts or neglect by Owner or others performing additional work as contemplated by Article 7, or to fires, floods, labor disputes not the fault of the Contractor, coordination with the work of others, abnormal weather conditions, acts of God, and delays caused by subcontractors and suppliers if the delays are beyond the control of the subcontractor or supplier.

12.2.1. Inclement weather shall be defined as precipitation and/or temperature conditions which prevent substantial work on the project for more than 50% of the full number of hours in the normal daily schedule as determined by the Engineer. Abnormal weather shall be defined as inclement weather in excess or variation of the normal monthly averages for the specific type of inclement weather condition. Requests for an extension of contract time due to abnormal weather conditions will be considered by the Engineer, subject to the following requirements:

- (1) Any individual request shall cover a minimum of one full calendar month or portion thereof if at the beginning or ending of the project time. Requests shall be submitted no more frequently than monthly.

(2) Each request shall fully document the specific date and nature of each inclement weather day in the period for which the request is made.

(3) Each request shall document the normal monthly average number of days for inclement weather conditions being considered based on the following table:

<u>Month</u>	<u>Normal monthly average Inclement weather days</u>
January	8
February	7
March	7
April	6
May	4
June	4
July	4
August	4
September	5
October	6
November	7
December	7

(4) Each request shall document the number of normal schedule days (weekdays) in the period during which substantial work could have proceeded, but did not at Contractor's choice.

(5) Each request shall document the number of non-normal schedule days (Saturdays, Sundays and holidays, unless otherwise authorized by the Engineer) in the period during which inclement weather defined in (2) above occurred.

(6) The determination of the number of extension days due to abnormal weather shall be made based on the number of inclement weather days determined in (2) above less the number of days determined in (3), (4) and (5) above.

12.3. All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court costs) for delay by either party.

Computation of Time:

12.4.1. 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 day of such period. If the last day of any 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.

12.4.2. A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

ARTICLE 13 - WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee:

13.1. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to Contractor. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. Engineer and Engineer's representatives, other representatives of Owner, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at all reasonable times for their observation, inspecting and testing. Contractor shall provide proper and safe conditions for such access.

Tests and Inspections:

13.3. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests or approvals.

13.4. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, Contractor shall assume full responsibility therefore, pay all costs in connection therewith and furnish Engineer the required certificates of inspection, testing or approval. Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Owner's or Engineer's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by Owner (unless otherwise specified).

13.5. All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to Owner and Contractor (or by Engineer if so specified).

13.6. If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.7. Neither observations by Engineer nor inspections, tests or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract Documents.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of or without the approval of

Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

13.9. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose or otherwise make available for observation, inspection or testing as Engineer may require, that portion of the work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, Contractor shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys and other professionals), and Owner shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, Owner may make a claim therefor as provided in Article 11. If, however, such Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and, if the parties are unable to agree as to the amount or extent thereof, Contractor may make a claim therefor as provided in Articles 11 and 12.

Owner May Stop the Work:

13.10. If the Work is defective, or Contractor 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, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor or any other party.

Correction or Removal of Defective Work:

13.11. If required by Engineer, Contractor shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by Engineer, remove it from the site and replace it with non-defective Work. Contractor shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

One Year Correction Period:

13.12. If within one year after the date of Final Completion or such longer period of time as may be prescribed by Laws or Regulations or 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, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, either correct such defective Work, or, if it has been rejected by Owner, remove it from the site and replace it with non-defective work. If Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by Contractor. In special circumstances where a particular portion is placed in continuous service before Final 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.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, also Engineer) prefers to accept it, Owner may do so. Contractor shall bear all direct, indirect and consequential costs attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the contract Price, and, if the parties are unable to agree as to the amount thereof, Owner may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner or deducted from amounts owed to Contractor.

Owner May Correct Defective Work:

13.14. If Contractor fails within a reasonable time after written notice of Engineer to proceed to correct and to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with paragraph 13.11, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days' written notice to Contractor, correct and remedy any such deficiency. To the extent necessary to complete corrective and remedial action, Owner may exclude Contractor from all or part of the site, take possession of all or part of the Work, and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees such access to the site as may be necessary to enable Owner to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of Owner in exercising such rights and remedies will be charged against Contractor in an amount approved as to reasonableness by Engineer, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, Owner may make a claim therefor as provided in Article 11. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. Contractor shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by Owner of Owner's rights and remedies hereunder.

Owner May Regulate Work:

13.15. The Owner shall have the authority to regulate the amount of work which may be open or under construction in advance of the completed portions of the Work. The sequence of construction shall be approved by the Engineer prior to construction if not specifically covered in the Contract Documents.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

Basis of Payment:

14.1. Progress payments for unit price contracts shall be based on the number of units completed. If a number of units are partially completed, the estimated percentage of the partially completed units times the number of units shall determine the completed units for that item. Lump sum items shall be paid based on the estimated percentage of completion at the end of each progress payment period.

Application for Progress Payment:

14.2 Contractor shall submit to Engineer for review an Application for Payment filled out and signed by the Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. All applications for payment shall include an updated and/or revised project schedule conforming to the requirements of paragraph 2.6.1. Contractor shall submit the Application for Payment within seven (7) days following the end of the period for which payment is being requested. If payment is requested on the basis of materials and equipment not incorporated in 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, invoice or other documentation and proof of payment for said materials warranting that Owner has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and/or other arrangements to protect Owner's interest therein, all of which will be satisfactory to Owner. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

Contractor's Warranty of Title:

14.3. Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner, no later than the time of payment, free and clear of all Liens.

Review of Applications for Progress Payment:

14.4. Engineer will, within seven (7) days after receipt of each Application for Payment, both indicate in writing, a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reason for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application. Engineer will, within seven (7) days, review the resubmitted application as detailed above. Twenty-One (21) days after presentation of the Application for Payment with Engineer's recommendation for approval, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by Owner to Contractor.

14.5. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's on-site observations of the Work in progress as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of Engineer's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10, and to any other qualifications stated in the recommendation); and that Contractor is entitled to payment of the amount recommended.

14.6. Engineer's recommendation of final payment will constitute an additional representation by Engineer to Owner that the conditions precedent to Contractor's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

14.7. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make such representations to the Owner. Engineer may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

14.7.1. The Work is defective, or completed Work has been damaged requiring correction or replacement,

14.7.2. The Contract Price has been reduced by Change Order.

14.7.3. Owner has been required to correct defective Work or complete Work in accordance with paragraph 13.14, or

14.7.4. Of Engineer's actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.9 inclusive.

Owner may refuse to make payment of the full amount recommended by Engineer because claims have been made against Owner on account of Contractor's performance or furnishing of the Work or Liens have been filed in connection with the Work or there are other items entitling Owner to a set-off against the amount recommended, but Owner must give Contractor immediate written notice stating the reasons for such action.

Substantial Completion:

14.8. When Contractor considers the entire Work ready for its intended use Contractor shall notify Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a notice of Substantial Completion. Within a reasonable time thereafter, Owner, Contractor and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor. If Engineer considers the Work substantially complete, Engineer will prepare and deliver to Owner and Contractor a notice of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a list of items to be

completed or corrected before final payment. At the time of delivery of the notice of Substantial Completion Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to operation, safety, maintenance, insurance and warranties.

14.9. Owner shall have the right to exclude Contractor from the Work after the date of Substantial Completion, but Owner shall allow Contractor reasonable access to complete or correct items on the list.

Partial Utilization:

14.10 The Owner shall have the right to take possession of and use any finished part of the Works when it can be established by the Owner and Engineer that the part in question constitutes a separately functioning and usable part of the Work that can be used by Owner without significant interference with Contractor's performance of the remainder of the Work, subject to the following:

14.10.1 Owner at any time may request Contractor in writing to permit Owner to use any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If Contractor agrees, Contractor will certify to Owner and Engineer that said part of the Work is substantially complete. Engineer will then issue a notice of Substantial Completion for said part of the Work. The provisions of paragraphs 14.8 and 14.9 will apply with respect to said Substantial Completion and the division of responsibility in respect thereof and access thereto.

14.10.2. Owner may at any time notify Contractor in writing of Owner's intent to take over operation or use of any such part of the Work although it is not substantially complete. Engineer shall make an inspection of that part of the work to determine its status of completion and prepare a list of items remaining to be completed or corrected thereon before final payment. Engineer shall submit said list together with a written recommendation as to the division of responsibilities pending final payment between Owner and Contractor with respect to operation, safety, maintenance, insurance, warranties and guarantees for that part of the Work which will become binding upon Owner and Contractor at the time when Owner takes over such operation or use. During such operation or use and prior to Substantial Completion of such part of the Work, Owner shall allow Contractor reasonable access to complete or correct items on said list and to complete other related Work.

If Contractor believes that Owner's action to take possession of and use said part of the Work justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, Contractor may make a claim therefor as provided in Article 11 or Article 12.

14.10.3. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.12 in respect of property insurance.

Final Inspection:

14.11. Upon notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to remedy such deficiencies.

Final Application for Payment:

14.12. After Contractor has completed all such corrections to the satisfaction of Engineer and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents - all as required by the Contract Documents, and after Engineer has indicated that the Work is acceptable (subject to the provisions of paragraph 14.16), Contractor may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to Owner) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by Owner, Contractor may furnish receipts or releases and receipts in full; an affidavit of Contractor that the releases include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, Contractor may furnish a Bond or other collateral satisfactory to Owner to indemnify Owner against any Lien. The Contractor shall also be responsible for correct submittal of all payroll information to the satisfaction of the Contracts and Procurement Division-Contract Compliance prior to submittal of the application for final payment.

Final Payment and Acceptance; Deadline for Submission of Final Application for Payment:

14.13. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract documents have been fulfilled, including compliance with Section 14.13(a), Engineer will, within seven (7) days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application to Owner. If Engineer does not recommend payment, Engineer will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor may make the necessary corrections and resubmit the application unless Contractor has forfeited payment pursuant to Section 14.13(a). Except as provided by Section 14.13(a), thirty (30) days after presentation to Owner of the application and accompanying documentation, in appropriate form and substance, and with Engineer's recommendation, the amount recommended by Engineer will become due and will be paid by Owner to Contractor.

14.13(a) Final Application for Payment; Deadline. If the Contractor has not submitted a final application for payment within sixty 60 days from the date of the Engineer's determination that the Work is acceptable pursuant to Section 14.12, the Owner will notify the Contractor, in writing, that a final application must be submitted within thirty (30) days from the date of the notification or else the Contractor will be deemed to have forfeited any remaining amounts due.

14.13(b) Forfeiture of Payment. Contractor agrees that failure to timely submit a Final Application for Payment pursuant to Section 14.13(a) will result in forfeiture of any remaining amounts due.

14.14. If, through no fault of Contractor, final completion of the Work is significantly delayed and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment and recommendation of Engineer, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Contractor's Continuing Obligation:

14.15. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by Engineer, nor the notice of Substantial Completion, nor any payment by Owner to Contractor under the Contract Documents, nor any use or occupancy of the Work or any part thereof by Owner, nor any act of acceptance by Owner nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by Engineer pursuant to paragraph 14.13, nor any correction of defective Work by Owner will constitute an acceptance of Work not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 14.16).

Waiver of Claims:

14.16. The making and acceptance of final payment will constitute:

14.16.1. A waiver of all claims by Owner against Contractor, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.11 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by Owner of any rights in respect of Contractor's continuing obligations under the contract Documents; and

14.16.2. A waiver of all claims by Contractor against Owner other than those previously made in writing and still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

Owner May Suspend Work:

15.1. Owner may, at any time and without cause, suspend the work, or any portion thereof, for a period of not more than 120 days, by notice in writing to Contractor and Engineer. Contractor shall resume the Work on the date fixed by Owner by notice in writing to Contractor and Engineer. Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension by Owner without cause and in excess of 120 days if Contractor makes an approved claim therefor as provided in Articles 11 and 12.

Owner May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. If Contractor commences a voluntary case under any chapter of the bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if Contractor takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

15.2.2. If a petition is filed against Contractor under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against Contractor under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

15.2.3. If Contractor makes a general assignment for the benefit of creditors;

15.2.4. If a trustee, receiver, custodian or agent of Contractor is appointed under applicable law or under contract, whose appointment or authority to take charge of property of Contractor is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of Contractor's creditors;

15.2.5. If Contractor admits in writing an inability to pay its debts generally as they become due;

15.2.6. If Contractor persistently 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 2.6 as revised from time to time);

15.2.7. If Contractor disregards Laws or Regulations of any public body having jurisdiction;

15.2.8. If Contractor disregards the authority of Engineer; or

15.2.9. If Contractor otherwise violates in any substantial way any provisions of the Contract Documents;

Owner may, after giving Contractor (and the surety, if there be one) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of Contractor, exclude Contractor from the site and take possession of the Work, incorporate in the Work all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere, and finish the Work as Owner may deem expedient. In such case Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court costs) such excess will be paid to Contractor. If such costs exceed such unpaid balance, Contractor shall pay the difference to Owner. Such costs incurred by Owner will be approved as to reasonableness by Engineer and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph Owner shall not be required to obtain the lowest price for the Work performed.

15.3. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

15.4. Upon seven days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, Contractor shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court costs).

Contractor May Stop Work or Terminate:

15.5. If, through no act or fault of Contractor, the Work is suspended for a period of more than 120 days by Owner or under an order of court or other public authority, or Engineer fails to act on any Application for Payment within forty-five (45) days after it is submitted, or Owner fails for forty-five (45) days after submittal of the application to pay Contractor any sum finally determined to be due provided that Contractor has complied with all appropriate requirements of these Contract Documents, then Contractor may, upon seven days' written notice to Owner and Engineer, terminate the Agreement and recover from Owner payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if Engineer has failed to act on an Application for Payment or Owner has failed to make any payment as aforesaid, Contractor may upon seven days' written notice to Owner and Engineer stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve Contractor of the obligations under paragraph 6.29 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with Owner.

ARTICLE 16 - MISCELLANEOUS

Giving Notice:

16.1. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by regular mail postage prepaid, to the last business address known to the giver of the notice.

General:

16.2. Should Owner or Contractor suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 16.2 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

16.3. 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 Contractor by paragraphs 6.30, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to Owner and Engineer thereunder, 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 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. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

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Footnote: These General Conditions are based on the "Standard General Conditions of the Construction Contract", prepared by the Engineers Joint Contract Documents Committee, EJCDC No.1910-8 (1983 Edition). Deletions and additions have been made to the referenced document as deemed appropriate for use by the City of Topeka.

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Bartlett & West

**DOCUMENT 820
SUPPLEMENTARY CONDITIONS**

These Supplementary Conditions amend, modify or supplement the General Conditions for City of Topeka Department of Public Works Construction Projects, Document 700, other provisions of the Contract Documents, the Standard Technical Specifications or the Drawings, as indicated below. All provisions which are not so amended, modified or supplemented shall remain in full force and effect.

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SC-2. PRELIMINARY MATTERS

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- SC-2.8. Legal Addresses

SC-3. CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE - No Modifications

SC-4. AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; CONSTRUCTION LAYOUT

- SC-4.5. Construction Layout
- SC-4.6. Asbestos Material

SC-5. BONDS AND INSURANCE

- SC-5.1. Performance and Other Bonds
- SC-5.3.2. Employers' Liability Insurance
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SC-6. CONTRACTOR'S RESPONSIBILITIES

- SC-6.3. Labor, Materials, and Equipment
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- SC-7. OTHERWORK
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- SC-8. OWNER'S RESPONSIBILITIES - No Modifications

- SC-9. ENGINEER'S STATUS DURING CONSTRUCTION
 - SC-9.3. Project Representation
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 - SC-9.7. Shop Drawings, Change Orders, and Payments
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- SC-10. CHANGES IN THE WORK - No Modifications

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 - SC-12.2. Abnormal Weather Conditions
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- SC-13. WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS;
CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE
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 - SC-13.12. One Year Correction Period
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- SC-14. PAYMENTS TO CONTRACTOR AND COMPLETION
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- SC-15. SUSPENSION OF WORK AND TERMINATION - No Modifications

- SC-16. MISCELLANEOUS
 - SC-16.4. General
 - SC-16.6. Historical/Archeological
 - SC-16.7. Records Access
 - SC-16.8. Records Retention

Attachments

Duties, Responsibilities, and Limitations of Authority of the Resident Project Representative as Set Forth in the Owner/Engineer Agreement.

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend, modify, or supplement the General Conditions for City of Topeka Department of Public Works Construction Projects, Document 700, other provisions of the Contract Documents, the Standard Technical Specifications, or the Drawings, as indicated below. All provisions which are not so amended, modified, or supplemented shall remain in full force and effect.

SC-1. DEFINITIONS.

1. Add the following definitions to Article 1 of the General Conditions:

Bidder - The one who submits a Bid directly to Owner, as distinct from a sub-bidder who submits a bid directly to a Bidder.

Engineer's Consultant - The firm of Bartlett & West Engineers, Inc., 1200 Southwest Executive Drive, Topeka, Kansas 66615-6850, and their duly authorized agents, such agents acting within the scope of the particular duties entrusted to them in each case.

2. In Article 1 of the General Conditions, add the following to the definition for "Drawings":

Shop Drawings are not drawings as so defined.

SC-2.2.

Add the following new paragraph to Paragraph 2.2 of the General Conditions:

The Contractor to whom a contract is awarded will be furnished, free of charge, 5 copies of the Specifications and 5 sets of the Drawings, together with all Addenda thereto. Additional copies of Specifications and Drawings may be obtained from Engineer on the following basis:

Full set of Drawings and Specifications \$160.00

SC-2.8.

Add the following new paragraph to the General Conditions:

2.8. The business address of Contractor given in the Bid Form and Contractor's office in the vicinity of the Work are both hereby designated as the places to which all notices, letters, and other communication to Contractor will be mailed or delivered. The addresses of Owner and Engineer appearing below are hereby designated as the places to which all notices, letters, and other communication to Owner and to Engineer shall be mailed or delivered. All parties may change their address at any time by an instrument in writing delivered to the other parties.

Owner's Address:

Mr. Zachary P. Stueve, P.E.
Water Pollution Control Division
Oakland Wastewater Treatment Plant
1115 NE Poplar Street
Topeka, Kansas 66616

Engineer's Address:

Mr. Andrew Wright, P.E.
Bartlett & West, Inc.
1200 SW Executive Drive
Topeka, Kansas 66615

SC-4.3.1.2

Replace "show12/3/07n" with "shown".

SC-4.5.

Delete Paragraph 4.5 of the General Conditions in its entirety. Construction layout shall be as described in the Summary of Work Section.

SC-4.6.

Add the following new paragraph to the General Conditions:

4.6. Asbestos removal is covered in the project requirements section.

SC-5.1.

Revise the third sentence of Paragraph 5.1 to read:

"The performance bond shall acknowledge the two year correction period in accordance with the requirements of Article 13."

SC-5.3.2.

Revise the liability limit in Paragraph 5.3.2. to \$1,000,000 each person.

SC-5.3.6.

Delete Paragraph 5.3.6 of the General Conditions in its entirety and replace it with the following:

5.3.6. The commercial general liability insurance required under Paragraphs 5.3.3 through 5.3.5 shall have the following specific coverages:

(1) Bodily Injury (including completed operations and products liability):

\$1,000,000	Each Occurrence
\$1,000,000	Annual Aggregate

Property Damage:

\$1,000,000	Each Occurrence
\$1,000,000	Annual Aggregate

or a combined single limit of \$1,000,000.

(2) Personal Injury, with employment exclusion deleted:

\$1,000,000	Annual Aggregate
-------------	------------------

(3) Excess Liability:

Bodily Injury and Property Damage Combined:

\$4,000,000	Each Occurrence
\$4,000,000	Annual Aggregate

The commercial general liability insurance shall include completed operations insurance. Property damage liability insurance shall be provided with coverages for explosion, collapse, and underground hazards, where applicable. Owner, Engineer, and Engineer's Consultant shall be named as additional insureds on the Contractor's general liability policy.

5.4. The commercial general liability insurance and automobile insurance required by Paragraph 5.3 will include contractual liability insurance applicable to Contractor's obligations under Paragraphs 6.30 and 6.31. The coverage limits shall be:

- (1) Bodily Injury
\$1,000,000 Each Occurrence

- (2) Broad Form Property Damage
\$1,000,000 Each Occurrence
\$1,000,000 Annual Aggregate

SC-5.5.

Delete Paragraph 5.5 of the General Conditions in its entirety and replace it with the following:

5.5. Contractor shall purchase and maintain property insurance coverage for the Work at the site in the amount of the full replacement cost thereof. This insurance shall:

- a. include the interests of Owner, Contractor, Subcontractors, Engineer, and Engineer's Consultant, each of whom is deemed to have an insurable interest and shall be listed as a named insured;

- b. 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, Work in transit including ocean transit, and Work in storage at the project site or at another location acceptable to Owner, and shall insure against at least the following perils: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and damage caused by frost and freezing;

- c. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

- d. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer, with 30 days' written notice to each other insured; and

If Owner requests in writing that other special insurance be included in the property insurance provided by Contractor, Contractor shall, if possible, include such insurance, and the cost thereof will be charged to Owner by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, Contractor shall in writing advise Owner whether or not such other special insurance has been procured by Contractor.

SC-5.6.

Make the following modification to Paragraph 5.6. of the General Conditions:

Add "Engineer" and "Engineer's Consultant" as additionally insured parties.

SC-5.13.

Add the following new paragraph to the General Conditions:

5.13. Contractor shall deliver to Owner, with copies to each additional insured indicated in the Supplementary Conditions, prior to the start of any Work at the project site, properly completed certificates of insurance and a copy of the actual insurance policy which Contractor is required to purchase and maintain in accordance with the Contract Documents.

SC-5.14.

Add the following new paragraph to the General Conditions:

5.14. With respect to workers' compensation and employers' liability, comprehensive automobile liability, commercial general liability, and umbrella liability insurance, Contractor shall require its insurance carriers to waive all rights of subrogation against Owner, Engineer, and Engineer's Consultant, and their respective officers, directors, partners, employees, and agents.

SC-5.15.

Add the following new paragraphs to the General Conditions:

5.15. Owner and Contractor intend that all property insurance required by the Contract Documents will protect Owner, Contractor, Subcontractors, Engineer, and Engineer's Consultant 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 thereunder. Owner and Contractor 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; and, in addition, waive all such rights against Subcontractors, Engineer, and Engineer's Consultant, for losses and damages so caused. 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 Owner as trustee or otherwise payable under any policy so issued.

In addition, Owner waives all rights against Contractor, Subcontractors, Engineer, Engineer's Consultant, and the officers, directors, partners, employees, and agents of any of them for:

- a. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other peril whether or not insured by Owner; and
- b. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization, after Substantial Completion, or after final payment.

Any insurance policy maintained by Owner covering any loss, damage, or consequential loss referred to in this paragraph shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss the insurers will have no rights of recovery against Contractor, Subcontractors, Engineer, Engineer's Consultant, and the officers, directors, partners, employees, and agents of any of them.

SC-6.3.

Add the following new paragraph to the General Conditions:

6.3.1. Should the Contractor's regular construction operations or schedule of work require either the Resident Project Representative (RPR) to be at the site in excess of a normal workweek of 40 hours or additional RPRs to carry out the Engineer's responsibilities at the site, the Contractor shall be responsible for all costs directly chargeable to the Work to provide the Resident Project Representative(s) for the normal or overtime hours. The Owner shall deduct the costs for the overtime hours from the Contractor's Application for Progress Payment based upon the actual cost of providing the Resident Project Representative for overtime work during the same period covered by the Application for Progress Payment. The fee for the Resident Project Representative will not exceed \$100 per normal working hour and expenses will not exceed \$50 per day. The Owner will notify the Contractor of the actual rates at the time the Contractor requests to work the overtime hours.

SC-6.4.

Specification Section 015100 -TEMPORARY UTILITIES supplements Paragraph 6.4.

SC-6.9.

Add the following language at the end of paragraph 6.9 of the General Conditions:

"Owner or Engineer may furnish to any such Subcontractor, Supplier or other person or organization, to the extent practicable, evidence of amounts paid to Contractor in accordance with Contractor's Applications for Payment."

SC-6.14.3.

Add the following new paragraph to the General Conditions:

6.14.3. Employment requirements shall be as specified herein and in the Wage Rate Determination attachments at the end of the Supplementary Conditions.

SC-6.19.

Delete paragraph 6.19 of the General Conditions in its entirety and replace it with the following:

6.19. Contractor shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Directive Changes, Field Orders, and written interpretations and clarifications (issued pursuant to Paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all final samples and a counterpart of all final Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, samples, and Shop Drawings shall be delivered to Engineer for Owner.

SC-6.20.

The second sentence of the last subparagraph of Paragraph 6.20 of the General Conditions shall be revised to read as follows:

"...shall be remedied by the Contractor (except damage or loss arising out of the performance of services for the Owner attributable to the negligent act, error or omission of Owner or Design Engineer...)"

SC-6.23 through SC-6.28.

Paragraphs 6.23 through 6.28 of the General Conditions supplements Specification Section 013300 -SUBMITTALS. Submission of shop drawings, samples, and other data shall be as set forth in the Submittals section.

SC-7.5.

Add the following new paragraph immediately after Paragraph 7.4 of the General Conditions:

7.5. Delays and Damages. Contractor shall accept the risk of any delays caused by the rate of progress of the work to be performed under other contracts. In the event Contractor is delayed in the prosecution and completion of the Work because of such conditions, Contractor shall have no claim against Owner for damages or contract adjustment other than an extension of Contract Times and the waiving of liquidated damages during the period occasioned by the delay.

Time limitations required by Owner shall be for the benefit of Owner and contractors under other contracts who have entered into such contracts with Owner in reliance on the time limitations set forth in these Contract Documents. Any claim by Contractor for damages due to delay or damage to the Work or the property of Contractor by another contractor shall be asserted against that contractor.

SC-9.3.

Delete Paragraph 9.3 of the General Conditions in its entirety and replace it with the following:

9.3. Engineer may furnish a Resident Project Representative and assistants to aid Engineer in carrying out his responsibilities at the site. The duties, responsibilities, and limitations of authority of the Resident Project Representative are set forth in an attachment to the Supplementary Conditions.

SC-9.6.

Add the following language at the end of paragraph 9.6 of the General Conditions:

"The provisions of this paragraph shall have force and effect regardless of the fact that the rejected work may have been done or the rejected materials may have been used or placed with the knowledge of the Engineer or his Resident Project Representative. The fact that the Engineer or his Representative may not have previously become or been made aware of the defects in rejected work shall not constitute an acceptance of any part of it."

SC-9.7.

Delete Paragraph 9.7 of the General Conditions and replace it with the following:

9.7. In connection with Engineer's responsibility for Shop Drawings and samples, see Paragraphs 6.23 through 6.28 inclusive and the Specification Section 013300-SUBMITTALS.

SC-9.17.

Add a new paragraph immediately after paragraph GC-9.16 which is to read as follows:

"Engineer, notwithstanding any reference to any rule, regulation or specification, will not assume any duty to provide supervision of construction methods or processes."

SC-12.2.

Amend the second sentence of paragraph GC-12.2, striking out the following words: "Abnormal Weather Conditions."

Add the following at the end of paragraph GC-12.2 "Abnormal Weather Conditions shall not be cause for an extension of contract time."

SC-12.2.1.

Delete paragraph 12.2.1 in its entirety. Inclement and abnormal weather conditions and variations in site conditions due to weather conditions shall not be cause for an extension of contract time.

SC-13.2.

Add the following new paragraph to Paragraph 13.2 of the General Conditions:

Representatives of the Kansas Department of Health and Environment shall have access to the Work wherever it is in preparation or progress and also to any books, documents, papers and records of the Contractor which are directly pertinent to that specific contract for the purpose of making audit, examinations, excerpts and transcriptions. Proper facilities and safe conditions must be provided for access and inspections, including advice regarding site safety procedures and programs to allow compliance.

SC-13.6.

Add the following new sentence to Paragraph 13.6. of the General Conditions:

Timely notice of Contractor's intent to cover shall be defined as seven calendar days.

SC-13.12.1.

Add the following new paragraph immediately after Paragraph 13.12 of the General Conditions:

Where defective work (and damage to other work resulting therefrom) has been corrected, removed, or replaced during the warranty period, the warranty period, with respect to such work, shall be extended for an additional one year after such correction or removal and replacement has been satisfactorily completed.

SC-14.1.

All references to "unit price(s)" in the Contract Documents are hereby changed to read "unit or lump sum price(s)".

SC-14.4

Replace "both" with "either".

SC-14.8.

Add the following new paragraphs to the General Conditions:

14.8.1. "Substantial Completion" The date certified by the Engineer in accordance with Section 017700 Closeout Procedures when the project has been sufficiently completed in accordance with the Contract Documents and as listed below, so that the Owner can utilize the entire project for which it is intended. Partial utilization will be required as noted on the plans and specified within the sequence of work, Section 011100. This partial utilization shall not constitute substantial completion of a portion of the total project". Substantial completion means that the facilities are completed to the point that all rehabilitation or replacement work has been completed, tested and accepted. All process equipment and piping shall be installed and operational, or temporary arrangements satisfactory to Owner shall have been made. All performance testing need not have been completed prior to the date of Substantial Completion. If all performance testing has not been satisfactorily completed, the Contractor shall provide adequate supervision onsite in case of a failure of the operating system.

Portions of the Work not essential to providing sewer service, which can be completed without interruption of service, may be completed after the Work is accepted as substantially complete, and may include the following items:

- Seeding and sodding.
- Other surface restoration.

Substantial Completion for this project shall be defined as follows:

- | | | |
|----|---|---------------|
| 1. | Complete installation of pipe rehabilitation | 100% Complete |
| 2. | Complete installation of manhole rehabilitation | 100% Complete |
| 3. | Complete installation of new manhole installation | 100% Complete |
| 4. | Complete installation of new pavement | 100% Complete |

"14.8.2. Should Engineer perform reinspection due to failure of the Work to comply with the claims of status of completion made by Contractor, Owner will compensate Engineer for such additional service and Owner will deduct the amount of such compensation from the final payment to Contractor."

SC-14.12.

Add the following new paragraphs to the General Conditions:

14.12.1. "Final Completion" The date certified by the Engineer in accordance with Section 017700 Project Closeout when the project has been totally completed in accordance with the Contract Documents. This date is established and based upon when the Contractor has completed all such previously indicated corrections to the satisfaction of the Engineer and Owner and delivered all required paperwork and documents, whose form and contents are acceptable to the Engineer and Owner, in accordance with the Contract Documents, to allow the Owner to finalize their project documentation and close out the project.

14.12.2. Consent of the Surety, signed by an agent, must be accompanied by a certified copy of such agent's authority to act for the Surety.

SC-14.13.

Revise the first sentence of Paragraph 14.13 to read:

"...Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment..."

SC-16.

Add the following new paragraphs immediately after paragraph 16.3 of the General Conditions which is to read as follows:

"16.4. The successful bidder, if not a resident of the county where the project work is to be constructed, shall appoint a Service Agent as provided in the form in these documents. Service Agent form shall be filed with the Secretary of State, Corporations Division, State Capitol, Topeka, Kansas."

"16.6. Historical/Archeological. If during the course of construction, evidence of deposits of historical or archeological interest is found, the Contractor shall cease operations affecting the find and shall notify the Owner who shall notify the Kansas Department of Health & Environment, and the Executive Director, Kansas State Historical Society, 120 West 10th, Topeka, Kansas 66612. No further disturbance of the deposits shall ensue until the Contractor has been notified by the Owner that he may proceed. The Owner will issue a notice to proceed only after the state official has surveyed the find and made a determination of value and effect and submitted such determination to the Owner. Compensation to the Contractor, if any, for lost time or changes in construction to avoid the find, shall be determined in accordance with changed conditions or change order provisions of the specifications."

"16.7. Records Access. The Contractor shall allow access by the Owner, grantee, the subgrantee, the Kansas Department of Health & Environment or any of their duly authorized representatives to

any books, documents, papers and records of the Contractor which are directly pertinent to that specific contract for the purpose of making audit, examination, excerpts, and transcriptions."

"16.8. Records Retention. The Contractor shall retain all required records for three years after Grantor or Sub-Grantees make final payments and all other pending matters are closed."

END OF SECTION

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Bartlett & West

EXHIBIT A

Duties, Responsibilities, and Limitations of Authority of Resident Project Representative

Resident Project Representative

A. ENGINEER shall furnish a Resident Project Representative (“RPR”), assistants, and other field staff to assist ENGINEER in observing progress and quality of the Work. The RPR, assistants, and other field staff under this Exhibit A may provide full time representation or may provide representation to a lesser degree.

B. Through such additional observations of Contractor’s work in progress and field checks of materials and equipment by the RPR and assistants, ENGINEER shall endeavor to provide further protection for OWNER against defects and deficiencies in the Work. However, ENGINEER shall not, during such visits or as a result of such observations of Contractor’s work in progress, supervise, direct, or have control over the Contractor’s Work nor shall ENGINEER have authority over or responsibility for the means, methods, techniques, sequences, or procedures selected by Contractor, for safety precautions and programs incident to the Contractor’s work in progress, for any failure of Contractor to comply with Laws and Regulations applicable to Contractor’s performing and furnishing the Work, or responsibility of construction for Contractor’s failure to furnish and perform the Work in accordance with the Contract Documents. In addition, the specific limitations set forth in section A.1.05 of Exhibit A of the Agreement are applicable.

C. The duties and responsibilities of the RPR are limited to those of ENGINEER in the Agreement with the OWNER and in the Contract Documents, and are further limited and described as follows:

1. *General:* RPR is ENGINEER’s agent at the Site, will act as directed by and under the supervision of ENGINEER, and will confer with ENGINEER regarding RPR’s actions. RPR’s dealings in matters pertaining to the Contractor’s work in progress shall in general be with ENGINEER and Contractor, keeping OWNER advised as necessary. RPR’s dealings with subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with OWNER with the knowledge of and under the direction of ENGINEER.
2. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample submittals, and schedule of values prepared by Contractor and consult with ENGINEER concerning acceptability.
3. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.
4. *Liaison:*
 - a. Serve as ENGINEER’s liaison with Contractor, working principally through Contractor’s superintendent and assist in understanding the intent of the Contract Documents.
 - b. Assist ENGINEER in serving as OWNER’s liaison with Contractor when Contractor’s operations affect OWNER’s on-Site operations.
 - c. Assist in obtaining from OWNER additional details or information, when required for proper execution of the Work.

5. *Interpretation of Contract Documents:* Report to ENGINEER when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by ENGINEER.
6. *Shop Drawings and Samples:*
 - a. Record date of receipt of Samples and approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor, and notify ENGINEER of availability of Samples for examination.
 - c. Advise ENGINEER and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by ENGINEER.
7. *Modifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report with RPR's recommendations to ENGINEER. Transmit to Contractor in writing decisions as issued by ENGINEER.
8. *Review of Work and Rejection of Defective Work:*
 - a. Conduct on-Site observations of Contractor's work in progress to assist ENGINEER in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to ENGINEER whenever RPR believes that any part of Contractor's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise ENGINEER of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
9. *Inspections, Tests, and System Startups:*
 - a. Consult with ENGINEER in advance of scheduled major inspections, tests, and systems startups of important phases of the Work.
 - b. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate OWNER's personnel, and that Contractor maintains adequate records thereof.
 - c. Observe, record, and report to ENGINEER appropriate details relative to the test procedures and systems startups.
 - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections, and report to ENGINEER.
10. *Records:*
 - a. Maintain at the Site orderly files for correspondence, reports of job conferences, reproductions of original Contract Documents including all Change Orders, Field Orders, Work Change Directives, Addenda, additional Drawings issued subsequent to the execution of the Contract, ENGINEER's clarifications and interpretations of the Contract Documents, progress reports, Shop Drawing and Sample submittals received from and delivered to Contractor, and other Project related documents.
 - b. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work

Change Directives, or changed conditions, Site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to ENGINEER.

- c. Record names, addresses and telephone numbers of all Contractors, subcontractors, and major suppliers of materials and equipment.
- d. Maintain records for use in preparing Project documentation.
- e. Upon completion of the Work, furnish original set of all RPR Project documentation to ENGINEER.

11. *Reports:*

- a. Furnish to ENGINEER periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.
- b. Draft and recommend to ENGINEER proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
- c. Furnish to ENGINEER and OWNER copies of all inspection, test, and system startup reports.
- d. Report immediately to ENGINEER the occurrence of any Site accidents, any Hazardous Environmental Conditions, emergencies, or acts of God endangering the Work, and property damaged by fire or other causes.

12. *Payment Requests:* Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to ENGINEER, noting particularly the relationship of the payment requested to the schedule of values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

13. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to ENGINEER for review and forwarding to OWNER prior to payment for that part of the Work.

14. *Completion:*

- a. Before ENGINEER issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.
- b. Observe whether Contractor has arranged for inspections required by Laws and Regulations, including but not limited to those to be performed by public agencies having jurisdiction over the Work.
- c. Participate in a final inspection in the company of ENGINEER, OWNER, and Contractor and prepare a final list of items to be completed or corrected.
- d. Observe whether all items on final list have been completed or corrected and make recommendations to ENGINEER concerning acceptance and issuance of the Notice of Acceptability of the Work.

D. Resident Project Representative shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including “or-equal” items).
2. Exceed limitations of ENGINEER’s authority as set forth in the Agreement or the Contract Documents.
3. Undertake any of the responsibilities of Contractor, subcontractors, suppliers, or Contractor’s superintendent.
4. Advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor’s work unless such advice or directions are specifically required by the Contract Documents.
5. Advise on, issue directions regarding, or assume control over safety precautions and programs in connection with the activities or operations of OWNER or Contractor.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by ENGINEER.
7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
8. Authorize OWNER to occupy the Project in whole or in part.

**SECTION 011100
SUMMARY OF WORK**

PART 1 GENERAL

1.01 GENERAL

- A. The work to be performed under this Contract shall consist of furnishing all equipment, materials, supplies, and manufactured articles and for furnishing all transportation and services, including fuel, power, water, and essential communications, and for the performance of all labor, work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The Work shall be complete, and all work, materials, and services not expressly shown or called for in the Contract Documents which may be necessary for the complete and proper construction of the Work in good faith shall be performed, furnished, and installed by the Contractor as though originally so specified or shown, at no increase in cost to the Owner.
- B. Wherever the Contract Documents address a third party, i.e. subcontractor, manufacturer, supplier or vendor, it is to be considered as the Contractor through a third party.
- C. Wherever a reference to number of days is noted, it shall be construed to mean calendar days.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work set forth within these bid documents includes the furnishing of all labor, materials, equipment, services and incidentals for the sanitary sewer improvements located on SW Huntoon Street in Topeka, KS and all appurtenant work, complete, tested and ready for operation, including temporary facilities as required, all in conformance with the Contract Documents.
- B. The Work is located on SW Huntoon Street, from SW Watson Avenue and SW Topeka Boulevard (as shown on the Project Drawings).
- C. Contractor's Duties (See also General Conditions):
 - 1. Except as specifically noted, provide and pay for:
 - a. Labor, materials and equipment.
 - b. Tools, construction equipment and machinery.
 - c. Water, heat and utilities required for construction.
 - d. Other facilities and services necessary for proper execution and completion of Work.
 - 2. Secure and pay for, as necessary for proper execution and completion of work, and as applicable at time of receipt of bids.
 - a. Permits (Traffic).
 - b. Government fees.
 - c. Licenses.
 - 3. Give required notices.
 - 4. Comply with codes, ordinances, rules, regulations orders and other legal requirements of public authorities which bear on performance of work.
 - 5. Enforce strict discipline and good order among employees. Contractor's employees, including subcontractors, shall meet the following minimum requirements.

- a. Superintendent: All work under the Contract shall be performed under the continuous supervision of competent personnel thoroughly experienced in the class of work specified. Prior to beginning the work, the Contractor shall give the Engineer, in writing, the name of the Contractor's official representative or superintendent for the project. The superintendent shall be capable of providing adequate supervision to the project and shall be responsible for receiving instructions, notices, and written orders from the Engineer. A change of the superintendent shall be reported to the Engineer in writing. Failure to provide adequate supervision to the project shall be grounds for the Engineer to require a change in supervision before allowing the work to proceed. The superintendent shall be responsible for reporting to the Engineer any inconsistencies, omissions, or lack of definite detail which is not covered on the plans or in the specification.
 - b. Workers: The Contractor shall employ competent and efficient workers for every kind of work. The Owner reserves the right to suspend or discharge from the work any worker, employee, agent, overseer, foreman, or superintendent in the employ of the Contractor, who in the opinion of the Engineer, shall be considered incompetent, negligent, unfaithful, insubordinate, or disorderly, and any such person shall immediately be suspended or discharged by the Contractor whenever so directed by the Engineer.
- 6. Protect existing pavement, curb and gutter from damage. All equipment used on paved surfaces shall be mounted on rubber. The use of tracked vehicles without rubber lugs is prohibited. The Contractor shall make every effort to use equipment which will not cause damage to any paved areas. Should construction equipment damage any paved surface, the Contractor shall repair it at their expense as directed by the Engineer.
 - 7. File with the City Clerk the names, phone numbers and addresses of two or more responsible persons in the Contractor's organization who are to be on call at all times.
 - 8. Contractor is responsible for holding a property owner coordination meeting in conjunction with the owner and engineer. Contractor shall provide preliminary scheduling of the work as well as notification of any impacts to access or sewer service. The contractor's on-site superintendent shall be in attendance at the meeting. Contractor shall notify property owners once the meeting has been scheduled.

1.03 CONSTRUCTION OPERATION

- A. General. Work under the Contract shall be scheduled and performed in such a manner as to result in the least possible disruption to the operation of the existing facilities and to the public's use of roadways, driveways, and utilities. Utilities shall include but not be limited to water, sewerage, drainage structures, ditches and canals, gas, television and telephone. Prior to commencing with the Work, Contractor shall perform a location investigation of existing underground utilities and facilities in accordance with Section entitled "Protection of Existing Facilities" and shall have obtained all required permits and permissions. Contractor shall also deliver written notice to property occupants (private and public) of all planned disruption to roadways, driveways, and utilities seventy-two hours in advance of disruption.
- B. All work by the Contractor that disrupts utility service shall be shown on the Construction Schedule and specifically scheduled with the Owner. Schedule notification shall consist of a written notice defining the work to be accomplished, the normal function that will be interrupted, the duration of the interruption, and the mitigating effort to be performed by the Contractor to maintain the capacity to operate continuously. The written notice shall be submitted to the Owner fourteen days in advance of the proposed work and the Owner will respond to the Contractor in writing within 7 days of receipt of the notice regarding the acceptability of the proposed plan.
- C. At no time shall the Contractor undertake to close off any pipelines, or open valves, or take any other action which would affect the operation of the existing system or facilities, except as specifically required by the Drawings and specifications, until authorization is granted by the Owner or Engineer and after proper notification.

- D. This project is not divided into separate operating parts. The Contractor may at their option and depending on their approved schedule, work on more than one task at a time in accordance with the restrictions.
 - 1. Traffic control shall be coordinated with work by others in the project area.
- E. Temporary installation/connections, may be used where sufficient time is not available to complete a particular aspect of the work. All such subject temporary installations shall be subject to review and acceptance by the Engineer.
- F. Cancellation of Planned Shutdown: A planned shutdown may be cancelled by the Owner upon a 24-hour notification by the Owner/Engineer to the Contractor. Such cancellation shall be expected due to wet weather conditions or other conditions beyond the control of the Owner, Engineer or Contractor. All efforts shall be taken to check weather forecasts and the like prior to scheduling facility shutdowns. However, if a cancellation must occur, the Owner shall not be responsible for any additional costs associated with mobilization and demobilization.
- G. The Contractor shall be responsible for providing access throughout construction. This shall include maintaining access for residents and maintaining traffic flow. Contractor is also responsible for maintaining access for mail service and the weekly pickup and removal of residential trash along the project for the duration of construction.

1.04 SEQUENCE OF CONSTRUCTION

- A. General: Within ten (10) days after the "Notice to Proceed" is issued, the Contractor, Owner and Engineer shall meet to coordinate the sequence of construction.
 - 1. The facilities will be maintained in continuous operation by the Owner during the entire construction period of this contract. Work under this Contract shall be so scheduled and coordinated by the Contractor that such work will not impede the collection system or pump station operation or cause odor or other nuisance. In performing the work shown and specified, the Contractor shall plan and schedule their work to meet the operating requirements and all additional restrictions.
 - 2. The Contractor has the option of providing additional temporary facilities that can eliminate a restraint provided it is done without added cost to the Owner and provided that all provisions of these Specifications are fulfilled. Work not specifically covered, in general, may be done at any time during the Contract period in accordance with the approved CPM subject to the facility's operating requirements outlined hereinafter and approved by the Owner in writing.
 - 3. The following sequence of construction describes simplistically, the major events required to complete the work in the preferred order of completion.
 - 4. The order of events is designed to minimize disruption to the ongoing operation of the existing treatment facility. Any proposed deviation from the schedule order must be submitted in writing to the Engineer and approved by the Engineer.
 - a. Bypass pumping systems shall be installed, approved, and fully operational prior to beginning any work for which the bypass system is required.
 - b. CIPP end seals shall be installed prior to CIPP lining
 - c. Required traffic control shall be installed, approved and fully operational prior to beginning any work for which the traffic control is required.
 - d. CIPP lining shall be completed prior to manhole rehabilitation
 - e. New manholes and point repairs shall be installed prior to CIPP lining of adjacent pipelines.
- B. Temporary Facilities. Owner personnel must have ready access at all times to all existing structures. Temporary facilities shall be any equipment, materials, controls, services and accessories temporarily needed for access to, and for protection of, all existing structures and equipment, and to maintain an operating system, all in accordance with the provisions of these Specifications.
 - 1. The size or capacity of the temporary facility shall generally be equal to the size or capacity of the facility replaced, unless otherwise indicated on the Contract Drawings or otherwise directed and approved in writing by the Owner.

2. All temporary facilities shall be removed when they are no longer required unless otherwise noted.
 3. To substitute an unscheduled temporary facility for an existing or new facility, the Contractor shall prepare and submit a plan and description of the proposed temporary facility to the Owner. Upon receipt of the written approval of the Owner, the Contractor shall then submit their notification of intent to commence work.
- C. Coordination with Owner Personnel. Before commencing work involving removing or placing in operation existing or new facilities, the Contractor shall notify the Owner at least thirty (30) days in advance in writing. The Owner shall be responsible for removing facilities from operation.
1. Only the Owner can authorize the shutdown of any portions of the facility or system. The Contractor shall, under no circumstances, interfere with any existing component without the Owner's authorization in writing.

1.05 PROGRESS SCHEDULE AND CONTRACTOR'S SEQUENCE OF WORK

- A. The general outline of the sequence of work listed in Paragraph 1.04 of this section is provided as an aid to Contractor so that Contractor may develop a definitive sequence of work and estimated progress schedule. The above sequence of work may have to be modified due to weather conditions at the time the notice to proceed is given. The Owner will require that those segments that can be installed during winter months be completed as weather permits during the winter months.
- B. Sequence of work developed by Contractor shall be considered a part of the progress schedule and shall be subject to the requirements stated in Articles 2.6.1, 6.6, 6.29, and 15.2.6 of the General Conditions.

1.06 OBSTRUCTIONS

- A. Any street signs, traffic signs, posts, mail boxes, guard fence, standards, yard lights or other similar obstructions shall be removed, properly stored and reset or salvaged to the Owner as directed by the Engineer.
- B. Pipe culverts shall be removed and reset where shown on the plans. Adjustments of this type shall be done in such a manner as to not damage the existing pipe or the existing pipe shall be replaced by new culvert of the same size and material in its entirety.
- C. Trees and shrubs that are encountered in the vicinity of the proposed facilities shall be removed only if deemed necessary by the Engineer.
- D. The Contractor shall protect existing utilities from damage.
- E. All property pins, section corners or other monuments moved and/or destroyed by the Contractor's operations shall be replaced and reset. Replacement and resetting shall be done by a professional Engineer or Surveyor paid by the Contractor at no additional cost to the Owner.

1.07 CONTRACTOR USE OF PROJECT SITE

- A. The Contractor's use of the project site shall be limited to its construction operations, including on-site storage of materials, on-site fabrication facilities, and field offices, as noted on the Contract Drawings.
- B. Do not unreasonably encumber the site with materials or equipment.
- C. The Contractor shall, at their own expense, replace or repair any sod, grass, sidewalk, curb and gutter, pavement, private property or any other improvement damaged by the Contractor's operations, that is outside the limits of construction or not listed and denoted as a specific pay item.

1.08 OWNER USE OF THE PROJECT SITE

- A. The Owner may utilize all or part of the existing facilities during the entire period of construction for the conduct of the Owner's normal operations. The Contractor shall cooperate with the Owner to minimize interference with the Contractor's operations and to facilitate the Owner's operations.

1.09 PARTIAL UTILIZATION OF THE WORK BY OWNER.

- A. The Contractor is hereby advised that the Owner may accept the responsibility for the maintenance and protection of a specific portion of the project if utilized prior to completion. However, the Contractor shall retain full responsibility for satisfactory operation of the total project.

1.10 WORK BY OTHERS

- A. The Owner may perform additional work related to the project by themselves or they may let other direct contracts which shall contain conditions similar to these. Contractor shall afford the other contractors who are parties to such direct contracts (or Owner, if they are performing the additional work themselves), reasonable opportunity for the introduction and storage of materials and equipment and the execution of the work, and shall properly coordinate, schedule and connect their work with theirs.
- B. If any part of Contractor's work depends on proper executions or results upon the work of any such other contractor (or Owner), Contractor shall inspect and promptly report to Engineer, in writing, any defects or deficiencies in such work that render it unsuitable for such proper execution and results. Their failure to so report shall constitute an acceptance of the other work as fit and proper for the relationship of their work except as to defects and deficiencies which may appear in the other work after the execution of their work.
- C. The Contractor shall do all cutting, fitting and patching of their work that may be required to make its several parts come together properly and fit it to receive or to be received by such other work. Contractor 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 the Engineer and of the other contractors whose work will be affected.
- D. If the performance of additional work by other contractors or Owner is not noted in the Contract Documents prior to the execution of the Contract, written notice thereof shall be given to Contractor prior to starting any such additional work.
- E. The work by others for this Contract involves the construction of the following work:
 - 1. Utility relocations by private utilities. Contractor to coordinate with private utilities to ensure no conflict of work between contractor and utilities. Contractor to ensure traffic control does not conflict with utility traffic control prior to traffic control being installed.
 - 2. City of Topeka alleyway projects. Contractor to coordinate with City to ensure no conflict of work between contractors. Contractor to ensure traffic control does not conflict with other traffic control prior to traffic control being installed.

1.11 PROJECT MEETINGS

- A. Preconstruction Conference: Prior to the commencement of work at the site, a preconstruction conference will be held at a mutually agreed time and place which shall be attended by the Contractor, its superintendent, and its subcontractors as appropriate. Other attendees will be:
 - 1. Engineer.
 - 2. Representatives of Owner.
 - 3. Governmental representatives as appropriate.
 - 4. Others as requested by Contractor, Owner, or Engineer.
- B. Unless previously submitted to the Engineer, the Contractor shall bring to the conference one copy each of the following:
 - 1. Preliminary schedule.
 - 2. Preliminary Shop Drawing/Sample/Substitute or "Or Equal" submittal schedule.
- C. The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include:
 - 1. Contractor's tentative schedules.
 - 2. Transmittal, review, and distribution of Contractor's submittals.
 - 3. Processing applications for payment.

4. Maintaining record documents.
 5. Critical work sequencing.
 6. Field decisions and change orders.
 7. Use of project site, office and storage areas, security, housekeeping, the Other's needs.
 8. Major equipment deliveries and priorities.
- D. The Engineer will preside at the preconstruction conference and will arrange for keeping the minutes and distributing the minutes to all persons in attendance.
- E. Progress Meetings: The Engineer shall schedule and hold regular on-site progress meetings at least bi-weekly and at other times as requested by Engineer. The Contractor, Engineer, and all subcontractors active on the site shall be represented at each meeting. Contractor may at its discretion request attendance by representatives of its suppliers, manufacturers, and other subcontractors. At a minimum, the Contractors Superintendent shall be present at each meeting. The Contractor's Project Manager shall be required to attend the meetings if so requested by the Engineer.
- F. The Engineer shall preside at the meetings and provide for keeping and distribution of the minutes. The purpose of the meetings will be to review the progress of the Work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems, which may develop.

1.12 PERMITS

- A. It shall be the Contractor's responsibility to secure all permits of every description required to initiate and complete the work under this contract, except permits obtained by the Owner.
- B. No separate or direct payment will be made to the Contractor for permits and inspection requirements, but all such costs shall be included in the applicable items in the Schedule of Payment Items. The Owner will furnish signed and sealed sets of contract documents for permit use as required.
- C. The Contractor shall furnish to the Engineer copies of all permits prior to commencement of work requiring permits.

1.13 SUBSURFACE CONDITIONS

- A. The Contractor acknowledges that they have, prior to executing the Contract, investigated and satisfied themselves as to the conditions affecting the Work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, tides, water tables or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the Work. The Contractor further acknowledges that they have satisfied themselves as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, or any contiguous site, as well as from information presented by the Drawings and Specifications made a part of this Contract, or any other information made available to them prior to executing the Contract. Any failure by the Contractor to acquaint themselves with the available information will not relieve them from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner or Engineer.

1.14 DIFFERING SITE CONDITIONS

- A. The Contractor shall promptly and before such conditions are disturbed, notify the Engineer in writing within 48 hours: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for this contract. The Engineer will promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the work under this contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the contract modified in writing accordingly.
- B. No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required in Paragraph A.
- C. No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract.

1.15 DIMENSIONS OF EXISTING STRUCTURES

- A. Where the dimensions and locations of existing structures are of critical importance in the installation or connection of new work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any materials or equipment which is dependent on the correctness of such information.

1.16 CONSTRUCTION LAYOUT

- A. All Work under this Contract shall be constructed in accordance with the lines and grades shown on the Contract Drawings or as directed by the Engineer. Elevation of existing ground, structures and appurtenances are believed to be reasonably correct, but are not guaranteed to be absolute and therefore are presented only as an approximation. Any error or apparent discrepancy in the data shown or omissions of data required for accurately accomplishing the stakeout survey shall be referred immediately to the Engineer for interpretation or correction.
- B. All survey work for construction control purposes shall be made by the Contractor at their expense.
- C. The Contractor shall employ a Land Surveyor registered in the State of Kansas and acceptable to the Engineer. The Contractor shall locate and protect survey control and reference points.
- D. The Contractor shall establish all base lines for the location of the principal component parts of the Work, including bench-marks. Based upon the information provided by the Drawings, the Contractor shall develop and make all detail surveys necessary for construction.
- E. The Contractor shall have the responsibility to carefully preserve the benchmarks, reference points, stakes, property pins, and all other survey location items. In case of destruction thereof by the Contractor or resulting from their negligence, he shall be held liable for any expense and damage resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench-marks, reference points and stakes.
- F. Existing or new control points, property markers, and monuments that will be established or are destroyed during the normal causes of construction shall be reestablished by the Contractor; all reference ties recorded therefore shall be furnished to the Engineer. All computations necessary to establish the exact position of the Work shall be made and preserved by the Contractor.
- G. Submit a copy of registered site drawings and certificate signed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 011100

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**SECTION 011419
USE OF SITE**

PART 1 GENERAL

1.01 REGULATIONS

- A. Confine operations at site to areas permitted by:
 - 1. Law
 - 2. Ordinances
 - 3. Permits
 - 4. Contract Documents
 - 5. Areas authorized or approved by the Owner.

1.02 LOCATION

- A. Limit use of site for work and storage to within street right of ways and easements as indicated on the drawings and as directed by the Owner's representative.
- B. The Contractor at their option may negotiate and pay for additional temporary easements from landowners as may be required for their construction operations. Copies of written agreement between the Contractor and landowner shall be provided to the Engineer.

1.03 USE OF PREMISES

- A. Do not unreasonably encumber site with materials or equipment.
- B. Assume full responsibility for protection and safe keeping of products stored on premises. Products stored along the route of the interceptor sewer rehabilitation shall be stored in such a manner to prevent injury to children and residents that may come in contact with the pipe, manholes or other construction equipment. No materials will be allowed to be stacked on top of one another that could inadvertently be dislodged by children climbing on the materials.
- C. The Contractor shall note the location of water meters and fire hydrants along the route of the improvements and shall maintain clear access to both at all times. Fire hydrants that are inadvertently damaged during construction shall be reported immediately to the Water Division and the Fire Department.

1.04 DAMAGE TO PREMISES

- A. Contractor shall, at their own expense, replace or repair any sod, sidewalk, curb and gutter or street and private property not listed as a pay item that is damaged by the Contractor's operations. All equipment used on paved surfaces shall be mounted on rubber. The use of tracked vehicles without rubber lugs is prohibited. At locations where use of half of street for construction work is allowed, earth may be spread over that portion of the area to allow the movement of construction equipment.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 011419

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**SECTION 012000
MEASUREMENT AND PAYMENT**

PART 1 GENERAL

1.01 METHODS OF MEASUREMENTS AND BASIS FOR PAYMENTS

- A. All work to be performed under this contract shall be paid for at the lump sum or unit prices stated in the Bid Form. Unit price payments will be based upon the measurement of actual quantities furnished and installed in accordance with the Contract Documents and accepted by the Engineer. Lump sum payments will be based upon completed and accepted items in accordance with its description in this section and as related to the work specified and as shown on the Drawings.
- B. Payment for the items set forth herein, as further specified herein, shall include full compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, mobilization and demobilization, utilities, coordination, taxes, materials, commissions, transportation and handling, traffic control, barricades, signs, lights, and other traffic control devices, bonds, permit fees, insurance, overhead and profit, incidentals appurtenant to the items of work being described and performing all operations as necessary to complete the various items of the work all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). Such compensation shall also include payment for any loss or damages arising directly or indirectly from the work, or from any discrepancies between the actual quantities of work and those shown in the Contract Documents, or from any unforeseen difficulties, which may be encountered during the prosecution of the work until the final acceptance by the Owner. Any material, equipment or operation not specifically mentioned shall be considered to be incidental to the lump sum or unit prices. Final payment will only be made for completed and accepted work.
- C. The Contractor's attention is called to the fact that the contract prices set forth in the bid form establish the total price for completing the work in its entirety. Should the Contractor feel that the cost of any item of work has not been established by the Schedule of Payment Items or this Section they shall include the cost for that work in some other bid item, so that their proposal for the project does reflect their total price for completing the work in its entirety.

1.02 CASH ALLOWANCES

- A. Costs Included in Cash Allowances: Cost of product to Contractor or Subcontractor, less applicable trade discounts.
- B. Costs Not Included in Cash Allowances But Included in Contract Sum/Price: Product, delivery to site and handling at site, including unloading, uncrating, and storage, protection of products from elements and from damage, and labor for installation and finishing and appurtenances and accessories required to properly install the products.

1.03 MEASUREMENT

- A. The quantities for unit price payment under this Contract shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the Engineer. Lump sum item payment under this Contract shall be in accordance with the Schedule of Payment Items as described in the Submittals Section, unless otherwise specified. A representative of the Contractor shall witness all field measurements.

1.04 PAYMENT ITEMS

- A. Abandon Manhole in Place - Bid Item No. 1:
 - 1. Measurement will be by each manhole that is abandoned, completed and accepted.

2. Payment will be made at the contract unit price per manhole abandoned, completed and accepted, which price shall include excavation, pavement and sidewalk removal and replacement, flowable fill backfill, structure modifications and backfill, and compaction, plugging, testing, labor, equipment, and incidentals.
- B. Point Repair - Bid Item No. 2
1. Measurement will be by each point repair of section of pipe, completed and accepted.
 2. Payment will be made at the contract unit price per point repair, completed and accepted, which price shall include all labor, materials, equipment, excavation, pavement and sidewalk removal and replacement, compaction, plugging, testing, and all incidental work required to complete the point repair as detailed and specified.
- C. Bypass Pumping - Bid Item No. 3:
1. Measurement shall be made at the lump sum for the bypass pumping setups required for the projects, completed and accepted.
 2. Payment will be made at the lump sum contract price for all of the bypass pumping setups which price shall include furnishing and installing, operating, and removing all pumps, piping, controls, fuel, and other appurtenances and incidentals necessary to bypass flows past the project location.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 012000

**SECTION 013300
SUBMITTALS**

PART 1 GENERAL

1.01 THE REQUIREMENT

- A. This section specifies the means of all submittals. All submittals, whether their final destination is to the Owner, Engineer, architect, electrical engineer, landscape architect or other representative of the Owner, shall be submitted to the Engineer. A general summary of the types of submittals and the number of copies required is as follows:

<u>Copies to Engineer</u>	<u>Types of Submittal</u>	<u>Submittal Format</u>
1	Construction schedule	PDF, Excel or other readable scheduling file format
1	Schedule of payment items	PDF or Excel
3	Audio-visual record	.mp4 or other media file format
1	Progress estimates	PDF or Excel
1	Shop drawings	PDF
2	Product samples	As specified
1	Record drawings	PDF
1	Certificates of compliance	PDF
1	Warranties	PDF

1.02 SUBMITTAL PROCEDURES

- A. Transmit each submittal with a form acceptable to the Engineer, clearly identifying the project Contractor, the enclosed material and other pertinent information specified in other parts of this section. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- B. Revise and resubmit submittals as required, identify all changes made since previous submittals. Resubmittals shall be noted as such.
- C. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.03 CONSTRUCTION SCHEDULE

- A. The construction schedule shall be prepared in the form of a horizontal bar chart showing in detail the proposed sequence of the work and identifying construction activities for each major component, structure or facility. The schedule shall be time scaled, identifying the first day of each week, with the estimated date of starting and completion of each stage of the work in order to complete the project within the Contract time. An electronic copy of the schedule shall be submitted ten calendar days before the date of the Notice to Proceed or Pre-Construction meeting, whichever comes first.
- B. The construction schedule shall be revised to reflect comments by the Owner and Engineer and updated monthly, depicting progress to the last day of the month. Six copies shall be submitted with each request for monthly progress payment.
- C. Changes to the schedule shall be accompanied by a letter of explanation with appropriate reference and revision date on the schedule.
- D. The Contractor shall maintain the work progress in accordance with the accepted schedule and shall take whatever steps necessary to maintain the overall project schedule and unless specifically authorized in writing by the Engineer, any individual component of the schedule.

1.04 SCHEDULE OF PAYMENT ITEMS

- A. The Contractor shall submit a Schedule of Payment Items for review ten calendar days before the date of the Notice to Proceed or Pre-Construction meeting, whichever comes first. The schedule shall contain the installed value of the component parts of Work for the purpose of making progress payments during the construction period.
- B. The schedule shall be given in sufficient detail for the proper identification of Work accomplished. Each item shall include its proportional share of all costs, including the Contractor's overhead, contingencies and profit. The sum of all scheduled items shall equal the total value of the Contract.
- C. No payment will be made for materials stored on the project site.
- D. The Contractor shall expand or modify the above schedule as required by the Engineer's initial or subsequent reviews.

1.05 PROGRESS ESTIMATES

- A. Progress estimates shall be submitted in accordance with the General Conditions and shall be accompanied by the revised Construction Schedule.

1.06 SHOP DRAWINGS

- A. General: The Contractor shall submit for review shop drawings for all equipment, fabricated items and materials, materials and equipment fabricated especially for this Contract, and materials and equipment for which such Drawings are specified or specifically requested by the Engineer.
- B. Shop drawings shall show performance characteristics, the principal dimensions, weight, structural and operating features, space required, clearances, dimensions needed for installation and correlation with other equipment and materials, external connections, anchorages, supports required, type and/or brand of finish or shop coat, grease fittings, etc. depending on the subject of the Drawings.
- C. When so specified, or if considered by the Engineer to be acceptable, the manufacturer's specifications, catalog data, descriptive matter, illustrations, etc. may be submitted for review in place of shop drawings. In such case, the requirements shall be as specified for shop drawings, insofar as applicable.
- D. The Contractor shall be responsible for the prompt submittal of all shop drawings so that there shall be no delay to the Work due to the absence of such Drawings. The Engineer will review the shop drawings within 21 calendar days of receipt of such Drawings. This review time will commence starting the next working day following receipt of the shop drawing. Reviewed shop drawings will be returned to the Contractor by regular mail, posted no later than 21 days after receipt.
- E. Time delays caused by rejection of submittals are not cause for extra charges to the Owner or time extensions.
- F. Shop drawings received directly from suppliers or subcontractors will be returned without action.
- G. All shop drawings shall be submitted to the Engineer through the Contractor. The Contractor is responsible for obtaining shop drawings from their subcontractors and returning reviewed Drawings to them. All shop drawings shall be prepared on standard size, 24-inch by 36-inch sheets, or smaller.
- H. Each submittal shall include a statement prepared by the originator of the drawings and data, certifying compliance with the Contract Documents except for deviations which are specifically identified.

- I. All deviations from the Contract Documents shall be identified on each submittal and shall be tabulated in Contractor's letter of transmittal. Such submittals shall, as pertinent to the deviation, indicate essential details of all changes proposed by Contractor (including modifications to other facilities that may be a result of the deviation) and all required piping and wiring diagrams.
- J. Accompany submittals with transmittal letter, in duplicate, containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.
 - 4. The number of each shop drawing, project datum and sample submitted.
 - 5. Notification of deviations from Contract Documents.
 - 6. Other pertinent data.
- K. Submittals shall include:
 - 1. Date and revision dates.
 - 2. Project title and number.
 - 3. The names of:
 - a. Engineer
 - b. Contractor
 - c. Subcontractor
 - d. Supplier
 - e. Manufacturer
 - f. Separate detailer when pertinent.
 - 4. Identification of product or material.
 - 5. Relation to adjacent structure or materials.
 - 6. Field dimensions, clearly identified as such.
 - 7. Specification section number.
 - 8. Applicable standards, such as ASTM number or Federal Specification.
 - 9. A blank space, 4 inch x 3 inch, for the Engineer's stamp.
 - 10. Identification of deviations from Contract Documents.
 - 11. Contractor's stamp, initialed or signed, certifying review of submittal, verification of field measurements and compliance with Contract Documents.
- L. Product Data:
 - 1. Where manufacturer's publications in the form of catalogs, brochures, illustrations, or other data sheets are submitted in lieu of prepared shop drawings, such submission shall specifically indicate the particular item offered. Identification of such items and relative pertinent information shall be made with indelible ink. Submissions showing only general information will not be accepted.
 - 2. Manufacturer's standard schematic drawings:
 - a. Modify drawings to delete information which is not applicable to project.
 - b. Supplement standard information to provide additional information applicable to project.
 - 3. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data:
 - a. Clearly mark each copy to identify pertinent materials, products or models.
 - b. Show dimensions and clearances required.
 - c. Show performance characteristics and capacities.
- M. Product data shall include materials of construction, dimensions, performance characteristics, capacities, wiring diagrams, piping and controls, etc.
- N. Sample Warranties: When warranties are called for, a sample of the warranty shall be submitted with the shop drawings. The sample warranty shall be the same form that will be used for the actual warranty.

- O. Work Prior to Review: No material or equipment shall be purchased, fabricated especially for this Contract, or delivered to the project site until the required shop drawings have been submitted, processed and marked either "RESUBMITTAL IS NOT REQUIRED" or "MAKE CORRECTIONS NOTED." All materials and Work involved in the construction shall be as represented by said Drawings.
- P. The Contractor shall not proceed with any portion of the Work (such as the construction of foundations) for which the design and details are dependent upon the design and details of equipment for which submittal review has not been completed.
- Q. Contractor's Review: Only submittals that have been checked and corrected should be submitted to the Contractor by their subcontractors and vendors. Prior to submitting shop drawings to the Engineer, the Contractor shall check thoroughly all such Drawings to satisfy themselves that the subject matter thereof conforms to the Drawings and Specifications in all respects. Drawings that are correct shall be marked with the date, checker's name and indications of the Contractor's approval, and then shall be submitted to the Engineer. Other Drawings submitted to the Engineer will be returned to the Contractor unreviewed.
- R. Contractor's Modifications: For submissions containing departures from the Contract Documents, the Contractor shall include proper explanation in their letter of transmittal. Should the Contractor submit for review equipment that requires modifications to the structures, piping, layout, etc. detailed on the Drawings, they shall also submit for review details for the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do all Work necessary to make such modifications.
- S. Substitutions: Whenever a particular brand or make of material, equipment, or other item is specified, or is indicated on the Drawings, it is for the purpose of establishing a standard of quality, design, and type desired and to supplement the detailed specifications. Any other brand or make which, in the opinion of the Engineer, is equivalent to that specified or indicated may be offered as a substitute subject to the following provisions:
 - 1. Contractor shall submit for each proposed substitution sufficient details, complete descriptive literature, and performance data together with samples of the materials, where feasible, to enable the Engineer to determine if the proposed substitution is equal.
 - 2. Contractor shall submit certified tests, where applicable, by an independent laboratory attesting that the proposed substitution is equal.
 - 3. A list of installations where the proposed substitution is equal.
 - 4. Where the acceptance of a substitution requires revision or redesign of any part of the Work, all such revision and redesign, and all new Drawings and details required therefore, shall be provided by the Contractor at their own cost and expense, and shall be subject to review of the Engineer.
 - 5. In all cases, the Engineer shall be the sole judge as to whether a proposed substitution is to be accepted. The Contractor shall abide by the Engineer's decision when proposed substitute items are judged to be unacceptable and shall in such instances furnish the item, or substitute, as specified. No substitute items shall be used in the Work without written acceptance of the Engineer.
 - 6. Acceptance of any proposed substitution shall in no way release the Contractor from any of the provisions of the Contract Documents.
- T. Complete Submittals: Each submittal shall be complete in all aspects incorporating all information and data required to evaluate the products' compliance with the Contract Documents. Partial or incomplete submissions shall be returned to the Contractor without review.
- U. Shop Drawing Distribution: The Contractor shall submit electronic copies of all shop drawings to the Engineer for review. Shop drawings will be reviewed, stamped and distributed with the appropriate box checked either "RESUBMITTAL IS NOT REQUIRED," "MAKE CORRECTIONS NOTED" or "REVISE AND RESUBMIT." The Contractor shall distribute the processed shop drawings.

- V. If the Contractor requires additional copies of returned shop drawings, they shall include extra Drawings in their original submittal. The Engineer will process the Drawings and return them to the Contractor.

1.07 PRODUCT SAMPLES

- A. Contractor shall furnish for review all product samples as required by the Contract Documents or requested by the Engineer to determine compliance with the specifications.
- B. Samples shall be of sufficient size or quantity to clearly illustrate the quality, type, range of color, finish or texture and shall be properly labeled to show complete project identification, the nature of the material, trade name of manufacturer and location of the Work where the material represented by the sample will be used.
- C. Samples shall be checked by the Contractor for conformance to the Contract Documents before being submitted to the Engineer and shall bear the Contractor's stamp certifying that they have been so checked. Transportation charges on samples submitted to the Engineer shall be prepaid by the Contractor.
- D. Engineer's review will be for compliance with the Contract Documents, and their comments will be transmitted to the Contractor with reasonable promptness.
- E. Acceptable samples will establish the standards by which the completed Work will be judged.

1.08 CONTRACTOR RESPONSIBILITIES

- A. Contractor responsibilities for submittals are defined in the General and Supplementary Conditions.
- B. Contractor's Responsibility: The review of shop drawings will be general and shall not relieve the Contractor of the responsibility for details of design, dimensions, etc. necessary for proper fitting and construction of the Work required by the Contract and to achieve the specified performance.
- C. Review shop drawings, project data and samples prior to submission. Submittals not bearing the Contractor's certification that they have reviewed, checked and approved the shop drawings and that they are in conformance with the requirements of the Contract Documents will be returned without action by Engineer.
- D. Contractor's stamp or approval is a representation to Owner and Engineer that Contractor accepts full responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, and that they have reviewed or coordinated each submittal with the requirements of the Work and the Contract Documents.
- E. Contractor shall accept full responsibility for the completeness of each submission, including the identification of all deviations from the Contract Documents on each submittal and in the Contractor's letter of transmittal. In addition, in the case of a resubmission, Contractor shall verify that all exceptions previously noted by Engineer have been taken into account. In the event that more than one resubmission is required because of failure of Contractor to account for exceptions previously noted, Contractor shall reimburse Owner for the charges of Engineer for review of the additional resubmissions.
- F. After Engineer's review, distribute copies.

1.09 CERTIFICATES OF COMPLIANCE

- A. Certificate of Compliance: Prior to the use or installation of any material, appliance or equipment in the work, and if requested by the Engineer, the Contractor shall furnish the Engineer a notarized affidavit certifying that the material, appliance or equipment conforms to the requirements of the specifications for this project. The certificate of compliance shall be accompanied by certified test reports from the manufacturer, mill or an approved commercial testing laboratory. Copies of certificates of compliance and test reports shall be submitted for requested items to the Engineer prior to request for payment.

1.10 WARRANTIES

- A. Original warranties, called for in the Contract Documents, shall be submitted to the Owner through the Engineer. When warranties are required for an item, warranty shall be submitted prior to request for payment of that item.
- B. When warranties are requested, a sample of the warranty to be provided shall be submitted with, and considered part of, the shop drawings.

1.11 RESUBMISSION REQUIREMENTS

- A. Resubmittals shall be made within 30 days of the date of the letter returning the material to be modified or corrected, unless within 14 days Contractor submits an acceptable request for an extension of the stipulated time period, listing the reasons the resubmittal cannot be completed within that time.
- B. Shop Drawings:
 - 1. Revise initial drawings as required and resubmit for initial submittal.
 - 2. Indicate on drawings any changes which have been made other than those requested by Engineer.
- C. Project Data and Samples. Submit new data and samples as required for initial submittal.
- D. Contractor's letter of resubmittal shall list the date of their original submittal letter, the date of the Engineer's letter returning the submittal, and the dates of submission and return of any previous resubmittals.
- E. When the drawings and data are returned marked "REJECTED" or "REVISE AND RESUBMIT", the corrections shall be made as noted thereon and as instructed by Engineer and five corrected copies submitted.
- F. When corrected copies are resubmitted, Contractor shall in writing direct specific attention to all revisions and shall list separately any revisions made other than those called for by Engineer on previous submissions.
- G. The Engineer shall review the initial submittal and one resubmittal or submittal of additional information, if required, of a shop drawing. Subsequent reviews by the Engineer shall be paid for by the Contractor. The Engineer shall invoice the Owner for all costs incurred by providing any and all subsequent shop drawing reviews. The Owner shall deduct these costs from the Contractor's monthly payment request.
- H. Any need for more than one resubmission, or any other delay in obtaining Engineer's review of submittals, will not entitle Contractor to extension on the Contract Time unless delay of the Work is directly caused by a change in the Work authorized by a Change Order or by failure of Engineer to review any submittal within the submittal review period set forth herein and to return this submittal to Contractor.

1.12 ENGINEER'S REVIEW

- A. Engineer's submittal review period shall be 21 consecutive calendar days in length and shall commence on the first work day (Monday through Friday) immediately following the date or arrival of the submittal or resubmittal in Engineer's office. The time required to mail the submittal or resubmittal back to Contractor shall not be considered a part of the submittal review period.
- B. Engineer's review of drawings and data submitted by Contractor will cover only general conformity to the Drawings and Specifications, external connections, and dimensions which affect the layout. Engineer's review does not indicate a thorough review of all dimensions, quantities, and details of the material, equipment, device, or item shown. Engineer's review of submittals shall not relieve Contractor from responsibility for errors, omissions, or deviations, nor responsibility for compliance with the Contract Documents.

1.13 RECORD DRAWINGS

- A. The Contractor shall keep and maintain, at the job site, one record set of Drawings. On these, it shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the details represented on the original Contract Drawings, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Drawings. Said record drawings shall be supplemented by detailed sketches as necessary or directed to indicate, fully, the Work as actually constructed. These master record drawings of the Contractor's representation of as-built conditions, including all revisions made necessary by addenda and change orders shall be maintained up-to-date during the progress of the Work.
- B. The record drawings shall be received on the 20th working day of every third month after the month in which the notice to proceed is given as well as on completion of Work. Failure to maintain the record drawings up-to-date shall be grounds of withholding monthly progress payments until such time as the record drawings are brought up-to-date.
- C. In the case of those drawings which depict the detail requirement for equipment to be assembled and wired in the factory, such as motor control centers and the like, the record drawing shall be updated by indicating those portions which are superseded by change order drawings or final shop drawings, and by including appropriate reference information describing the change orders by number and the shop drawings by manufacturer, drawing, and revision numbers.
- D. Record drawings shall be accessible to the Engineer at all times during the construction period.
- E. Final payment will not be acted upon until the Contractor-prepared record drawings have been delivered to the Engineer. Said up-to-date record drawings shall be in the form of a set of prints with carefully plotted information overlaid in pencil.
- F. Upon substantial completion of the Work and prior to final acceptance, the Contractor shall finalize the deliver a complete set of record drawings to the Engineer for transmittal to the Owner, conforming to the construction records of the Contractor. This set of drawings shall consist of corrected drawings showing the reported location of the Work. The information submitted by the Contractor and incorporated in the Record Drawings will be assumed to be correct, and the Engineer will not be responsible for the accuracy of such information, and for any errors or omissions which may appear on the Record Drawings as a result.
- G. The information submitted by the Contractor in the record drawings shall be certified by a land surveyor registered in the State of Kansas.
- H. The record drawings shall show the exact location of all structures and all mains within the right-of-way or easement, size and type of material of mains, all deflection points (vertical and horizontal), top pipe elevations and stationing at 100-foot increments, and exact dimensions and locations of all fittings and valves.

1.14 AUDIO-VISUAL PRECONSTRUCTION RECORD

- A. General
 - 1. Prior to the start of any on-site construction activities, the Contractor shall have a continuous color audio-video recording taken along the entire length of the Project to serve as a record of preconstruction conditions. No construction shall begin prior to review and acceptance of the recording covering the construction area by the Engineer. The Engineer shall have the authority to reject all or any portion of the video not conforming to the specifications and order that it be redone at no additional charge. The Contractor shall reschedule unacceptable coverage within five days after being notified. The Engineer shall designate those areas, if any, to be omitted from or added to the audio-video coverage. Recordings shall not be more than ninety days prior to construction in any area. All videos and written records shall become property of the Owner.

- B. The Contractor shall engage the services of a professional electrographer. A responsible commercial firm known to be skilled and regularly engaged in the business of preconstruction color audio-video documentation shall prepare the color audio-video files. The electrographer shall furnish to the Engineer a list of all equipment to be used for the audio-video recording, i.e., manufacturer's name, model number, specifications and other pertinent information. Additional information to be furnished by the electrographer is the names and addresses of two references that the electrographer has performed color audio-video recording for on projects of a similar nature within the last twelve months.
- C. Equipment
 - 1. All equipment, accessories, materials and labor to perform this service shall be furnished by the Contractor and shall be media file format.
- D. The total audio-video system shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls or any other form of imperfection. The audio portion of the recording shall reproduce the commentary of the camera operator with proper volume, clarity and be free from distortion and interruptions.
- E. When conventional wheeled vehicles are used, the distance from the camera lens to the ground shall not be less than twelve feet. In some instances, audio-video tape coverage may be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance acceptable to the Engineer.
- F. The color video camera used in the recording system shall have a resolution of 4k, a luminance signal to noise ratio of 45 dB and a minimum illumination requirement of twenty-five foot-candles.
- G. Recorded Information - Audio: Each media file shall begin with the current date, project number and municipality and be followed by the general location; i.e., name of street, house address, viewing side and direction of progress. The audio track shall consist of an original live recording. The recording shall contain the narrative commentary of the electrographer, recorded simultaneously with their fixed elevation video record of the zone of influence of construction.
- H. Recorded Information - Video
 - 1. All video recordings must, by electronic means, display continuously and simultaneously, generated with the actual videoing, transparent digital information to include the date and time of recording. The date information shall contain the month, day, and year. The time information shall contain the hours and minutes. Additional information shall be displayed or verbally provided periodically. Such information shall include, but not be limited to, the project name and contract number. Supplemental information including, but not be limited to, the name of street, house address, direction of travel and the viewing side shall be verbally indicated at the beginning of that section of tape.
- I. All recording shall be done during times of good visibility. No recording shall be done during precipitation, mist, or fog or more than 10% snow coverage on the ground. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects or recordings and to produce bright, sharp video recordings of those subjects.
- J. The rate of speed in the general direction of travel of the vehicle used during taping shall not exceed forty-four feet per minute. Panning, zoom-in and zoom-out rates shall be sufficiently controlled to maintain a clear view of the object.
- K. Video coverage shall include all surface features located within the zone of influence of construction supported by appropriate audio coverage. Such coverage shall include, but not be limited to, existing driveways, sidewalks, curbs, pavements, ditches, mailboxes, landscaping, culverts, fences, signs and headwalls within the area covered.
- L. Traveled routes on private property to be used to access the project site shall be included in the preconstruction video survey.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 013300

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**SECTION 014126
PERMITS**

PART 1 GENERAL

1.01 REQUIREMENTS

- A. It shall be the Contractor's responsibility to secure all permits of every description required to initiate and complete the work under this contract, except permits obtained by the Owner. The Contractor shall be responsible for complying with all permit and approval requirements including Owner obtained.
- B. No separate or direct payment will be made to the Contractor for permits and inspection requirements, but all such costs shall be included in the applicable items in the Schedule of Prices. The Owner will furnish signed and sealed sets of Contract Documents for permit use as required.
- C. Expected permits include:
 - 1. City of Topeka Traffic Disruption Permit(s)
- D. The Contractor shall furnish to the Engineer copies of all permits and/or agreements prior to commencement of work requiring permits.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 014126

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**SECTION 014219
REFERENCE STANDARDS**

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Titles of Sections and Paragraphs
 - 1. Captions accompanying specification sections and paragraphs are for convenience of reference only, and do not form a part of the Specifications.
- B. Applicable Publications
 - 1. Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date of the Notice to Proceed, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of, or omission from, said standards or requirements.
- C. Specialists, Assignments
 - 1. In certain instances, Specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the Work; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of contract requirements remains with the Contractor.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of other requirements of the specifications, all work specified herein shall conform to or exceed the requirements of all applicable codes and the applicable requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of these Specifications nor the applicable codes.
- B. References herein to "Building Code" or UBC shall mean the Uniform Building Code. The latest edition of the code as approved and used by the local agency as of the date of award, as adopted by the agency having jurisdiction, shall apply to the Work herein, including all addenda, modifications, amendment, or other lawful changes thereto.
- C. In case of conflict between codes, reference standards, Drawings and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the Engineer for clarification and directions prior to ordering or providing any materials or labor. The Contractor shall follow the most stringent requirements.
- D. Applicable Standard Specifications
 - 1. The Contractor shall construct the Work specified herein in accordance with the requirements of the Contract Documents and the referenced portion of those referenced codes, standards, and Specifications listed herein.
- E. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.
- F. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

1.03 ABBREVIATIONS AND SYMBOLS

Abbreviations used in the Contract Documents are defined as follows:

AABC Associated Air Balance Council
AAMA Architectural Aluminum Manufacturers Assoc.
ASSHTO American Association of State Highway and Transportation
Officials
ACI American Concrete Institute
ACPA American Concrete Pipe Association
AFBMA Antifriction Bearing Manufacturers Assoc.
AGA American Gas Association
AGMA American Gear Manufacturers Association
AHDGA American Hot Dip Galvanizers Association
AI Asphalt Institute
AIA American Institute of Architects
AISC American Institute of Steel Construction
AISI American Iron and Steel Institute
AITC American Institute of Timber Construction
AMCA Air Moving and Conditioning Association
ANSI American National Standards Institute
APA American Plywood Association
API American Petroleum Institute
APHA American Public Health Association
APWA American Public Works Association
ARI Air Conditioning and Refrigeration Institute
ASA Acoustical Society of America
ASAE American Society of Agriculture Engineers
ASCE American Society of Civil Engineers
ASHRAE American Society of Heating, Refrigerating and Air Conditioning
Engineers
ASLE American Society of Lubricating Engineers
ASME American Society of Mechanical Engineers
ASMM Architectural Sheet Metal Manual
ASSE American Society of Sanitary Engineering
ASTM American Society for Testing and Materials
AWG American Wire gauge
AWPA American Wood Preservers Association
APWI American Wood Preservers Institute
AWS American Welding Society
AWWA American Water Works Association
BHMA Builders Hardware Manufacturers Association
CEMA Conveyor Equipment Manufacturers Association
CISPI Cast Iron Soil Pipe Institute
CMA Concrete Masonry Association
CRSI Concrete Reinforcing Steel Institute
CS Commercial Standard
DHI Door and Hardware Institute
DIPRA Ductile Iron Pipe Research Association
EIA Electronic Industries Association
ETL Electronic Test Laboratories
FS Federal Specifications
FGMA Flat Glass Marketing Association
FM Factory Mutual

IBBM Iron Body, Bronze Mounted
IEEE Institute Electrical and Electronics Engineers
IES Illuminating Engineering Society
IFI Industrial Fasteners Institute
IPCEA Insulated Power Cable Engineers Association
IPS Iron Pipe Size
ISA Instrument Society of America
ISO International Organization for Standardization
MBMA Metal Roofing Systems Design Manual; 2021
MIL Military Specification
MTI Marine Testing Institute
NAAMM National Association of Architectural Metals Manufacturers
NACE National Association of Corrosion Engineers
NBHA National Builder's Hardware Association
NBS National Bureau of Standards
NEBB National Environmental Balancing Bureau
NEC National Electrical Code
NEMA National Electrical Manufacturers Association
NFPA National Fire Protection Association
NIST National Institute of Standards and Technology
NPT National Pipe Thread
NRCA National Roofing Contractors Association
OSHA Occupational Safety and Health Administration
PCA Portland Cement Association
PCI Prestressed Concrete Institute
PS Product Standard
SAE Society of Automotive Engineers
SCPRF Structural Clay Products Research Foundation
SMACNA Sheet Metal and Air Conditioning Contractors National Association
SPI Society of the Plastics Industry
SSPC Steel Structures Painting Council
SSPWC Standard Specifications for Public Works Construction
UBC Uniform Building Code
UL Underwriters' Laboratories
USBR U.S. Bureau of Reclamation
WRI Manual of Standard Practice for Welded Wire Fabric

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 014219

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**SECTION 014500
QUALITY CONTROL**

PART 1 GENERAL

1.01 QUALITY ASSURANCE

- A. Quality
 - 1. All materials and equipment shall be new and correctly designed and shall conform to the requirements of Sections entitled "Reference Standards" and "Product Requirements". They shall be standard first-grade quality produced by expert workers and be intended for the use for which they are offered. Materials or equipment which, in the opinion of the Engineer, are inferior or of a lower grade than indicated, specified or required will not be acceptable.
- B. Source Limitations
 - 1. To the greatest extent possible for each unit of Work, the Contractor shall provide products, materials, or equipment of a singular generic kind from a single source.
- C. Compatibility of Options
 - 1. Where more than one choice is available as options for Contractor's selection of a product, material, or equipment, the Contractor shall select an option which is compatible with other products, materials, or equipment already selected. Compatibility is a basic general requirement of product/material selections.
- D. Uniform Finish
 - 1. A uniform finish shall be used for all hardware, metallic nameplates and similar exposed metal parts used on any equipment or group of equipment and, as far as possible, the same finish shall be used for all such equipment items.

1.02 PRODUCT EVALUATION

- A. At the Owner's discretion, the Owner will employ and pay for the services of an independent testing laboratory for testing. Testing shall be as specified by the Engineer.
- B. The work or actions of the testing laboratory shall in no way relieve the Contractor of his obligations under the Contract. The laboratory testing work will include such inspections and testing required by the Contract Documents, existing laws, codes, ordinances, etc. The testing laboratory will have no authority to change the requirements of the Contract Documents, nor perform, accept or approve any of the Contractor's Work.
- C. The Contractor shall allow the Engineer ample time and opportunity for evaluation and testing of materials and equipment to be used in the Work. The Contractor shall advise the Engineer promptly upon placing orders for materials and equipment so that arrangements may be made, if desired, for evaluation before shipment from the place of manufacture. The Contractor shall at all times furnish the Engineer and his representatives, facilities including labor, and allow proper time for evaluation and testing materials, equipment, and workmanship. The Contractor must anticipate that possible delays may occur in the execution of its work due to the necessity of materials and equipment being inspected and accepted for use. The Contractor shall furnish, at his own expense, all samples of materials required by the Engineer for testing, and shall make his own arrangements for providing water, electric power, or fuel for the various evaluation and tests of structures and equipment.
- D. The Contractor shall furnish the services of representatives of the manufacturers of certain equipment, as specified in other sections of these Contract Documents, as required. The Contractor shall also place its orders for such equipment on the basis that, after the equipment has been tested prior to final acceptance of the work, the manufacturer will furnish the Engineer with certified statements that the equipment has been installed properly and is ready to be placed in functional operation. Tests and analyses required for equipment shall be paid for by the Contractor, unless specified otherwise in the section which covers a particular piece of equipment.

- E. The Owner will bear the cost of all tests, evaluation, or investigations undertaken by the order of the Engineer for the purpose of determining conformance with the Contract Documents if such tests, evaluation, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the Engineer as a result of such tests, evaluation, or investigations, the Contractor shall bear the full cost of any additional tests, evaluations and investigations, which are ordered by the Engineer to ascertain subsequent conformance with the Contract Documents.

1.03 EVALUATION AT PLACE OF MANUFACTURE

- A. Unless otherwise specified, all products, materials, and time and equipment shall be subject to evaluation by the Engineer at the place of manufacture.
- B. The presence of the Engineer at the place of manufacture however, shall not relieve the Contractor of the responsibility for furnishing products, materials, and equipment that comply with all requirements of the Contract Documents. Compliance is a duty of the Contractor, and said duty shall not be avoided by any act or omission on the part of the Engineer.

1.04 SAMPLING AND TESTING

- A. Unless otherwise specified, all sampling and testing shall be in accordance with the methods prescribed in the current standards of the ASTM, as applicable to the class and nature of the article or materials considered; however, the Engineer reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the Engineer will insure the Owner that the quality of the workmanship is in full accord with the Contract Documents.
- B. Any waiver by the Owner of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a performance bond to assure execution of any necessary corrective or remedial Work, shall not be construed as a waiver of any requirements of the Contract Documents.
- C. Notwithstanding the existence of such waiver, the Engineer reserves the right to make independent investigations and tests and failure of any portion of the Work to meet any of the requirements of the Contract Documents, shall be reasonable cause for the Engineer to require the removal or correction and reconstruction of any such work in accordance with the General Conditions.
- D. In addition to any other evaluation, observation or quality assurance provisions that may be specified, the Engineer shall have the right to independently select, test, and analyze, at the expense of the Owner, additional test specimens or any or all of the materials to be used. Results of such tests and analyses shall be considered along with the tests or analyses made by the Contractor to determine compliance with the applicable specifications for the materials so tested or analyzed; provided, that testing or investigation by the Engineer, which fails to meet the requirements of the Contract Documents, all costs of such independent inspection and investigation, and all costs of removal, correction, and reconstruction or repair of any such Work shall be borne by the Contractor.

1.05 TESTING SERVICES FURNISHED BY CONTRACTOR

- A. Unless otherwise specified, Contractor shall provide all testing services in connection with the following:
 - 1. Concrete.
 - 2. Asphaltic concrete materials and mix designs.
 - 3. Moisture-density and relative density tests on fill and backfill materials.
 - 4. In-place field density tests on fills and backfill.
 - 5. Fill and backfill materials.
 - 6. All other tests and engineering data required for Engineer's review of materials and equipment proposed to be used in the Work.

- B. Contractor shall obtain Engineer's acceptance of the testing firm before having services performed, and shall pay all costs for these testing services.

1.06 SITE INVESTIGATION AND CONTROL

- A. The Contractor shall verify all dimensions in the field and shall check field conditions continuously during construction. The Contractor shall be solely responsible for any inaccuracies built into the Work due to its failure to comply with this requirement.
- B. The Contractor shall inspect related and appurtenant Work and shall report in writing to the Engineer any conditions that will prevent proper completion of the Work. Failure to report any such conditions shall constitute acceptance of all site conditions, and any required removal, repair, or replacement caused by unsuitable conditions shall be performed by the Contractor at its sole cost and expense.

1.07 DIMENSIONS OF EXISTING STRUCTURES

- A. Where the dimensions and locations of existing structures are of critical importance in the installation or connection of new work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any materials or equipment which is dependent on the correctness of such information.

1.08 FIELD SURVEYING AND ENGINEERING

- A. The Contractor shall employ a Land Surveyor registered in the State of Kansas and acceptable to the Owner. The Contractor shall locate and protect survey control and reference points.
- B. Contractor shall provide field engineering services to establish elevations, lines, and levels, utilizing recognized engineering survey practices based upon the construction staking.
- C. Submit a copy of registered site drawing and certificate signed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.

1.09 RIGHT OF REJECTION

- A. The Engineer, acting for the Owner, shall have the right, at all times and places, to reject any articles or materials to be furnished hereunder which, in any respect, fail to meet the requirements of the Contract Documents, regardless of whether the defects in such articles or materials are detected at the point of manufacture or after completion of the Work at the site. If the Engineer, through an oversight or otherwise, has accepted materials or Work which is defective or which is contrary to the Contract Documents, such materials, no matter in what stage or condition of manufacture, delivery, or erection, may be subsequently rejected by the Engineer for the Owner.
- B. The Contractor shall promptly remove rejected articles or materials from the site of the Work after notification of rejection. All costs of removal and replacement of rejected articles or materials as specified herein shall be borne by the Contractor.

1.10 PROTECTION

- A. Weather Conditions: Work that may be affected by inclement weather shall be suspended until proper conditions prevail. In the event of impending storms, the Contractor shall take necessary precautions to protect all work, materials and equipment from exposure.
- B. Fire Protection: The Contractor shall take all necessary precautions to prevent fires at or adjacent to the Work, including its own buildings and trailers. Adequate fire extinguisher and hose line stations shall be provided throughout the work area.

1.11 CUTTING AND PATCHING

- A. The Contractor shall perform all cutting and patching of the Work that may be required to make its several parts come together properly and fit it to receive or be received by such other work. The Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and shall only cut or alter work with the written consent of the Owner and of the other Contractors whose work will be affected.

1.12 SLEEVES AND OPENINGS

- A. The Contractor shall provide all openings, chases, etc., to fit its own work and that of any other subcontractors and Contractors. All such openings or chases shown on the Contract Drawings, or reasonably implied thereby, or as confirmed or modified by acceptable shop, setting or erecting drawings, shall be provided by the Contractor.
- B. Where pipes or conduits are to pass through slabs or walls, or where equipment frames or supports are to be installed as integral part of an opening, the sleeves, openings, forms or frames shall be furnished by the installer of the pipes, conduits or equipment, but shall be placed by the Contractor. Where hanger inserts, anchor bolts and similar items are to be embedded in concrete as an integral part of a slab or wall they shall be furnished by the installer of the pipe or other equipment requiring the hanger, etc, but shall be placed by the Contractor.
- C. Any cost resulting from correction of defective, ill-timed, or mislocated work or for subsequent work which becomes necessary because of omitted openings, chases, sleeves, frames, inserts, etc., shall be borne by the Contractor or subcontractor responsible therefor. The Contractor shall not arbitrarily cut, drill, alter, damage, or otherwise endanger the work of another Contractor. In no case shall beams, lintels, or other structural members be cut without the proper authorization of the Engineer. The nature and extent of any corrective or additional work shall be subject to the acceptance of the Engineer following consultation with the affected parties.

1.13 ABANDONMENT AND SALVAGE OF EXISTING FACILITIES

- A. General
 - 1. The scope of work requires the Contractor to interface with existing structures, mechanical equipment, electrical facilities and piping which will be abandoned or otherwise removed and/or relocated as part of the work. Prior to beginning any work associated with existing facilities to be abandoned, salvaged, or otherwise removed or relocated, the Contractor shall inform the Owner and the Engineer of his intent so that all arrangements can be made with the Owner for disconnecting electrical service (where appropriate), isolating pipelines (where possible) or otherwise removing existing facilities from service to the extent possible. The Contractor shall not proceed without written authorization from the Owner.
- B. Pipelines
 - 1. The Contractor shall abandon, salvage or otherwise remove existing pipelines or segments of existing pipelines shown to be abandoned in place, salvaged, or removed as part of the contract work. Unless otherwise indicated in the Contract Documents, all piping shown on the Drawings to be abandoned shall be abandoned in place. Pipe shown to be abandoned need only be removed a minimum three feet clear of new utilities to be installed. Abandon-in-place shall be defined as installing plugs, or other permanent closure, as reviewed and accepted by the Owner, on all terminations, open ends or ends of pipe designated as being cut, capped, and anchored in an acceptable manner. The pipe will remain buried unless otherwise noted.
- C. Piping indicated on the Drawings as being removed, or any piping to be abandoned which interferes with new structures or piping, shall be excavated and removed using methods which will not disturb adjacent piping or other facilities. All pipe materials shall be subject to salvage by the Owner as defined below. Any remaining piping on both ends of pipe segments removed shall be abandoned in-place, per the above definition. After piping has been removed, the Contractor shall backfill the evacuated area in accordance with requirements set forth in other sections of these specifications.
- D. Equipment

1. The Contractor shall abandon, salvage or otherwise remove existing equipment or other facilities as shown on the Contract Drawings or indicated herein. In all cases, the Contractor shall exercise caution when handling the existing equipment so as not to disturb or damage adjacent facilities. The Contractor shall make all repairs to adjacent facilities which may be damaged as a result of the Contractor's efforts in abandoning, salvaging or otherwise removing existing facilities, at no additional cost to the Owner.

1.14 REHABILITATION

- A. Certain areas of existing structures, piping, conduits, and the like will be affected by work necessary to complete modifications under this Contract. The Contractor shall be responsible to rehabilitate those areas affected by its construction activities.
- B. Where new rectangular openings are to be installed in concrete or concrete masonry walls or floors, the Contractor shall score the edges of each opening (both sides of wall or elevated slab) by saw cutting clean, straight lines to a minimum depth of one inch and then chipping out the concrete. Alternately, the opening can be formed by saw cutting completely through the slab or wall. Saw cuts deeper than one inch (or the depth of cover over existing reinforcing steel, whichever is less) shall not be allowed to extend beyond the limits of the opening. Corners shall be made square and true by a combination of core drilling, chipping, or grinding. All necessary precautions shall be taken during removal of concrete to prevent debris from falling and damaging adjacent equipment or piping. Saw cuts allowed to extend beyond the opening shall be repaired by filling with nonshrink grout. The concrete around any exposed reinforcement steel shall be chipped back and exposed reinforcement steel cut a minimum of 3 inches from the finished face of the new opening. The inside face of the new opening shall be grouted to fill any voids and cover the exposed aggregate and shall be trowel-finished to provide a plumb and square opening.
- C. Where new conduit or piping is to be installed through existing concrete walls, the Contractor shall accurately position and core-drill openings. Openings shall be adequately sized to allow alignment of piping or conduit and fittings without deflection and to provide adequate clearance for satisfactory packing in the annular space between the piping or conduit and the core drilling opening as shown on the Drawings.
- D. Where new piping is to be connected to existing piping, the existing piping shall be cut square and the ends properly prepared for the connection shown on the drawings. Any damage to the lining and coating of the existing piping shall be repaired by the Contractor.
- E. Where existing equipment, equipment pads and bases, piping, piping supports, electrical panels and devices, conduits, and associated appurtenances are removed, the Contractor shall rehabilitate the affected area such that little or no evidence of the previous installation remains. Openings in concrete floors, walls, and ceiling from piping, conduit, and fastener penetrations shall be filled with nonshrink grout and finished to match the adjacent area. Concrete pads and bases for equipment and supports shall be removed by chipping away concrete and cutting any exposed reinforced steel and anchor bolts a minimum of 1-½ inches below finished grade. The area of concrete to be rehabilitated shall be scored by saw cutting clean, straight lines to a minimum depth of 1-½ inches, and all concrete within the scored lines removed to a minimum depth of 1-½ inches. The area within the scored lines shall be patched with nonshrink grout to match the adjacent grade and finish. Abandoned connections to piping and conduits shall be terminated with blind flanges, caps, and plugs suited for the material, type, and service of the pipe or conduit. Walls shall be painted in accordance with requirements set forth in Section entitled "Painting".
- F. Where existing structural steel members are removed or modified, the surface of the remaining existing steel members damaged by construction activities shall be repaired. The affected areas shall be surface prepared and coated in accordance with Section entitled "Painting."
- G. Architecturally finished surfaces of walls, floors, ceilings, or other areas which are exposed by any of the removals specified herein and which have bolt holes, scars, chipped or other damaged surfaces revealed by the removal, shall be repaired by the Contractor with the same or matching materials as the existing surface or as approved by the Engineer.

- H. Disposal of Debris: All debris, materials, piping, and miscellaneous waste products from the work described in this section shall be removed from the project as soon as possible. They shall be disposed of in accordance with applicable federal, state, and local regulations. The Contractor is responsible for determining these regulations and shall bear all costs or retain any profit associated with disposal of these items.

1.15 INSTALLATION OF EQUIPMENT

- A. Contractor shall have on hand sufficient personnel, proper equipment, and machinery of ample capacity to facilitate the work.
- B. Contractor shall be responsible for locating, aligning and leveling all equipment and shall employ a licensed surveyor to set all lines and levels of equipment to the accuracy required.
- C. Complete manufacturer's installation instructions, including permissible tolerances, shall be furnished in duplicate with each unit of equipment or set of identical units.
- D. All equipment shall be installed in accordance with the shop drawings; inclusive of manufacturer's specifications, drawings and tolerances; under the direct supervision of the required manufacturer's engineer. In no instance shall the directions of the manufacturer's engineer contravene the Engineer's direction.
- E. Equipment shall be erected in a neat and workmanlike manner on the foundations at the locations and elevations shown on the drawings unless otherwise indicated by the Engineer during installation.
- F. Erection equipment shall meet the approval of the Engineer. Motor operated handling equipment shall be maintained in a condition such that no oil or grease will be dropped on the finished floors. Materials to be dragged within the building shall be skidded in such a manner, and by such methods, that will not gouge or mar finished floors. Erection equipment shall not be allowed on or operated over any concrete floor slabs until approval is given by the Engineer. The Contractor shall be responsible for the correction and repair of any damage to the buildings caused by his operations.
- G. If the Contractor uses the floor in any structure to support equipment, he shall protect, brace, and shore up the floor so as to avoid damage to the floor itself or to the floor supporting beams, columns, or structure. Any and all damage to the floor itself or to the floor supporting beams, columns or structure shall be repaired as directed by the Engineer, and the Contractor shall pay for all costs of the repairs.

1.16 SUPERVISION BY MANUFACTURER'S REPRESENTATIVES

- A. The Contractor shall provide the services of qualified equipment manufacturer's technical representatives who shall adequately supervise the installation and testing of all equipment furnished under this Contract and instruct the Contractor's personnel and Owner's operating personnel in its maintenance and operation. The manufacturers' representatives shall devote, as a minimum, the full time specified under the detailed Specifications. Any additional time required to achieve successful installation and operation shall be at the expense of the Contractor. The manufacturers representatives shall sign in and out in a book kept by the Resident Project Representative on every occasion they are on the project site and shall indicate time of arrival and departure.

1.17 EQUIPMENT MANUFACTURERS CERTIFICATION

- A. As a condition precedent to acceptance of equipment installed and operating, the Contractor will provide the Owner with written certification, obtained from each company manufacturing equipment for the Project, that the equipment is installed and does operate in accordance with the specifications and manufacturer's recommendations.

1.18 OBSERVATION OF THE WORK

- A. The Work shall be conducted under the general observation of the Engineer and shall be subject to observation by representatives of the Engineer acting on behalf of the Owner to ensure strict compliance with the requirements of the Contract Documents. Such observation may include mill, plant, shop or field observation, as required. The Engineer shall be permitted access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated.
- B. The presence of the Engineer or any observer, however, shall not relieve the Contractor of the responsibility for the proper execution of the Work in accordance with all requirements of the Contract Documents. Compliance is a duty of the Contractor, and said duty shall not be avoided by any act or omission on the part of the Engineer or any observer.
- C. All materials and articles furnished by the Contractor shall be subject to rigid inspection, and no materials or articles shall be used in the Work until they have been inspected and accepted by the Engineer or its representative. No Work shall be backfilled, buried, cast in concrete, hidden or otherwise covered until it has been inspected by the Engineer or its authorized representative. Any Work so covered in the absence of inspection shall be subject to uncovering. Where uninspected Work cannot be uncovered, such as in concrete cast over reinforcing steel, all such Work shall be subject to demolition, removal, and reconstruction under proper inspection, and no additional payment will be allowed therefore.

1.19 TIME OF OBSERVATION AND TESTS

- A. Samples and test specimens required under these Specifications shall be furnished and prepared for testing in ample time for the completion of the necessary tests and analyses before said articles or materials are to be used. The Contractor shall furnish and prepare all required test specimens within the scope of the Contract. Except as otherwise provided in the Contract Documents, performance of the required tests will be by the Contractor, and all costs therefore will be borne by the Contractor at no cost to the Owner. whenever the Contractor is ready to backfill, bury, cast in concrete, hide, or otherwise cover any Work under the Contract, the Engineer shall be notified not less than twenty four hours in advance to request inspection before beginning any such Work of covering. Failure of the Contractor to notify the Engineer at least twenty-four hours in advance of any such inspections shall be reasonable cause for the Engineer to order a sufficient delay in the Contractor's schedule to allow time for such inspections and any remedial or corrective Work required, and all costs of such delays, including its effect upon other portions of the Work, shall be borne by the Contractor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 014500

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**SECTION 015100
TEMPORARY UTILITIES**

PART 1 GENERAL

1.01 WORK INCLUDED

- A. It shall be the Contractor's responsibility to provide equipment that is adequate for the performance of the Work under this Contract within the time specified. All equipment shall be kept in satisfactory operating condition, shall be capable of safely and efficiently performing the required Work, and shall be subject to inspection and review by the Owner's representative at any time within the duration of the Contract.
- B. The Contractor shall provide for utilities and services for its own operations. The Contractor shall furnish, install, maintain and provide all necessary supplies for all temporary utilities during the contract period including removal upon completion of the Work.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

- A. All Work hereunder shall conform to the applicable requirements of the OSHA Standards for Construction, all Federal, State and local codes, permit conditions, regulations, and utility requirements.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.02 POWER AND LIGHTING

- A. Power
 - 1. The Contractor shall provide all necessary power required for its operations under the Contract, and shall provide and maintain all temporary power lines required to perform the Work in a safe and satisfactory manner.
- B. Construction Lighting
 - 1. All Work conducted at night or under conditions of deficient daylight shall be suitably lighted to insure proper Work and to afford adequate facilities for inspection and safe working conditions. Temporary lighting shall be maintained during nonworking periods if the area is subject to access by the public.
- C. Electrical Connections
 - 1. All temporary connections for electricity shall be subject to review by the Owner and the power company representative, and shall be removed in like manner at the Contractor's expense prior to final acceptance of the Work.
- D. Separation of Circuits
 - 1. Circuits separate from lighting circuits shall be used for all power purposes, unless otherwise permitted by the Owner.
- E. Construction Wiring
 - 1. All wiring for temporary electric light and power shall be properly installed and maintained and shall be securely fastened in place. All electrical facilities shall conform to the requirements of Subpart K of the OSHA Safety and Health Standards for Construction.

2.03 WATER SUPPLY

- A. General
 - 1. The Contractor shall supply, and pay for all costs for all water used for construction, flushing, disinfection, and testing. The Contractor shall provide and maintain all meters, piping, fittings, adapters, and valving required.
- B. Potable Water

1. All drinking water on the site during construction shall be furnished by the Contractor and shall be bottled water or water furnished in suitable dispensers. Notices shall be posted conspicuously throughout the site warning the Contractor's personnel that piped water may be contaminated.
- C. Water Connections
1. The Contractor shall not make connection to, or draw water from, any fire hydrant or pipeline without first obtaining permission of the authority having jurisdiction over the use of said fire hydrant or pipeline and from the agency owning the affected water system.
For each such connection made, the Contractor shall first attach to the fire hydrant or pipeline a valve and a meter, if required by the said authority, of a size and type acceptable to said authority and agency.
- D. Removal of Water Connections
1. Before final acceptance of the Work on the project, all temporary connections and piping installed by the Contractor shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the Owner and to the agency owning the affected utility.
- E. Fire Protection
1. The construction, and all other parts of the Work shall be adequately protected against damage by fire. Hose connections and hose, water casks, chemical equipment, or other sufficient means shall be provided for fighting fires in the temporary structures and other portions of the Work, and responsible persons shall be designated and instructed in the operation of such fire apparatus so as to prevent or minimize the hazard of fire. The Contractor's fire protection program shall conform to the requirements of Subpart F of the OSHA Standards for Construction.
- F. Coordinate the use of water for any construction-related purpose with the water utility and Engineer. Provide 24-hour notice prior to withdrawing water from any source.

2.04 SANITATION

- A. Toilet Facilities
1. Fixed or portable chemical toilets shall be provided wherever needed for the use of employees. Toilets at construction job sites shall conform to the requirements of Part 1926 of the OSHA Standards for Construction.
- B. Such facilities shall be made available when the first employees arrive on the Work, shall be properly secluded from public observation, and shall be constructed and maintained in suitable numbers and at such points and in such manner as may be required.
- C. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. They shall rigorously prohibit the committing of nuisances on the site of the Work, on the lands of the Owner, or an adjacent property.
- D. The Owner shall have the right to inspect any building or other facility erected, maintained, or used by the Contractor, to determine whether or not the sanitary regulations have been complied with.
- E. Sanitary and Other Organic Wastes
1. The Contractor shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations shall be disposed of away from the site in a manner satisfactory to the Owner and in accordance with all laws and regulations pertaining thereto.

2.05 TEMPORARY VENTILATION

- A. The Contractor shall provide and maintain adequate ventilation for a safe working environment. In addition, forced air ventilation shall be provided for the curing of installed materials, humidity control and the prevention of hazardous accumulations of dust, gases or vapors.

PART 3 EXECUTION

3.01 GENERAL

- A. On-going Clean-up. The Contractor and their Sub-contractors shall, during the course of the construction, keep all areas reasonably free of debris and miscellaneous materials. Clean-up shall be an on-going process and, as a minimum, all areas within the construction limits shall be policed daily.

3.02 REMOVAL

- A. Completely remove temporary materials and equipment when their use is no longer required.
- B. Clean and repair damage caused by temporary installations or use of temporary facilities.
- C. Restore existing facilities used for temporary services to specified, or to original, condition.

END OF SECTION 015100

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**SECTION 015110
TEMPORARY BYPASS PUMPING SYSTEM**

PART 1 GENERAL

1.01 SCOPE

- A. Contractor is required to furnish all materials, labor, equipment, power, and maintenance to install and properly operate a temporary pumping system while performing the following work:
 - 1. Gravity sewer and manhole rehabilitation
- B. The temporary pumping system will divert the existing sewage flow around the work area.
- C. The design, installation, and operation of the temporary pumping system shall be the Contractor's responsibility. The temporary pumping system shall comply with the requirements of all codes and regulatory agencies having jurisdiction. Contractor shall employ the services of a vendor who can demonstrate to Engineer that they specialize in the design and operation of temporary bypass pumping systems. The firm performing the temporary pumping shall have successfully completed projects pumping a minimum of 3 million gallons per day (MGD) of wastewater in the United States within the past 5 years.

1.02 REQUIREMENTS FOR SUBMITTING BIDS

- A. Contractor shall submit a Statement of Qualifications (SOQ) for the firm performing the temporary bypass pumping with his bid. The SOQ shall document successfully completed projects pumping a minimum of 3 million gallons per day (MGD) of wastewater in the United States within the past 5 years. The SOQ shall include at least references for projects performed that are similar in size and complexity to this project.
- B. Contractor shall prepare and submit with his bid a specific detailed description of the proposed pumping system. The submittal shall include a written description of the temporary pumping system and a plan view ½ drawing of the proposed bypass layout. The description shall address the quantity, capacity, and location of all pumping equipment.
- C. Bids submitted without an acceptable bypass pumping firm Statement of Qualifications or an acceptable detailed description of the proposed pumping system will be rejected.

1.03 SUBMITTALS

- A. Contractor shall submit detailed plans and descriptions outlining all provisions and precautions to be taken by Contractor regarding the handling of existing wastewater flows to Engineer. This plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, material and all other incidental item as necessary and/or required to ensure proper protection of the facilities, including protection of public and private property from damage and flooding by surcharging of sewers. No construction shall begin until all provisions and requirements have been reviewed and approved by Engineer. The plan shall include but not be limited to details of the following:
 - 1. Staging areas for pumps.
 - 2. Sewer plugging method(s), types of plugs used, and proposed method of bracing the plugs. The head capacity of the plug and the maximum head possible at the plug location.
 - 3. Number, size, material, location and method of installation of discharge piping.
 - 4. Diversion pump sizes, capacity, number of each size to be on site, and fuel requirements.
 - 5. Calculations of static lift, friction losses, and flow velocity.
 - 6. Manufacturer's pump performance curves for all pumping equipment.
 - 7. Required fuel source and location.
 - 8. Discharge plan.
 - 9. Method of protecting discharge manholes or structures from surface water infiltration, erosion, and damage.
 - 10. Thrust and restraint block sizes and locations.
 - 11. Method of noise control for each pump and/or generator.
 - 12. Any temporary pipe supports and anchoring required.

13. Design plans and computation for access to diversion pumping locations indicated on the Drawings.
14. Calculations for selection of diversion pumping pipe size.
15. Schedule for installation of and maintenance of diversion pumping lines.
16. Plan indicating selected location of diversion pumping line and air valve locations.

1.04 QUALITY ASSURANCE

- A. Contractor or flow diversion pumping Subcontractor shall be experienced in flow diversion pumping operations of at least 3 MGD capacity in the United States
- B. The design, installation, and operation of the temporary pumping system shall be Contractor's responsibility. The diversion system shall meet the requirements of all codes and regulatory agencies having jurisdiction. Contractor shall be responsible for any spillage of raw sewage that results in civil or criminal charges from any local, state, or federal agency and will bear all costs for these charges and any restoration required.

1.05 OPERATION AND MAINTENANCE

- A. Operation
 1. Contractor shall insure that the flow diversion pumping system is properly operated and shall provide responsible personnel (Operators) for the diversion pumping system at all times. The diversion pumping Operator(s) shall have a minimum of one (1) year's experience with the operation and maintenance of similar diversion pumping operations. Resume(s) shall be submitted to Engineer prior to the start of work. Contractor shall provide a monitoring and control system capable of automatically operating the second pump and/or backup pump and remotely alerting multiple persons of alarm and status indications. One Operator shall be on call at all times and shall be included in the list of persons to be alerted by the monitoring and control system.
- B. Maintenance Service
 1. Contractor shall insure that the flow diversion pumping system is properly maintained and shall provide responsible personnel (Mechanics) for the diversion pumping system at all times. The Mechanic(s) shall have a minimum of one (1) year's experience with the operation and maintenance of similar diversion pumping operations. Resume(s) shall be submitted to Engineer prior to the start of work. One Mechanic shall be on call at all times and shall be included in the list of persons to be alerted by the monitoring and control system.
- C. Pumping System Extra Materials
 1. Spare parts for pumps and piping shall be kept on site at all times. Spare parts shall include, but not be limited to, the following: one (1) spare pump(s) identical to the operating pumps, 20 feet of extra pipe for each pipe size in use, and a fusion weld machine. For each diversion discharge line installed, including backup lines, Contractor shall have available at the site repair clamps or necessary fittings for the pipe system being used.
- D. Adequate hoisting equipment for each pump and accessories shall be maintained on the site.

PART 2 PRODUCTS

2.01 DESIGN REQUIREMENTS

- A. Contractor shall provide all pipeline plugs, pumps of adequate size to handle peak flow, and temporary discharge piping, to ensure that influent flows called out on the bypass pumping plan sheets can be safely diverted while performing the work. The diversion pumping system shall be operated 24 hours per day 7 days per week, including holidays, for the duration of gravity sewer rehabilitation.
- B. Contractor shall install as many pumps as needed to divert the influent flow upstream of the work. All pumps for an individual setup shall be of equal size and have a minimum capacity of 50 GPM. At least one (1) standby pump(s) shall be provided for immediate use in the event of an emergency or breakdown. Pump pipelines shall be readily isolated by individual valves.

- C. Contractor shall furnish and maintain portable lighting systems as needed, for his activities at the bypass pumping site(s).

2.02 PERFORMANCE REQUIREMENTS

- A. It is essential to the operation of the existing sewerage system that there be no interruption in the flow of sewage throughout the duration of the Project. Contractor shall provide, maintain, and operate all temporary facilities such as plugs, pumping equipment (both primary and backup units as required), conduits, all necessary power or fuel source, and all other labor and equipment necessary to handle the sewage by-pass flow.
- B. The design installation and operation of the flow diversion pumping system shall be Contractor's responsibility. The diversion system shall meet the requirements of all codes and regulatory agencies having jurisdiction.
- C. Contractor shall provide all necessary means to safely convey the sewage past the work area. Contractor shall not stop or impede the interceptor flows under any circumstances.
- D. Contractor shall maintain sewage flow around the work area in a manner that will not cause surcharging of sewers, damage to sewers, and that will protect public and private property from damage and flooding.
- E. Contractor shall protect water resources, wetlands, and other natural resources.

2.03 DIVERSION PIPING MATERIALS

- A. Discharge piping systems shall be constructed of rigid high-density polyethylene (HDPE) pipe with fused or flanged leak proof connections. Flex hose can be used during normal operations and in the immediate vicinity of the work being performed. The contractor's staff should be on site and able to monitor flexible hoses at all times when in use. PVC pipe will not be accepted.

2.04 EQUIPMENT

- A. All pumps shall be centrifugal, end suction, fully automatic self-priming units that do not require the use of foot-valves, diaphragm pumps, or vacuum pumps in the priming system. The pumps must be diesel powered. All pumps shall be constructed to allow dry running for long periods of time to accommodate the cyclical nature of sewage flows.
- B. Contractor shall provide the necessary stop/start controls and a visual alarm indicating a pump malfunction for each pump. Each pump shall have a 0-30 inch Hg vacuum gauge on the inlet and a 0-60 PSI pressure gauge on the outlet.
- C. Contractor shall incorporate noise prevention measures for any and all equipment used to insure minimum noise impact on the surrounding areas. Such measures shall include but not be limited to:
 - 1. Hospital grade silencers or mufflers.
 - 2. Equipment modifications.

PART 3 EXECUTION

3.01 PREPARATION

- A. Contractor is responsible for locating any existing utilities in the area Contractor selects to locate the diversion pipelines. The diversion pipelines shall be located to minimize any disturbance to existing utilities, traffic, and the Contractor shall obtain approval of the pipeline locations from the Owner and Engineer prior to installation.

3.02 INSTALLATION

- A. Plugging or blocking of sewage flows shall incorporate primary and secondary plugging devices. Plugging devices shall be braced and/or designed such that they are capable of retaining the maximum head that could be produced at the plug location during maximum surcharging of the sewer system. When plugging or blocking is no longer needed for performance and acceptance of work, the plugs or blocks shall be removed in a manner that permits the sewage flow to slowly return to normal, to prevent surcharging or causing other major disturbances downstream.

- B. When working inside manholes, Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible oxygen-deficient atmospheres, and confined spaces.
- C. Contractor shall protect the diversion lines from damage in the areas of backhoe operations. Protection shall be by either concrete Jersey Barriers or wood timbers.
- D. Contractor shall confine the diversion pipelines to the limits of Work as defined by the contract documents during diversion operations. Concrete barriers or timber deadman posts may be used to confine the movement of the diversion pipeline during relocation.
- E. The temporary pumping system shall be placed in operation a minimum of 24 hours before any other work in the areas being bypassed may begin.

3.03 FIELD QUALITY CONTROL

- A. Contractor shall perform a hydrostatic pressure test for each section of discharge piping using a pressure equal to 1.5 times the maximum operating pressure of the system to ensure that there are no leaks in the discharge piping prior to actual operation. Engineer shall witness the test.
- B. All bypass pumping systems shall be inspected daily with the daily inspection reports being submitted weekly. Failure to perform these inspections will result in immediate removal of the Operator from the site and Contractor shall be assessed liquidated damages of \$1,000.00 for each occurrence. All bypass systems will require the following to be inspected daily and documented for any bypass pumping systems in operation:
 - 1. Pumps
 - 2. Pipes
 - 3. Calling/alarm system
 - 4. Intake manholes need to be checked for debris
 - 5. Discharge manholes checked for debris
 - 6. Pump discharge pressure

3.04 PROJECT CLOSEOUT

- A. Disturbed Areas: On completion of the diversion pumping operation, Contractor shall clean all areas disturbed by these operations and restore all areas to equal or better conditions that existed prior to the start of work.

END OF SECTION 015110

**SECTION 015510
SITE ACCESS AND STORAGE**

PART 1 GENERAL

1.01 REGULATIONS

- A. Confine operations at site to areas permitted by:
 - 1. Law
 - 2. Ordinances
 - 3. Permits
 - 4. Contract Documents
 - 5. Areas authorized or approved by the Owner

1.02 HIGHWAY LIMITATIONS

- A. The Contractor shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to the site of the Work. It shall be the Contractor's responsibility to construct and maintain any haul roads required for its construction operations.

1.03 TEMPORARY CROSSINGS

- A. General
 - 1. Wherever necessary or required for the convenience of the public or individual residents at street or highway crossings, private driveways, or elsewhere, the Contractor shall provide suitable temporary bridges over unfilled excavations, except in such cases as the Contractor shall secure the written consent of the individuals or authorities concerned to omit such temporary bridges, which written consent shall be delivered to the Owner prior to excavation. All such bridges shall be maintained in service until access is provided across the backfilled excavation. Temporary bridges for street and highway crossing shall conform to the requirements of the authority having jurisdiction in each case, and the Contractor shall adopt designs furnished by said authority for such bridges, or shall submit designs to said authority for approval, as may be required.
- B. The Contractor shall maintain traffic and protect the public from all damage to persons and property within the contract limits, in accordance with all applicable state, local, and city regulations. The Contractor shall conduct its operations so as to maintain and protect access for vehicular and pedestrian traffic to and from all properties and business establishments adjoining or adjacent to those streets affected by its operations, and to subject the public to a minimum of delay and inconvenience. Suitable signs, barricades, railing, etc. shall be erected and the work outlined by adequate lighting at night. Danger lights shall be provided as required. Watchmen and flagmen shall be provided as may be necessary for the protection of traffic.
- C. Street Use
 - 1. Nothing herein shall be construed to entitle the Contractor to the exclusive use of any public street, alleyway, or parking area during the performance of the Work hereunder, and it shall so conduct its operation as not to interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleys, ways, or parking areas. No street shall be closed to the public without first obtaining permission of the Owner and proper government authority. Where excavation is being performed in primary streets or highways, one lane in each direction shall be kept open to traffic at all times unless otherwise provided or shown. Toe boards shall be provided to retain excavated material if required by the Owner or the agency having jurisdiction over the street or highway. Fire hydrants on or adjacent to the Work shall be kept accessible to fire-fighting equipment at all times. Temporary provisions shall be made by the Contractor to assure the use of sidewalks and the proper functioning of all gutters, sewer inlets, and other drainage facilities.
- D. Traffic Control

1. The Contractor shall provide, place, and maintain all necessary barricades, traffic cones, warning signs, lights, flaggers, and other safety devices in accordance with the requirements of the "Manual of Uniform Traffic Control Devices, Part VI - Traffic Controls for Street and Highway Construction and Maintenance Operations", published by U.S. Department of Transportation, Federal Highway Administration (ANSI D6.1). All barricades and obstructions shall be illuminated at night, and all lights shall be kept burning from sunset until sunrise. The Contractor shall provide guards or flaggers and shall conform to such special safety regulations relating to traffic control as may be required by the public authorities within their respective jurisdictions. All signs, signals, and barricades shall conform to the requirements of Subpart G, Part 1926, of the OSHA Safety and Health Standards for Construction.
- E. The Contractor shall submit three copies of a traffic control plan to the authority having jurisdiction for approval a minimum of two weeks prior to construction. The authority reserves the right to observe these traffic control plans in use and to make any changes as field conditions warrant. Any changes shall supersede these plans and be done solely at the Contractor's expense.
- F. The Contractor shall remove traffic control devices when no longer needed, repair all damage caused by installation of the devices, and shall remove post settings and backfill the resulting holes to match grade.
- G. Street Closure
 1. If closure of any street is required during construction, a formal temporary application for a street closure shall be made to the authority having jurisdiction at least 7 days prior to the required street closure in order to determine necessary sign and detour requirements.
- H. Temporary Driveway Closure:
 1. The Contractor shall notify the owner or occupant (if not owner-occupied) of the closure of the driveways to be closed more than one eight-hour work day, at least three working days prior to the closure. The Contractor shall minimize the inconvenience and minimize the time period that the driveways will be closed. The Contractor shall fully explain to the owner/occupant how long the work will take and when closure is to start.
- I. All dirt, debris and construction materials deposited on existing streets and right of ways shall be immediately removed by the Contractor.

1.04 CONTRACTOR'S SITE ACCESS

- A. Unless otherwise required by the Contractor, site access shall be from applicable public roads. Additional access deemed necessary by the Contractor shall be investigated and procured. Written consent of the Owner or governmental agency shall be submitted.

1.05 CONTRACTOR'S WORK AND STORAGE AREA

- A. The staging area for this project shall be within the right of way and limited general area, or within the limits of the general area of the construction shown on the Drawings. Storage areas shall be provided within the designated staging area. The staging area is general and does not indicate limits of construction. Responsibility for protection and safekeeping of equipment and materials at or near the sites will be solely that of the Contractor and no claim shall be made against the Owner by reasons of any act of an employee or trespasser. Should an occasion arise necessitating access to an area occupied by stored equipment and/or materials, the Contractor shall immediately move them. No equipment or materials shall be placed upon the Owner's property until it is acceptable to the Owner.
- B. If the Contractor requires additional staging area other than shown on the Drawings, the Contractor shall obtain such areas from off site sources. The Contractor shall pay for any off site area required.
- C. Upon completion of the Contract, the Contractor shall remove from the storage areas all of their equipment, temporary fencing, surplus materials, rubbish, and restore the areas as designated on the Drawings.

1.06 SECURITY

- A. The Contractor shall employ watchmen and security guards to protect the job site against vandalism, burglary, theft, trespassing at the Contractors discretion. The Contractor shall care for and protect against loss or damage of all material to be incorporated in the construction for the duration of the project and shall repair or replace damaged or lost materials and damage to structures. The Contractor shall be responsible for providing, maintaining and securing gates used for construction purposes for the duration of the project.
- B. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage due to construction operations.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 015510

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SECTION 016000 PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 GENERAL

- A. The word "Products", as used herein, is defined to include purchased items for incorporation into the Work, regardless of whether specifically purchased for project or taken from Contractor's stock of previously purchased products. The word "Materials", is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed, or applied to form units of work. The word "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, and other like items). Definitions in this paragraph are not intended to negate the meaning of other terms used in Contract Documents, including "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

1.02 QUALITY ASSURANCE

- A. All materials and equipment shall conform to the Section entitled "Quality Control."
- B. Source Limitations: To the greatest extent possible for each unit of Work, the Contractor shall provide products, materials, or equipment of a singular generic kind from a single source.
- C. Compatibility of Options: Where more than one choice is available as options for Contractor's selection of a product, material, or equipment, the Contractor shall select an option which is compatible with other products, materials, or equipment already selected. Compatibility is a basic general requirement of product/material selections.

1.03 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products or manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.04 SUBSTITUTIONS

- A. Engineer will consider requests for Substitutions only within 15 days after date of Notice to Proceed.
- B. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that Contractor:
1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 2. Will provide the same warranty for the Substitution as for the specified product.
 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 5. Will reimburse Owner for review or redesign services associated with re-approval by authorities.

- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
 - 1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.
 - 3. The Engineer will notify Contractor, in writing, of decision to accept or reject request.

1.05 DESIGN

- A. Equipment and appurtenances shall be designed in conformity with the ASME, AIEE, NEMA and other generally accepted applicable standards and shall be rugged construction and of sufficient strength to withstand all stresses which may occur during fabrication, testing, transportation, installation and all conditions of operation. All bearings and moving parts shall be adequately protected by bushings or other acceptable means against wear, and provision shall be made for adequate lubrication by readily accessible devices. Details shall be designed for appearance as well as utility. Protruding members, joints, corners, gear covers, etc., shall be finished in appearance.
- B. All exposed welds on machinery shall be ground smooth and the corners of structural shapes shall be rounded or chamfered, as required to ensure satisfactory paint adhesion.

1.06 PRODUCT DELIVERY-STORAGE-HANDLING

- A. The Contractor shall deliver, handle, and store products in accordance with supplier's written recommendations and by methods and means which will prevent damage, deterioration, and loss including theft. Delivery schedules shall be controlled to minimize long-term storage of products at site and overcrowding of construction spaces. In particular, the Contractor shall provide delivery/ installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.

1.07 TRANSPORTATION AND HANDLING

- A. Products shall be transported by methods to avoid product damage and shall be delivered in undamaged condition in supplier's unopened containers or packaging, dry.
- B. The Contractor shall provide equipment and personnel to handle products, materials, and equipment including those provided by Owner, by methods to prevent soiling and damage.
- C. The Contractor shall provide additional protection during handling to prevent marring and otherwise damaging products, packaging, and surrounding surfaces.

1.08 STORAGE AND PROTECTION

- A. Products shall be stored in accordance with supplier's written instructions, with seals and labels intact and legible. Sensitive products shall be stored in weather-tight enclosures and temperature and humidity ranges shall be maintained within tolerances required by supplier's written instructions.
- B. For exterior storage of fabricated products, they shall be placed on sloped supports above ground. Products subject to deterioration shall be covered with impervious sheet covering; ventilation shall be provided to avoid condensation.
- C. Loose granular materials shall be stored on solid surfaces in a well drained area and shall be prevented from mixing with foreign matter.
- D. Storage shall be arranged to provide access for inspection. The Contractor shall periodically inspect to assure products are undamaged and are maintained under required conditions.
- E. Storage shall be arranged in a manner to provide access for maintenance of stored items and for inspection.

1.09 MAINTENANCE OF STORAGE

- A. Stored products shall be periodically inspected on a scheduled basis. The Contractor shall maintain a log of inspections and shall make said log available to the Engineer on request.
- B. The Contractor shall verify that storage facilities comply with supplier's product storage requirements.
- C. The Contractor shall verify that supplier required environmental conditions are maintained continually.
- D. The Contractor shall verify that surfaces of products exposed to the elements are not adversely affected and that any weathering of finishes is acceptable under requirements of Contract Documents.
- E. Weather Conditions: Work that may be affected by inclement weather shall be suspended until proper conditions prevail. In the event of impending storms, the Contractor shall take necessary precautions to protect all work, materials and equipment from exposure.
- F. Fire Protection: The Contractor shall take all necessary precautions to prevent fires at or adjacent to the Work, including its own buildings and trailers. Adequate fire extinguisher and hose line stations shall be provided throughout the work area.

1.10 MAINTENANCE OF EQUIPMENT STORAGE

- A. For mechanical and electrical equipment in long-term storage, the Contractor shall provide a copy of the supplier's service instructions to accompany each item, with notice on enclosed instruction shown on exterior of package.
- B. Equipment shall be serviced on a regular basis, and a log of services shall be maintained and submitted as a record document to the Engineer.

1.11 LUBRICANTS

- A. During testing and prior to acceptance, the Contractor shall furnish all lubricants necessary for the proper lubrication of all equipment furnished under this Contract.

1.12 SPECIAL TOOLS

- A. For each type of equipment furnished by them the Contractor shall provide a complete set of all special tools (including calibration and test equipment) which may be necessary for the adjustment, operation, maintenance and disassembly of such equipment.
- B. Special tools shall be delivered at the same time as the equipment to which they pertain. The Contractor shall properly store and safeguard such special tools until completion of the Work, at which time they shall be delivered to the Owner.

1.13 PROTECTION AGAINST GALVANIC CORROSION

- A. Where dissimilar metals are in direct contact with each other, suitable insulation shall be provided between adjoining surfaces so as to eliminate direct contact. The insulation shall be heavy bituminous coatings, nonmetallic separators or washers, or other acceptable materials.

1.14 FASTENERS

- A. All necessary bolts, anchor bolts, nuts, washers, plates and bolt sleeves shall be furnished by the Contractor in accordance herewith. Bolts shall have suitable washers and, where so required, their nuts shall be hexagonal.
- B. All bolts, anchor bolts, nuts, washers, plates, and bolt sleeves shall be Type 304 stainless steel unless otherwise specifically indicated or specified.
- C. Unless otherwise specified, stud, tap, and machine bolts shall be Grade 5, plain, carbon steel. Hexagonal nuts of the same quality of metal as the bolts shall be used.

1.15 SALVAGED MATERIALS

- A. In the absence of special provisions in other Sections of the Specifications, salvage materials, equipment or other supplies that occur are the property of the Owner and shall be cleaned and stored as directed by the Engineer.

- B. All excavated materials needed for backfilling operation shall be stored on site. Where additional area is needed for stockpiling, it shall be obtained by the Contractor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 016000

**SECTION 017610
PROTECTION OF EXISTING FACILITES**

PART 1 GENERAL

1.01 WORK INCLUDED

- A. The Contractor shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents. All property that is damaged by the Contractor during the construction of the proposed facilities shall be repaired or replaced as directed by the Owner or the Engineer to a like new condition regardless of its physical condition prior to the start of construction.
- B. The Contractor shall verify the exact locations and depths of all utilities shown and the Contractor shall make exploratory excavations of all utilities that may interfere with the Work. All such exploratory excavations shall be performed as soon as practicable after award of Contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the Contractor's Work. When such exploratory excavations show the utility location to differ materially from the location shown or specified, the Contractor shall so notify the Engineer.
- C. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility.

1.02 RIGHTS-OF-WAY

- A. The Contractor shall not do any Work that would affect any oil, gas, sewer, or water pipeline; any telephone, telegraph, or electric transmission line; any fence; or any other structure, nor shall the Contractor enter upon the rights-of-way involved until notified by the Engineer that the Owner has secured authority therefor from the proper party. After authority has been obtained, the Contractor shall give said party due notice of its intention to begin Work, and shall give said party convenient access and every facility for removing, shoring, supporting, or otherwise protecting such pipeline, transmission line, ditch, fence, or structure, and for replacing same. When two or more contracts are being executed at one time on the same or adjacent land in such manner that work on one contract may interfere with that on another, the Owner shall determine the sequence and order of the Work. When the territory of one contract is the necessary or convenient means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the Owner to the Contractor so desiring, to the extent, amount, in the manner, and at the times permitted. No such decision as to the method or time of conducting the work or the use of territory shall be made the basis of any claim for delay or damage, except as provided for temporary suspension of the work in accordance with Article 15 of the General Conditions of the Contract Documents.

1.03 PROTECTION OF STREET OR ROADWAY MARKERS

- A. The Contractor shall not destroy, remove, or otherwise disturb any existing survey markers or other existing street or roadway markers without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the construction operations have been properly referenced for easy and accurate restoration. It shall be the Contractor's responsibility to notify the proper representatives of the Owner of the time and location that Work will be done. Such notification shall be sufficiently in advance of construction so that there will be no delay due to waiting for survey points to be satisfactorily referenced for restoration. All survey markers or points disturbed by the Contractor without proper authorization by the Engineer, will be accurately restored by the Owner at the Contractor's expense after all street or roadway resurfacing has been completed.

1.04 EXISTING UTILITIES AND IMPROVEMENTS

- A. General: The Contractor shall protect all underground utilities and other improvements which may be impaired during construction operations. It shall be the Contractor's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations. The Contractor shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.
- B. Utilities to be Moved: In case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the Contractor, be notified by the Owner to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the Contractor shall notify the Engineer a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.
- C. Where the proper completion of the Work requires the temporary or permanent removal and/or relocation of an existing utility or other improvement which is shown, the Contractor shall remove and, without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to the Owner and the owner of the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the Contractor in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal. This includes temporarily supporting and bracing for line and power poles.
- D. Owner's Right of Access: The right is reserved to the Owner and to the owners of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the Work of this Contract.
- E. Utilities Shown or Indicated: Existing utility lines that are shown or the locations of which are made known to the Contractor prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling. The appropriate utility owner or franchise holder shall be immediately notified of any and all damage to their facilities and they shall have jurisdiction and approval over the means and methods of repair of same.
- F. Underground Utilities Not Shown or Indicated: In the event that the Contractor damages any existing utility lines that are not shown or the locations of which are not made known to the Contractor prior to excavation, a written report thereof shall be made immediately to the Owner. If directed by the Owner, repairs shall be made by the Contractor under the provisions for changes and extra Work contained in the General Conditions.
- G. All costs of locating, and repairing damage not due to failure of the Contractor to exercise reasonable care, and removing or relocating such utility facilities not shown in the Contract Documents with reasonable accuracy, and for equipment on the project which was actually working on that portion of the Work which was interrupted or idled by removal or relocation of such utility facilities, and which was necessary idled during such Work will be paid for as extra Work in accordance with the provisions of the General Conditions. Compensation shall not include Contractor's costs for the coordination of their activities with the utility company affected. Contractor shall schedule their work in such a manner that he is not delayed by the utilities companies relocating or supporting their facilities. No compensation will be paid the Contractor for any loss of time or delay.
- H. Approval of Repairs: All repairs to a damaged improvement are subject to inspection and approval by an authorized representative of the improvement owner before being concealed by backfill or other work.

- I. **Maintaining in Service:** All oil and gasoline pipelines, power, and telephone or other communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the Work shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the Owner are made with the owner of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The Contractor shall be responsible for and shall repair all damage due to its operations and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.
- J. **Septic Tank Lateral Lines:** Septic tank lateral lines and drain fields may be encountered during construction operations. The Contractor shall be responsible to locate and take all possible precautions for protecting the lateral lines and drain fields. Any damage shall be repaired and/or replaced by the Contractor, at no additional cost to the Owner, in a manner satisfactory to the Engineer.

1.05 ELECTRICAL POWER POLES

- A. All work on power poles needing to be temporarily supported, braced, or relocated, shall be done by the owner of the utility, (i.e. Evergy, Rural Electric or other), at no charge to the Owner and paid for by the Contractor. The Contractor shall coordinate the work with utility owner.
- B. Underground power lines damaged by the Contractor shall be repaired by utility owner at no cost to the Owner and paid for by the Contractor.

1.06 GAS COMPANY LINES

- A. Gas Company lines damaged by the Contractor shall be repaired by the owner of the utility (i.e. Kansas Gas Service Company or other), at no cost to the Owner and paid for by the Contractor.
- B. Gas lines needing to be relocated shall be moved by the Kansas Gas Service Company and paid for by the Contractor. The Contractor shall coordinate the relocation with Kansas Gas Service Company to eliminate the relocation delays in the interceptor sewer construction.

1.07 LINES FOR STREET LIGHTS

- A. Lines and poles for street lights needing to be temporarily supported/braced, or which are damaged by the Contractor shall be repaired by the owner of the utility, (i.e. Evergy or other, and/or the Traffic Engineering Division), and paid for by the Contractor.

1.08 BURIED TELECOMMUNICATIONS LINES AND/OR CONDUIT

- A. Buried telecommunications lines and/or conduit damaged by the Contractor shall be repaired by the owner of the utility, (i.e. Southwestern Bell Telephone Company or other), at no additional cost to the Owner and paid for by the Contractor.

1.09 CABLE TELEVISION BURIED CABLE AND/OR CONDUIT.

- A. Cable Television buried lines and/or Conduit damaged by the Contractor shall be repaired by the appropriate Cable Television Company and paid for by the Contractor.

1.10 WATER DIVISION WATER MAINS

- A. Water mains damaged by the Contractor shall be repaired by the owner of the utility or upon written permission by the utility owner, by the Contractor in accordance with the requirements of the utility owner; both to be fully paid for by the Contractor.
- B. The opening and closing of distribution system valves shall be performed only by the utility owner. This includes existing valves and Contractor installed valves that control the flow of potable or non-potable water.

1.11 RECONNECTION OF SERVICE LINES

- A. The Contractor shall provide all excavation, backfill, and seeding as required for tapping the new main, trenching across the street where required and shall assist the City in making connection to the existing water services.

- B. The Contractor shall remove and replace the street pavement for service lines. Removal and replacement of pavement will be paid for under the bid item for removal and replacement of the type of pavement removed.

1.12 FIRE LINE CONNECTIONS

- A. The Contractor shall employ the services of a mechanical contractor to purge all air from the reconnected fire lines within the customer building(s) upon completion of the connection to the new water main.
- B. The mechanical contractor shall be a qualified contractor experienced with fire control systems and have the equipment needed to complete the purging of air from the fire protection system and placing the system back on line.
- C. The general contractor shall select one or more proposed mechanical contractors and submit their qualification statements to the Engineer and Owner for approval. The selected mechanical contractor shall be paid by the general contractor. The cost of this work shall be subsidiary to the water line installation.

1.13 TAPS TO EXISTING LINES.

- A. The Owner will perform all taps to existing mains that are required for main connections.
- B. The Contractor shall furnish and install the tapping sleeve and valve and necessary blocking as specified for tapping to existing mains.
- C. The Owner will make the actual wet tap after inspection and approval of the installation of the tapping sleeve and valve.
- D. Contractor will then complete the blocking and make the necessary connection between the newly installed tapping sleeve and valve and the new main, set the valve box, backfill and compact the excavation, and finish grade as required.

1.14 TREES WITHIN STREET RIGHTS-OF-WAY AND PROJECT LIMITS

- A. General
 - 1. The Contractor shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs, including those lying within street rights-of-way and project limits and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the jurisdictional agency or Owner. All existing trees and shrubs which are damaged during construction shall be trimmed or replaced by the Contractor to the satisfaction of the Owner. Tree trimming and replacement shall be accomplished in accordance with the following paragraphs.
- B. Trimming
 - 1. The symmetry of the tree shall be preserved; no stubs or splits or torn branches shall remain. Clean cuts shall be made close to trunk or large branch. Spikes shall not be used for climbing live trees. All cuts over 1½ inches in diameter shall be coated with an asphaltic emulsion material.
- C. Replacement
 - 1. The Contractor shall immediately notify the Owner if any tree is damaged by the Contractor's operation. If, in the opinion of the Owner, the damage is such that replacement is necessary, the Contractor shall replace the tree at its own expense. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the Contractor shall pay to the Owner of said tree compensatory payment acceptable to the tree owner, subject to the approval of the Owner.

1.15 NOTIFICATION BY THE CONTRACTOR

- A. Prior to any excavation in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas, petroleum products, or other pipelines; all buried electric power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway rights-of-way, the Contractor shall notify the respective authorities representing the owners or agencies responsible for such facilities not less than 3 days nor more than 7 days prior to excavation so that a representative of said owners or agencies can be present during such Work if they so desire.
- B. The Contractor shall prepare a written notice to property owners adjacent to the project work site notifying them of the schedule of work affecting them and anticipated inconveniences they may expect. The notice shall list the company name and phone numbers of responsible personnel, both local and out of town if non-local contractor, where the property owner, Engineer or Owner, including police, fire and public works can contact them during normal business hours, after hours and on weekends. The notice shall meet the approval of the Engineer and be delivered to property owners at least 72 hours prior to construction adjacent to their property.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 017610

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**SECTION 017700
CLOSEOUT PROCEDURES**

PART 1 GENERAL

1.01 FINAL CLEANUP

- A. The Contractor shall promptly remove from the vicinity of the completed Work, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the Work by the Owner will be withheld until the Contractor has satisfactorily complied with the foregoing requirements for final cleanup of the project site.

1.02 CLOSEOUT TIMETABLE

- A. The Contractor shall establish dates for equipment testing, acceptance periods, and on-site instructional periods (as required under the Contract). Such dates shall be established not less than two weeks prior to beginning any of the foregoing items, to allow the Owner, the Engineer, and their authorized representatives sufficient time to schedule attendance at such activities.

1.03 FINAL SUBMITTALS

- A. Before the final acceptance of the project, the Contractor shall submit to the Engineer (or to the Owner if indicated) certain records, certifications, etc., which are specified elsewhere in the Contract Documents. Missing, incomplete or unacceptable items, as determined by the Engineer or the Owner, shall constitute grounds for withholding final payment to the Contractor. A partial list of such items appears below, but it shall be the Contractor's responsibility to submit any other items which are required in the Contract Documents:
1. Written test results of project components, where required.
 2. Performance affidavits for equipment, where required.
 3. Operation and maintenance manuals for all equipment.
 4. During the entire construction operation, the Contractor shall maintain records of all deviations from the Drawings and Specifications and shall prepare therefrom record drawings showing correctly and accurately all changes and deviations from the Work made during construction to reflect the Work as it was actually constructed. These drawings shall conform to recognized standards of drafting, shall be neat, legible and on mylar or other reproducible material acceptable to the Engineer.
 5. Written guarantees, where required.
 6. Certificates of inspection and acceptance by local governing agencies having jurisdiction.
 7. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law including the fully executed Affidavit of Contractor, Document No. 860.
 8. Keying Schedule.
 9. Bonds for roofing, maintenance, etc. as required.

1.04 SUBSTANTIAL COMPLETION

- A. When Contractor considers the Work is substantially complete, he shall submit to Engineer:
1. A written notice that the Work is substantially complete.
 2. A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, Engineer will make an inspection to determine the status of completion.
- C. Should Engineer determine that the Work is not substantially complete:
1. Engineer will promptly notify the Contractor in writing, giving the reasons therefore.
 2. Contractor shall correct the deficiencies in the Work, and send a second written notice of substantial completion to the Engineer.
 3. Engineer will reinspect the Work.
- D. When the Engineer finds that the Work is substantially complete, he will:

1. Prepare and deliver to Owner a tentative Certificate of Substantial Completion on NSPE Form 1910-8-D, with a tentative list of items to be completed or corrected before final payment.
2. After consideration of any objections made by the Owner as provided in Conditions of the Contract, and when Engineer considers the Work substantially complete, he will execute and deliver to the Owner and the Contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.05 FINAL INSPECTION

- A. When Contractor considers the Work is complete, he shall submit written certification that:
 1. Contract Documents have been reviewed.
 2. Work has been inspected for compliance with Contract Documents.
 3. Work has been completed in accordance with Contract Documents.
 4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
 5. Work is completed and ready for final inspection.
- B. Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should Engineer consider that the Work is incomplete or defective
 1. Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
 2. Contractor shall take immediate steps to correct deficiencies, and send a second written certification to Engineer that the Work is complete.
 3. Engineer will reinspect the Work.
 4. This procedure will continue until the entire project has been accepted by the Engineer.
- D. The "Final Payment" will not be processed until the entire project has been accepted by the Owner and all of the requirements in sub-section 1.03 "Final Submittals" have been satisfied.
- E. When the Engineer finds that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.06 REINSPECTION FEES

- A. Should Engineer perform reinspections due to failure of the Work to comply with the claims of status of completion made by the Contractor:
 1. Owner will compensate Engineer for such additional services.
 2. Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.07 MAINTENANCE AND GUARANTEE

- A. The Contractor shall comply with all maintenance and guarantee requirements of the Contract Documents.
- B. Replacement of earth fill or backfill, where it has settled below the required finish elevations, shall be considered as a part of such required repair work, and any repair or resurfacing constructed by the Contractor which becomes necessary by reason of such settlement shall likewise be considered as a part of such required repair work unless the Contractor shall have obtained a statement in writing from the affected private owner or public agency releasing the Owner from further responsibility in connection with such repair or resurfacing.
- C. The Contractor shall make all repairs and replacements promptly upon receipt of written order from the Owner. If the Contractor fails to make such repairs or replacements promptly, the Owner reserves the right to do the Work and the Contractor and their surety shall be liable to the Owner for the cost thereof.

1.08 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit the final application for payment in accordance with procedures and requirements stated in the General Conditions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 017700

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**SECTION 023033
SUBSURFACE INVESTIGATION**

PART 1 GENERAL

1.01 DESCRIPTION

- A. Before submitting their Bid, each Bidder shall, at their own expense, make such additional investigations and tests as the Bidder may deem necessary to determine their Bid for performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents.
- B. On request, Owner will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of their Bid.
- C. The lands upon which the Work is to be performed, rights-of-way for access thereto, and other lands designated for use by contractor in performing the Work are identified in the Specifications or Drawings.

1.02 REQUIREMENTS

- A. Contractor shall carefully study all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site which have been identified in the Contract Documents.
- B. Contractor acknowledges that such reports and drawings are not Contract Documents and may not be complete for Contractor's purposes.
- C. Contractor acknowledges that Owner and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to the performance of the work at or contiguous to the site.
- D. Contractor has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Contractor and safety precautions and programs incident thereto. Contractor does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the contract price, within the contract times and in accordance with the other terms and conditions of the Contract Documents.
- E. The submission of a bid shall constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this section and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 023033

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**SECTION 312310
EXCAVATION, BACKFILL, AND COMPACTION**

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Excavate, backfill, compact and grade as required for the site underground utility and process piping systems, structure foundations and appurtenances as shown on the Drawings and specified herein.

1.02 GENERAL

- A. With reference to the terms and conditions of the construction standards for excavations set forth in the OSHA "Safety and Health Regulations for Construction", Chapter XVII of Title 29, CRF, Part 1926, the Contractor shall employ a competent person and, when necessary, a registered Professional Engineer, to act upon all pertinent matters of the Work of this section.
- B. The Contractor is, and the Owner and Engineer are not, responsible to review or assess the Contractor's safety precautions, programs or costs, or the means, methods, techniques or technique adequacy, reasonableness of cost, sequences or procedures of any safety precaution, program or cost, including but not limited to, compliance with any and all OSHA requirements. The Contractor is, and the Owner and Engineer are not, responsible to determine if any safety or safety related standards apply to the project.
- C. Classification of Excavation: Excavated material will not be classified with reference to type, and the terms "excavation" and "trenching" shall include all material encountered without regard to its physical properties, characteristics or composition.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D698 Moisture-Density Relations of Soils Using 5.5 lb. (2.5 kg) Rammer and a 12 inch (304.8 mm) Drop.
 - 2. D 1556 Density of Soil In Place by the Sand-Cone Method.
 - 3. D 2167 Density of Soil In Place by the Rubber Balloon Method.
 - 4. D448 Standard Sizes of Coarse Aggregate for Highway Construction.
 - 5. D 2922 In Place by Nuclear Methods (Shallow Depth).
- B. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. T99 Moisture Density Relations of Soils, Using a 5.5 lb. (2.5 kg) Rammer and a 12 inch (305 mm) Drop.
- C. Military Standard (MIL-STD-619):
 - 1. MIL-STD-619B Unified Soil Classification System for Roads, Airfields, Embankments and Foundations.
- D. Kansas Department of Transportation (KDOT):
 - 1. 1990 Edition Standard Specifications for State Road and Bridge Construction.
- E. Federal Register - Occupation and Safety Administration (OSHA):
 - 1. 29CFR Part 1926 Occupation Safety and Health Standards - Excavations.
- F. Department of the Kansas City District, Corps of Army Engineers.
 - 1. Guidebook General information for sponsors of flood protection projects constructed by the Corps of Engineers.

1.04 SUBMITTALS

- A. General: Submit information and samples to the Engineer for review as specified herein in accordance with Section 013300 "Submittals".
- B. Bedding and Backfill Materials: Prior to any earthwork, the Contractor shall submit a sieve analysis and Standard Proctor Curves for the existing soils to be used as backfill and the proposed bedding and backfill materials to Engineer for review and approval.

- C. Dewatering: The Contractor shall submit to the Engineer his proposed methods of handling ground water and the locations at which the water will be disposed of. Methods shall be acceptable to the Engineer before starting the excavation. The contractor shall obtain the necessary permits before starting and excavating.
- D. Sheeting System: Drawings and design computations of any proposed sheeting system shall be submitted to the Engineer; however, the review of these Drawings shall in no way relieve the Contractor of the responsibility to provide a safe and satisfactory sheeting and shoring system. Sheeting and shoring shall be designed by the Contractor, and the proposed design shall be sealed by a Professional Engineer registered in the State of Kansas. If the Engineer is of the opinion that at any point sufficient or proper supports have not been provided, he may order additional supports put in at the Contractor's expense.

1.05 QUALITY CONTROL

- A. Prior to the placement of any excavated or borrowed soils, each type of soil approved for backfill shall have a Standard Proctor Curve developed to indicate the moisture-density relationship required to obtain maximum density.
- B. A qualified soils engineer or geologist selected by the Contractor, approved by the Engineer and paid for by the Contractor shall be responsible for developing all required proctor curves and in-place density tests. The results shall be submitted to the Engineer for approval and used in determining the acceptability of the soils placed in accordance with the requirements of the section entitled "Earthwork". The Contractor shall coordinate and cooperate in the performance of the required testing. Do not place any footing reinforcing until the excavations have been tested for compaction.

1.06 SUBSURFACE INFORMATION

- A. The Contractor shall satisfy himself as to the character and amount of different soil materials, groundwater and the subsurface conditions to be encountered in the work to be performed. Information and data, when furnished, are for the Contractor's general information. However, it is expressly understood that any interpretation or conclusion drawn there from is totally the responsibility of the Contractor. Engineer and Owner assume no liability for the accurateness of the data reported or the materials used.

1.07 PROTECTION OF PROPERTY AND STRUCTURES

- A. The Contractor shall, at his own expense, sustain in place and protect from direct or indirect injury, all pipes, poles, conduits, walls, buildings, and all other structures, utilities, and property in the vicinity of his work. Such sustaining shall be done by the Contractor. The Contractor shall take all risks attending the presence or proximity of pipes, poles, conduits, walls, buildings, and all other structures, utilities, and property in the vicinity of his work. He shall be responsible for all damage, and assume all expenses, for direct or indirect injury and damage, caused by his work, to any such pipe, structures, etc., or to any person or property, by reason of injury to them, whether or not such structures, etc., are shown on the Drawings.
- B. Barriers shall be placed at each end of all excavations and at such places as may be necessary along excavations to warn all pedestrian and vehicular traffic of such excavations. Barricades with flashing lights shall also be placed along excavation from sunset each day to sunrise of the next day until such excavation is entirely refilled, compacted, and paved. All excavations shall be barricaded where required to meet OSHA, local, and Federal Code requirements, in such a manner to prevent persons from falling or walking into any excavation.

1.08 CRITICAL AREA - LEVEE

- A. The "critical area" as defined by the Corps of Engineers is a zone between Station 3+00 riverward and Station 5+00 landward of the levee centerline. Construction within those limits shall be in strict compliance with the guidelines as set forth by the Corps of Engineers.

PART 2 PRODUCTS

2.01 EXCAVATED MATERIALS

- A. Excavated Materials shall be as specified in the section entitled "Earthwork".

2.02 BEDDING MATERIALS

- A. PVC Sewer Lines, CMP and CSP Storm Sewer Lines: Bedding material shall be crushed limestone having the following characteristics:
 - 1. Retained on 3/4 inch sieve 0%
 - 2. Retained on 1/2 inch sieve 24-35%
 - 3. Retained on 3/8 inch sieve 40-60%
 - 4. Retained on No. 4 sieve 80-100%
 - 5. Deleterious Substances, (max.) 5%
- B. DIP Sewer Lines, PVC and DIP Force Main: Bedding material shall be crushed limestone (1/4" CHIP) having the following characteristics:
 - 1. Retained on 3/8 inch sieve 0%
 - 2. Retained on No. 4 sieve 25-40%
 - 3. Retained on No. 8 sieve 85-95%
 - 4. Retained on No. 100 sieve Not less than 98%

2.03 BACKFILL MATERIALS

- A. Backfill materials shall be furnished as required from on-site excavations or from acceptable off-site sources as required. Backfill material shall meet or exceed the requirements set forth in Section 310000 "Earthwork". Broken Portland cement or asphaltic concrete will not be considered an acceptable fill material.
- B. Trench Backfill
 - 1. Backfill material for backfilling trenches shall be approved selected material taken from the trench or other excavation, suitable for compaction and free of large clods over 3 inches in the largest dimension and free of rocks and debris.
 - 2. Flowable mortar fill material shall be as specified in Section 033000 "Cast in Place Concrete".
- C. Excavated materials within the "Critical Area" shall be selectively stockpiled for backfilling to replace the natural foundation stratification and embankment. In lieu of selective stockpiling, all impervious material from an approved borrow may be used.

2.04 STABILIZING MATERIAL FOR TRENCH BOTTOMS AND STRUCTURE SUBGRADE

- A. Wet or unstable trench bottoms and structure subgrade shall be stabilized by excavating to additional depth as directed by the Engineer and replacing the unsatisfactory soil with crushed limestone with angular shapes for high interlocking capability graded as follows:
 - 1. 4-inch to 8-inch primary crusher run.
 - 2. 3-inch to 4-inch crusher run.
 - 3. 1 1/2-inch poorly graded.
 - 4. 3/4-inch poorly graded.
 - 5. Specification bedding material.
- B. Field conditions shall be the determining factor for individual or combined use of these materials. The upper 2-inches of any stabilized area shall consist of specification bedding material. In sewer trenches, the minimum depth of bedding material shall be 4-inches under the pipe.

PART 3 EXECUTION**3.01 TRENCH EXCAVATION**

- A. The Contractor shall perform all excavation of every description and of whatever substance encountered, to the dimensions, grades and depths shown on the Drawings, or as directed. All excavations shall be made by open cut. All existing utilities such as pipes, poles and structures shall be carefully located, supported and protected from injury; in case of damage, they shall be restored at the Contractor's expense.

- B. The width of the trench shall be as shown on the project drawings. All pipe trenches shall be excavated to a level where suitable material is reached, a minimum of 4 inches below the sewer line, that will allow for a minimum of 42" of covering unless otherwise indicated on the Drawings. Excavation depths in other types of materials and conditions shall be made as hereinafter specified.
- C. In areas where trench widths are not limited by right-of-way and/or easement widths, property line restrictions, existing adjacent improvements, including pavements, structures and other utilities, and maintenance of traffic, the trench sides may be sloped to a stable angle of repose of the excavated material but only from a point one foot above the crown of the pipe. A substantially and safely constructed movable shield, "box" or "mule" may be used in place of sheeting when the trench is opened immediately ahead of the shield and closed immediately behind the shield as pipe laying proceeds inside the shield.
- D. Ladders or steps shall be provided for and used by workmen to enter and leave trenches.
- E. Excavation for appurtenances shall be sufficient to provide a clearance between their outer surfaces and the face of the excavation or sheeting, if used, of not less than 12 inches.
- F. Excavated unsuitable material shall be removed from the site and disposed of by the Contractor. Materials removed from the trenches shall be stored and in such a manner that will not interfere unduly with construction operations, traffic on public roadways and sidewalks and shall not be placed on private property. In congested areas, such materials as cannot be stored adjacent to the trench or used immediately as backfill shall be removed to other convenient places of storage acceptable to the Owner at the Contractor's expense.
- G. Stones shall be removed as necessary to avoid point bearing. Where rock excavation is required in trenches for pipe, the rock shall be excavated to a minimum overdepth of 6 inches below the trench depths indicated or specified and backfilled to the pipe bearing or bedding with the bedding material specified. Backfill material shall be thoroughly compacted to form a stable trench bottom.
- H. Where soil at designated elevations of pipelines is judged by the Engineer to be of an unstable character the Engineer may require that the trench be overexcavated as directed and backfilled to the pipe bearing or bedding with the bedding material specified. Backfill material shall be thoroughly compacted to form a stable trench bottom.

3.02 STRUCTURE EXCAVATION

- A. All excavation shall be made in such a manner, and to such widths, as will give ample room for properly constructing and inspecting the structures they are to contain. Excavation shall be made in accordance with the details shown on the Drawings, and as specified herein. Attention shall be given to the handling of storm water runoff.
- B. The entire area to be covered by the structures shall be excavated as shown by details on the drawings to elevations of the footings, foundations and floor slabs. Highly organic soils (peat or muck), weak silty materials, asphalt and concrete shall be removed from all foundation areas. In addition, all sandy silt zones shall be completely removed from mat foundation and footing areas.
- C. Footings, foundations and floor slabs shall be excavated to neat lines as shown on drawings, and shall be formed as required by site conditions. Excavations shall be carried outside slab or footing limits by one foot for each foot excavated below the bearing grade of the mat or footing.
- D. Sheet piling may be used in lieu of open cut. Unless specifically specified otherwise, if sheet piling is utilized, the piling must be removed as the backfill is replaced.

3.03 UNAUTHORIZED EXCAVATION

- A. Excavation Work carried outside of the Work limits required by the Contract Documents shall be at the Contractor's expense, and shall be backfilled by the Contractor at his own expense as directed by the Engineer. Where, in the judgment of the Engineer, such over-excavation requires use of lean concrete or crushed stone, the Contractor, at his expense shall furnish and place such materials.

3.04 SHEETING AND BRACING

- A. Trenches: The Contractor shall furnish, place and maintain sheeting and bracing to support sides of the excavation as necessary to provide safe working conditions in accordance with OSHA requirements, and to protect pipes, structures and other Work from possible damage.
 - 1. Where wood sheeting or certain designs of steel sheeting are used, the sheeting shall be cut off at a level of 2 feet above the top of the installed pipe and that portion below the level shall be left in place.
 - 2. If interlocking steel sheeting is used, it shall be removed providing removal can be accomplished without disturbing the bedding, pipe or alignment of the pipe.
 - 3. Any damage to the pipe bedding, pipe or alignment of the constructed utility caused by the removal of sheeting shall be cause for rejection of the affected portion of the work. The Owner may permit sheeting to be left in place at the request and expense of the Contractor.
- B. If the Engineer is of the opinion that at any point sufficient or proper supports have not be provided, he may order additional supports put in at the Contractor's expense. The Contractor shall be responsible for the adequacy of all sheeting used and for all damage resulting from sheeting and bracing failure or from placing, maintaining and removing it.

3.05 CONTROL OF WATER

- A. The utilities and structures have been designed to be constructed by open cut and constructed in a dry condition. All dewatering shall be provided at the Contractor's expense.
 - 1. Structures excavations below water table shall require a dewatering system to prepare the base of the excavation. The dewatering system shall remove water approximately two feet to three feet below the bottom of the excavation.
 - 2. 2If ground water is within twelve to twenty-four inches from the ground surface, it will be necessary to lower the ground water to permit effective compaction. The Contractor shall develop feasible procedures for dewatering.
 - 3. Proof roll the exposed stripped and excavated surface area until a soil density of 95 percent of maximum modified Proctor Density (((ASTM D1557))) has been achieved twenty-four inches below the exposed compacted surface. Test compaction as specified. Add water if necessary to bring up moisture to optimum levels. Replace all material if determined to be deleterious in areas that "yield" during the final rolling operation and replace with suitable fill material.
- B. Surface Water:
 - 1. Surface water shall be diverted to prevent entry to trenches and excavations for structures.
 - 2. In the event surface water does accumulate in trenches and other excavations, the excavations shall be dewatered as necessary to permit the proper execution of the work.
- C. Ground Water: Where ground water is encountered, trenches and structure excavations shall be dewatered as necessary to permit the proper execution of the work.
 - 1. The Contractor shall provide pumps, well points, and other appurtenant equipment necessary to remove and maintain water at such a level as to permit construction in a dry condition as specified except where authorized tremie concrete construction Work is shown or permitted. The groundwater level shall be controlled so as to permit the placing of sewer lines and structure foundations, curing of concrete, and the maintenance of supporting foundations and adjacent Work and structures. The dewatering system and points of discharge shall be subject to permitting, reviews, and acceptance by the Engineer before installation. Disposal of water to any surface water body will require silt screens.

2. The Contractor shall use dewatering systems that include automatic starting devices, and standby pumps that will ensure continuous dewatering in the event of an outage of one or more pumps. He shall be totally responsible for protecting structures from flotation until final acceptance of the Work. The Contractor shall also modify the dewatering system during the course of construction to satisfy faults, legitimate complaints, or legal requirements.

D. Pipelines in place shall not be used for draining trenches.

3.06 3TRENCH BACKFILL AND COMPACTION

- A. Backfill trenches only after pipelines, joints and bedding have been inspected and approved.
- B. Bedding material shall not be used for pipe laid in the Kansas River Valley, where existing natural material is sand.
 1. For pipes not laid in bedding material, the backfill material shall be placed in the trench to its full width, simultaneously on both sides of the pipe, in layers not more than 6 inches thick. Each layer shall be thoroughly tamped and compacted in place to insure uniform bearing and prevent lateral movement. Additional layers of selected material not exceeding 6 inches in thickness shall be placed, thoroughly tamped and compacted, until the pipe is covered to a depth of not less than one foot.
- C. Sanitary and Storm Sewer: All sanitary and storm sewer pipes greater than two feet from street or alley right-of-way shall be laid in bedding material compacted as specified for Type 'A' Compaction. A bed of bedding material shall be placed at the bottom of the trench and up to the spring line of the pipe for VCP, DIP, RCP, CSP, CMP (plain and Smooth-Flo) and C 900/905 PVC pipes; up to the top of the pipe for Ultra-Flo CMP; and to one foot above the top of the pipe for SDR 35 and ASTM F679-PS46 PVC gravity sewer pipe as detailed on the Drawings. Bedding material shall be placed, sliced under the haunches of the pipe with a shovel or other suitable tool, and tamped to sufficient depth to provide uniform bearing for the bottom 180-degree arc of the pipe. Additional layers of selected material not exceeding six (6) inches in thickness shall be placed, thoroughly tamped and compacted until the pipe is covered to a depth of not less than two feet.
 1. Aggregate material of the same gradation specified for bedding may be used in lieu of the selected material up to the one foot minimum cover over the top of the pipe.
- D. Compaction for the remainder of the backfill shall be as follows:
 1. Under areas to be paved or aggregate surfaced and under curbs, backfill around structures, or as noted on the plans, compaction shall be Type "A" (mechanical tamped). After selected backfill and compaction to 12" over the pipe, the backfill shall be composed of selected excavated materials free from large clods, rocks, debris or junk and shall be deposited in six (6) inch loose layers at optimum moisture content and compacted to a minimum of ninety five (95) percent of maximum density as determined in accordance with AASHTO T 99. The backfill material shall be properly "worked" to ensure the absence of shrinkage and swell potential for a stable subgrade.
 2. Backfill for the remaining areas and as noted on the Drawings shall be Type "AB" compaction. After selected backfill and compaction to 12" over the pipe, the backfill shall be made by placing the excavated materials, free of debris, rock and junk, back in the trench in six (6) inch loose layers and compacted to a minimum of ninety (90) percent of maximum density as determined in accordance with AASHTO T 99.
- E. Additional Excavation And Backfill

1. Where organic material, such as roots, muck, or other vegetable matter, or other material which, in the opinion of the Engineer, will result in unsatisfactory foundation conditions, is encountered below the level of the proposed pipe bedding material, it shall be removed to a depth of two feet below the outside bottom of the pipe or to a greater depths as directed by the Engineer and removed from the site. Sheeting shall be installed if necessary to maintain pipe trenches within the limits identified by the Engineer. The resulting excavation shall be backfilled with suitable backfill material, placed in 12-inch layers, tamped and compacted up to the level of the bottom of the proposed pipe bedding material. Sufficient compaction of this material shall be performed to protect the proposed pipe against settlement. Construction shall then proceed in accordance with the provisions of Article 3.05 "Trench Backfill and Compaction..
2. Additional excavation (more than two feet below the pipe) as indicated on the trench detail shall be performed only when ordered by the Engineer. Where organic or other material is encountered in the excavation, the Contractor shall bring the condition to the attention of the Engineer and obtain his determination as to whether or not the material will require removal, prior to preparing the pipe bedding. The excavation of material up to a depth of two feet below the outside bottom of the pipe, incidental items of construction, and the Work shall be done at the Contractor's expense. Where ordered by the Engineer, the additional excavation, backfill and additional sheeting, if required, below two feet below the outside bottom of the pipe, shall be paid in accordance with the Change Order procedure specified in the General Conditions.

3.07 TESTING

- A. All soil testing and earthwork monitoring shall be done by the Contractor in conformance with the Contract Documents. Notify the appropriate testing company or personnel in time to be on hand to make the tests required by these specifications. The project superintendent shall be informed of the testing results and designated areas requiring corrective work.
- B. Optimum moisture content of fill material shall be by Standard Proctor Method (((ASTM D698))). Conduct field densities to verify compaction in accordance with ASTM D-1556, ASTM D-2167, or ASTM D-2922.
- C. Retest compaction tests that fail to pass after additional compaction until the specified minimum compaction density is achieved. Two additional tests shall be taken for each failed test. All retesting costs shall be paid for by the Contractor at no additional cost to the Owner.

END OF SECTION 312310

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Bartlett & West

**SECTION 330141
CIPP PIPELINE REHABILITATION**

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 2017.
- B. ISO 9000 - Quality Management Systems -- Fundamentals and Vocabulary; 2015.

1.02 REQUIREMENTS

- A. The Contractor shall furnish all material, tools, equipment and labor necessary to rehabilitate the existing pipeline, at the locations shown on the Drawings, as detailed and in conformance with the Specifications.
- B. The CIPP shall be continuous and jointless from manhole to manhole or access point to access point and shall be free of all defects that will affect the long term life and operation of the pipe.
- C. The CIPP shall fit sufficiently tight within the existing pipe so as to not leak at the manholes, at the service connections or through the wall of the installed pipe. If leakage occurs at the manholes or the service connections the Contractor shall seal these areas to stop all leakage using a material compatible with the CIPP as directed by the Engineer at the price bid therefore in the Proposal. If leakage occurs through the wall of the pipe the liner shall be repaired or removed as recommended by the CIPP manufacturer. Final approval of the liner installation will be based on a leak tight pipe.
- D. The CIPP shall be designed for a life of 50 years or greater.
- E. The CIPP shall be designed as a fully structural stand alone pipe-within-a-pipe. Where specified in the contract documents the installed CIPP shall be a structurally designed pipe within a pipe, meet or exceed all contract specified physical properties, fitting tightly within the existing pipe all within the tolerances specified. The installed CIPP shall withstand all applicable surcharge loads (soil overburden, live loads, etc.) and external hydrostatic (groundwater) pressure, if present, for each specific installation location.
- F. The installed CIPP shall have a long term (50 year) corrosion resistance to the typical chemicals found in domestic sewage.
- G. All existing and confirmed active service connections and any other service laterals to be reinstated as directed by the Owner shall be re-opened robotically or by hand in the case of man-entry size piping, to their original shape and to 95% of their original capacity. All over-cut service connections will be properly repaired to meet the requirements of these specifications.
- H. All materials furnished, as part of this contract shall be marked with detailed product information, stored in a manner specified by the manufacturer and tested to the requirement of this contract.

1.03 COORDINATION OF WORK

- A. All work shall be fully coordinated between manhole and pipe contractors as applicable. Work shall also be fully coordinated between mainline and lateral rehabilitation contractors as to not impede the progress of the lateral contractor.

1.04 APPLICABLE STANDARDS

- A. Specifications of the following listed standards will be referred to hereinafter by standards abbreviation and specification number which shall include the latest revision thereof.
 - 1. ASTM - American Society for Testing and Materials.
 - 2. ACI - American Concrete Institute
 - 3. NACE - National Association of Corrosion Engineers
 - 4. SSPC - Society of Protective Coatings

- B. References: Work shall be accomplished in accordance with the City of Topeka Standard Specifications, except as modified herein.

1.05 QUALITY ASSURANCE

- A. Items submitted for approval in accordance with requirements shown on the Drawings and details shall be of the manufacturer indicated, or an approved equal, in compliance with materials, operations, physical assembly and performance as specified herein.
- B. In addition to the correction period set forth in General Conditions, the manufacturer's standard warranties shall be provided.

1.06 SUBMITTALS

- A. Pipeline Rehabilitation
 - 1. Technical data sheet on each product used, including applicable ASTM test results indicating the product conforms to and is suitable for its intended use per these specifications.
 - 2. Manufacturer's product data, including physical properties, results of applicable ASTM tests for the material supplied, and requirements for installation, curing and field quality control.
 - 3. Manufacturer Qualifications: Submit a list of a minimum of 10 successful similarly sized pipeline rehabilitation projects completed during the past 3 years.
 - 4. Installation Contractor Qualifications:
 - a. Manufacturer certification that installer has been trained and approved by manufacturer in the preparation, handling and installation of specified products, if applicable.
 - b. List of recently completed successful similarly sized pipeline rehabilitation projects, including project name and location, names of owner and engineer, and description of products used, and installation procedures.
 - c. Proof of any necessary federal, state or local permits or licenses necessary for the project.
 - d. For a Product to be considered Commercially Proven, a minimum of 1,000,000 linear feet or 4,000 manhole-to-manhole line sections of successful wastewater collection system installations in the U.S. must be documented to the satisfaction of the Owner to assure commercial viability.
 - e. For an Installer to be considered as Commercially Proven, the Installer must satisfy all insurance, financial, and bonding requirements of the Owner, and must have had at least 3 (three) years active experience in the commercial installation. In addition, the Installer must have successfully installed at least 1,000,000 feet of the same product bid in wastewater collection systems and a minimum of 500,000 feet of the product bid in 8-inch or larger sizes in wastewater collection systems. Acceptable documentation of these minimum installations must be submitted to the Owner.
 - f. Field Supervisor/Foreman: Minimum five (5) years as a foreman/superintendent for a cured-in-place lining crew (installing actual product included with this bid/project), and a minimum of 300,000 linear feet of cured-in-place lining, diameters up to, and including, thirty-six (36) inch diameter. A minimum of five (5) years as a foreman/superintendent for a cured-in-place lining crew, a minimum of 50,000 linear feet of cured-in-place lining of twenty-four (24) inch or greater diameter, installed under his/her supervision. Such experience shall include the actual product, by trade name, Installer proposes to install.
 - g. The rehabilitation manufacturing process shall operate under a quality management system which is third-party certified to ISO 9000 or other recognized organization standards. Proof of certification shall be required for approval.
 - h. The Contractor performing the rehabilitation work shall be fully qualified, experienced and equipped to complete this work expeditiously and in a manner that fulfills all requirements of this Contract. The Contractor shall be regularly engaged in CIPP rehabilitation of sewer systems and associated work included in this Contract.

- i. The Contractor shall have not less than five (5) years experience in the last five years within the United States in complete CIPP rehabilitation of sanitary sewer systems using the methods indicated in these specifications.
 - j. For a product and installer to be Commercially Proven, the installer must own and operate a legally permitted permanent facility to impregnate the CIPP tubes. To ensure the Owner all installed products will meet the minimum product quality control standards set forth by the manufacturer, all CIPP liners shall be impregnated by the approved product's licensed installer that is performing the work. No pre-impregnated CIPP products will be accepted from a third-party vendor. Provide a copy of your permits for this facility with the bid.
 - k. Training certification shall be submitted for each of the key crew members involved with all aspects of the rehabilitation method. Supervisors and key operators shall have not less than five (5) years of experience in the last five years on projects within the United States.
 - l. Within seven (7) days after the Bid Letting, the Contractor shall submit to the Owner, for review and approval prior to award of the Contract, resumes of the personnel to be performing the work, including those personnel to be performing the installation of the CIPP liner, to determine if the Contractor is responsible for meeting the requirements of the work. The Owner has the right to reject the use of personnel that, in the opinion of the Owner, do not have adequate or relevant experience installing CIPP Liner systems in sewer mains of similar diameters as those being rehabilitated as part of this project. Failure to provide the required experience may be grounds for rejection of the bid at the discretion of the Owner.
5. Manufacturer's design analysis.
 6. Additional submittal requirements related to the grouting operation as specified herein.
 7. Design details for any additional ancillary systems and equipment to be used in site and surface preparation and testing.

1.07 WARRANTY

- A. The materials used for the project shall be certified by the manufacturer for the specified purpose. The manufacturer shall warrant the liner to be free from defects in raw materials for three (3) years from the date of installation and acceptance by the Owner. The Contractor shall warrant the liner installation for a period of three (3) years. During the Contractor warranty period any defect, which may materially affect the integrity, strength, function and/or operation of the pipe, shall be repaired at the Contractor's expense in accordance with manufacturer's recommended procedures.
- B. After a pipe section has been lined and for a period of time up to three (3) years following completion of the project, the Owner may inspect all or portions of the lined system. The specific locations will be selected at random by the Owner and will include all sizes of CIPP from this project. If it is found that any of the CIPP has developed abnormalities since the time of "Post Construction Television Inspection," the abnormalities shall be repaired and/or replaced according to the manufacturer's recommended procedures. If, after inspection of a portion of the lined system under the contract, problems are found, the Owner may televise all the CIPP installed on the contract. All verified defects shall be repaired and/or replaced by the Contractor and shall be performed in accordance with the manufacturer's recommended procedures and per the original specifications, all at no additional cost to the Owner.

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Store materials to prevent physical damage and weather damage.
- B. Protect materials during transportation and installation to avoid physical damage.
- C. Materials shall be handled in a manner to insure installation of the material in an undamaged and structurally sound condition.
- D. Materials shall be handled according to their material safety data sheets.

1.09 BYPASS PUMPING

- A. Where flow control is required to perform a specified repair or replacement operation, plugging or blocking shall be used wherever possible.
- B. If plugging or blocking is not feasible or at the Contractor's discretion, Contractor shall provide the necessary pumps and temporary piping and associated accessories as required for pumping of wastewater around areas of construction so as to not impede the collection and treatment of the wastewater. Backup pumping capability will be required.
- C. The design, installation, and operation of the temporary pumping system shall be the Contractor's responsibility. The temporary pumping system shall comply with the requirements of all codes and regulatory agencies having jurisdiction. Contractor shall be responsible for any spillage of raw sewage that results in civil or criminal charges from any local, state, or federal agency and will bear all costs for these charges and any restoration required.
- D. It is essential to the operation of the existing sewerage system that there be no interruption in the flow of sewage throughout the duration of the Project. Contractor shall provide, maintain, and operate all temporary facilities such as plugs, pumping equipment (both primary and backup units as required), conduits, all necessary power or fuel source, and all other labor and equipment necessary to handle the sewage by-pass flow.
- E. Contractor shall provide all necessary means to safely convey the sewage past the work area. Contractor shall not stop or impede the sewer flows under any circumstances.
- F. Contractor shall maintain sewage flow around the work area in a manner that will not cause surcharging of sewers, damage to sewers, and that will protect public and private property from damage and flooding.
- G. Contractor shall protect water resources, wetlands, and other natural resources.
- H. Contractor shall insure that the flow diversion pumping system is properly operated and maintained and shall provide responsible personnel to oversee the diversion pumping system at all times.
- I. Work shall be so scheduled and timed as to cause the least possible interference with the operation of the existing sewer collection and treatment system.
- J. Contractor shall provide the necessary pumps and temporary piping and associated accessories as required for pumping wastewater around areas of construction so as to not impede the collection and treatment of wastewater. Backup pumping capability will be required.
- K. Sewage and water contaminated with sewage shall be conveyed to sanitary sewers.
- L. Refer to the Section entitled "Temporary Bypass Pumping System" for further requirements.

PART 2 PRODUCTS

2.01 CURED-IN-PLACE PIPE

- A. The cured-in-place liner system shall incorporate a resin-impregnated non-woven felt tube installed by inversion and expanded and cured by circulation of heated water or through the use of steam and air pressure (Insituform or pre-approved equal).
- B. Resin-impregnated tube
 - 1. Tube. The sewn tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F 1216 or ASTM F 1743, Section 5. The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections.
 - 2. The wet out tube shall have a uniform thickness that when compressed at installation pressures will meet or exceed the design thickness.
 - 3. The tube shall be sewn to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during inversion. Overlapping layers of felt in longitudinal seams that cause lumps in the final product shall not be utilized.

4. The outside layer of the tube (before wet out) shall be coated with an impermeable flexible membrane that will contain the resin and facilitate monitoring of resin saturation during the resin impregnation (wet out) procedure.
5. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No material shall be included in the tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be evident.
6. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television equipment may be made.
7. Seams in the tube shall be stronger than the non-seamed felt.
8. The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that when properly cured within the tube composite meets the requirements of ASTM F 1216 and ASTM F 1743, the physical properties herein, and those which are to be utilized in the design of the CIPP for this project.
9. The resin shall be a different color from the tube to allow for visual identification of areas of the tube that have or have not been wet out. The color of the resin shall be changed by the addition of dye or pigmentation.
10. The CIPP shall be designed as per ASTM F 1216, Appendix X.1. The CIPP design shall assume no bonding to the original pipe wall. The design safety factor shall be 2.0. The CIPP shall meet the chemical resistance requirements of ASTM F 1216, Appendix X2.
11. Liner thickness for 8" diameter host pipe shall be at least 6 mm.
12. For the design of the CIPP system, the following assumptions shall be made. The host pipe should be considered fully deteriorated, and the CIPP liner shall be designed as a fully structural pipe-within-a-pipe. The live load on the pipe should include traffic loading. The ground water table shall be assumed to be at the ground surface.
13. If the bituminous coating on the inside of the existing pipe will inhibit the cure of the CIPP, a preliner shall be used. The preliner shall act as a barrier between the bituminous coating on the pipe wall and the new CIPP. The preliner shall cover the full circumference of the pipe and extend its full length. It shall remain in place during the installation of the CIPP without tearing and shall be able to withstand the curing temperature without melting. Information on the preliner shall be submitted to the Engineer prior to installing the lining.
14. Resin-impregnated tube system shall be as manufactured by Insituform Technologies, Memphis, TN; Inliner Technologies, Paoli, IN; National Liner, Houston, TX; Spiniello Companies, Morristown, NJ; Pipenology, LLC, O'Fallon, MO or pre-approved equal.
15. The cured pipe material shall conform to the structural properties, as listed below.

CIPP Minimum Physical Properties			
		Cured Composite	
Property	Test Method	min. per ASTM F 1216	(400,000) psi Resin
Modulus of Elasticity	ASTM D790 (short term)	250,000 psi	400,000 psi
Flexural Stress	ASTM D790	4,500 psi	4,000 psi

- a. The required structural CIPP wall thickness shall be based, as a minimum, on the above physical properties in accordance with the Design Equations in Appendix X.1 of ASTM F 1216 and the following minimum design parameters:

Minimum Design Parameters	
Design Safety Factor	2
Retention Factor for Long-Term Flexural Modulus to be Used in Design	50%

Ovality (to be verified by preinstallation video tapes)	2%
Groundwater Depth (above invert)	(varies, assume groundwater at ground surface elevation) ft.
Soil Depth (above crown, see plans for depth information)	(varies) ft.
Soil Modulus	700 psi
Soil Density	120 pcf
Live Load	H20 Highway
Design Condition	Fully Deteriorated

- b. The Contractor shall provide calculations for the thickness of the CIPP liner which show compliance with the minimum design parameters outlined above. The Engineer shall be the sole judge as to the percent ovality. Percent ovalities in excess of 10% will require a point repair prior to installing CIPP. Where it is determined that a thickened tube/bag is required, the Contractor shall provide a thicker tube at no additional cost to the Owner or Engineer.
- c. The soil depth varies for each section of pipe and can be estimated from the profile data provided in the plans. CIPP design shall be based on the actual soil depth.
- d. Any layers of the tube that are not saturated with resin prior to insertion into the existing pipe shall not be included in the structural CIPP wall thickness computation.

2.02 CURED-IN-PLACE PIPE END SEALS

- A. The cured-in-place pipe end seals shall be a hydrophilic seal compatible with the installed cured-in-place liner system. End seal shall be a seamless sleeve type seal. End seal shall be held in place during lining by a mechanical fastener.
- B. Cured-in-place pipe end seals shall be Insignia™ End Seal Sleeve as manufactured by LMK Technologies, Ottawa, IL; Perma Main™ End Seals, as manufactured by Perma-Liner Industries LLC, Clearwater, FL, or approved equal.

PART 3 EXECUTION

3.01 PUBLIC NOTIFICATION

- A. The Contractor shall make every effort to maintain sewer service usage throughout the duration of the project. In the event that a connection will be out of service, the longest period of no service shall be 8 hours. A public notification program shall be implemented, and shall as a minimum, require the Contractor to be responsible for contacting each home or business connected to the sanitary sewer and informing them of the work to be conducted, and when the sewer will be off-line. All notifications shall be distributed in accordance with section 017610, and each home and business shall be notified a minimum of 72 hours in advance of any work impacting their property. The Contractor shall also provide the following:
 - 1. Written notice to be delivered to each home or business the day prior to the beginning of work being conducted on the section, and a local telephone number of the Contractor they can call to discuss the project or any potential problems.
 - 2. Personal contact with any home or business, which cannot be reconnected within the time stated in the written notice.

3.02 EXCAVATION, BACKFILL AND COMPACTION

- A. Excavation for insertion pits (if required), backfilling and compacting shall be in accordance with applicable requirements of the City of Topeka Standard Technical Specifications, latest edition.
- B. Unless otherwise specifically required, the Contractor shall locate excavations for insertion of slipliner to cause the least disruption to existing utilities, traffic, and area residents and businesses.

3.03 GENERAL PIPE INSTALLATION

- A. The repair installation shall be continuous and tight fitting.
- B. Prior to installation of any type of pipe, the existing pipe must be cleaned with high pressure water blasting to remove any obstructions that might prevent installation of the new pipe. Cleaning shall constitute removal of all debris, solids, roots, deposits, and other matter which would preclude the installation of the new pipe into the sewer line. It may be necessary to pull a mandrel or cleaning pig through the pipe to remove the corrosion growth and loose liner material.
- C. Prior to installation of the cured in place pipe, the Contractor shall inspect the sewer segments receiving the pipe using high definition closed circuit television inspection (780p minimum). Any portion of the sewer determined to be unprepared to receive the cured in place pipe or the slipliner pipe shall be cleaned again to remove the obstruction. The sewer shall then be inspected again to verify the obstruction has been removed. Additional cleaning and inspection shall be at no additional expense to the Owner.
 - 1. Contractor shall submit high definition closed circuit television inspection video (780p minimum) once installation of the CIPP liner is complete. All CCTV videos submitted should be coded using PACP Version 7.
- D. Prior to the installation of the cured in place pipe, the Contractor shall review the CCTV footage and note any intruding inlets. Any inlets that the Contractor believes will be detrimental to the installed cured in place pipe and all inlets intruding further than 0.5" shall be trimmed prior to installation. Inlets to be trimmed shall be trimmed to flush with the edge of the existing interceptor. Trimming method shall utilize a robotic cutter specially designed for pipeline applications. Any other trimming methods must be approved by the engineer.
- E. Contractor shall take all necessary measures to control the flow of wastewater during construction. Surcharging of the sewer facilities upstream of the sections of line being rehabilitated will not be allowed under any circumstances. Contractor shall provide temporary bypass pumping, if necessary, in accordance with the "TEMPORARY BYPASS PUMPING SYSTEM" Section of these specifications.
- F. Pipe shall be protected during handling against impact shocks and free fall and the pipe interior shall be free of extraneous material.
- G. Pipe Handling: Pipe lining material shall be handled in a manner to insure installation of the material in an undamaged and structurally sound condition. Handling equipment and procedures shall be in accordance with the approved manufacturer's recommendation for proper handling of its products. Improper handling of pipe that results in damage to pipe will be grounds for rejection of the pipe for installation. The Engineer will be the final judge as to the acceptability of any material on the project. Cutting of pipe is discouraged. The Contractor is urged to plan his job to minimize the necessity for cutting. Prior to installation each pipe shall be inspected for defects and cracks. All defective, unsound or damaged pipe shall be rejected. The interior of all pipes shall be thoroughly cleaned and kept clean thereafter. All joint surfaces shall be kept absolutely clean during the jointing process.
- H. Prior to installation of the cured in place pipe, the Contractor shall inspect the sewer segments receiving the pipe using closed circuit television inspection. Any portion of the sewer determined to be unprepared to receive the cured in place pipe shall be cleaned again to remove the obstruction. The sewer shall then be inspected again to verify the obstruction has been removed. Additional cleaning and inspection shall be at no additional expense to the Owner. Any service lines that intrude into the mainline more than 0.5" shall be cut as close to the inside of the pipe as possible but not less than 0.5", at no additional cost.
- I. Contractor shall take all necessary measures to control the flow of wastewater during construction. Surcharging of the sewer facilities upstream of the sections of line being rehabilitated will not be allowed under any circumstances. Contractor shall provide temporary bypass pumping, if necessary, in accordance with the "BYPASS PUMPING" Section of these specifications.

3.04 ACTIVE SERVICE IDENTIFICATION

- A. During the process of pre-lining CCTV inspection the contractor shall identify active service locations through the use of CCTV and dye testing. Each active service shall be attributed to an address in the post CCTV logs. Every effort shall be exhausted to identify not only if a service is active but to which structure it is connected. If a service cannot be identified the engineer shall be notified and further action will be determined.
- B. Only active service connections shall be reinstated after CIPP lining.

3.05 PIPE INSTALLATION

- A. Cured-In-Place Pipe: Installation shall be in accordance with ASTM F 1216, Section 7, or ASTM F 1743, Section 6 with the following modifications:
 - 1. Resin Impregnation - The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used. To insure thorough resin saturation throughout the length of the felt tube, the point of vacuum shall be no further than 25 feet from the point of initial resin introduction. After a vacuum in the tube is established, a vacuum point shall be no further than 75 feet from the leading edge of the resin. The leading edge of the resin slug shall be as near to perpendicular as possible. A roller system shall be used to uniformly distribute the resin throughout the tube. If the installer uses an alternate method of resin impregnation, the method must produce the same results. Any alternate resin impregnation method must be proven and approved by the engineer.
 - 2. The beginning and end of the CIPP shall be sealed to the existing host pipe. The end seal shall be by a hydrophilic seamless seal compatible with the installed cured-in-place liner system and shall provide a watertight seal.
 - 3. Tube Insertion -The wet out tube shall be positioned in the pipeline using either inversion or a pull-in method. If pulled into place, a power winch should be utilized and care must be exercised so as not to damage the tube as a result of pull-in friction. The tube should be pulled-in or inverted through an existing manhole or approved access point and fully extend to the next designated manhole or termination point.
 - 4. Temperature gauges shall be placed inside the tube at the invert level of each end to monitor the temperatures during the cure cycle.
 - 5. Curing shall be accomplished by utilizing hot water under hydrostatic pressure or air and steam in accordance with the manufacturer's recommended cure schedule.
 - 6. Inspection - CIPP samples shall be prepared and physical properties tested in accordance with ASTM F 1216 or ASTM F 1743, Section 8, using either method proposed. The flexural properties must meet or exceed the values listed in Table 1 of the applicable ASTM. Wall thickness of samples shall be determined as described in paragraph 8.1.6 of ASTM F 1743. The minimum wall thickness at any point shall not be less than 87½% of the design thickness. Visual inspection of the CIPP shall be in accordance with ASTM F 1743, Section 8.6.

3.06 FINISH

- A. The installed CIPP shall be continuous over the entire length of a sewer line section and be free from visual defects such as foreign inclusions, dry spots, pinholes, major wrinkles and delamination. The lining shall be impervious and free of any leakage from the pipe to the surrounding ground or from the ground to inside the lined pipe.
- B. Any defect, which will or could affect the structural integrity or strength of the linings, shall be repaired at the Contractor's expense, in accordance with the procedures submitted under Section 1.7 CIPP Repair/Replacement.
- C. The beginning and end of the CIPP shall be sealed to the existing host pipe. The sealing material shall be compatible with the pipe end and shall provide a watertight seal.

- D. If the wall of the CIPP leaks, it shall be repaired or removed and replaced with a watertight pipe as recommended by the manufacture of the CIPP system.
- E. Compensation shall be at the actual length of cured-in-place pipe installed. The length shall be measured from center of manhole to center of manhole. The unit price per linear foot installed shall include all materials, labor, equipment and supplies necessary for the complete CIPP liner installation.

3.07 REINSTATEMENT OF BRANCH CONNECTIONS

- A. The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing the CIPP.
- B. It is the intent of these specifications that branch connections to buildings be re-opened without excavation, utilizing a remotely controlled cutting device, monitored by a CCTV. The Contractor shall certify a minimum of two complete functional cutters plus key spare components are on the job site before each installation or are in the immediate area of the jobsite and can be quickly obtained. Unless otherwise directed by the Owner or his authorized representative, all active laterals will be reinstated. No additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs and liability associated with such excavation and restoration work.

3.08 TESTING AND ACCEPTANCE

- A. The liner shall be evaluated by the Engineer based on a review of television recordings and certified test data for the installed pipe samples and shall be deemed acceptable if the following criteria are met:
 - 1. No observable groundwater infiltration.
 - 2. All service connections are open and clear. All service and manhole connections are made watertight using the approved system.
 - 3. No observable evidence of splits, cracks, breaks, kinks, wrinkles larger than 1 inch that are not caused by the existing condition of the sewer, delaminations, or crazing in the liner.
- B. If any defective liner is discovered after it has been installed it shall be repaired to achieve the specified acceptance criteria or, if that is not achievable, removed and replaced with either a sound liner or a new pipe at no additional cost to the Owner and without a time extension to the Contract.

3.09 CERTIFICATION TESTING

- A. The Contractor shall provide specimens from one location per 1000 feet of CIPP lining installed to allow an independent laboratory to conduct the tests specified below. For each inversion, two CIPP samples shall be provided, using at least one of the following two methods. At least one of the samples shall be clamped mold sample as described in paragraph "2." below. The second sample may be taken per either paragraph "1." or paragraph "2." below.
 - 1. The sample shall be cut from a section of cured CIPP at an intermediate manhole or at the termination point that has been inverted through a like diameter pipe which has been held in place by a suitable heat sink, such as sandbags.
 - 2. The sample shall be fabricated from material taken from the tube and the resin/catalyst system used and cured in a clamped mold placed in the downtube.
 - 3. The samples for each of these cases shall be large enough to provide a minimum of three specimens and a recommended five specimens. Each specimen shall be clearly marked to indicate the installed location of the liner, the date of installation, the pipe diameter, and the resin used.
- B. For each specimen, the thickness shall be determined and the following test shall be performed.
 - 1. 1.Short-Term Flexural (Bending) Properties - The initial tangent flexural modulus of elasticity and flexural yield strength in accordance with ASTM D790.

- C. Six (6) copies of the test results shall be sent directly to the Engineer by the Contractor's laboratory. The results shall report the actual test results for each of the properties being tested. The laboratory shall certify the reports as to the results and test method utilized.
- D. Each individual reported value shall meet or exceed the value of that property as specified herein or as used in the design calculations, whichever is higher. Should the test results not meet the minimum strength requirements; the Owner will have the option of rejecting the CIPP sections found to be defective. If rejected, the CIPP shall be repaired or, if that is not feasible, removed and replaced at no additional cost to the Owner.
- E. All the expenses for the certified testing of the CIPP lining furnished under this contract shall be paid for by the Contractor.

END OF SECTION 330141

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Bartlett & West

**SECTION 330500
SANITARY MANHOLE REHABILITATION**

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).
- C. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers; 2000 (Reapproved 2020).
- D. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2022.
- E. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics; 2023.
- F. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 2017.
- G. ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics; 2020.
- H. ASTM D1623 - Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics; 2017 (Reapproved 2023).
- I. ASTM D1653 - Standard Test Methods for Water Vapor Transmission of Organic Coating Films; 2013 (Reapproved 2021).
- J. ASTM D2370 - Standard Test Method for Tensile Properties of Organic Coatings; 2016 (Reapproved 2021).
- K. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2025.
- L. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers; 2022.
- M. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- N. SSPC-SP 2 - Hand Tool Cleaning; 2024.
- O. SSPC-SP 3 - Power Tool Cleaning; 2024.
- P. SSPC-SP 13/NACE No.6 - Surface Preparation of Concrete; 2018.

1.02 REQUIREMENTS

- A. The Contractor shall furnish all material, tools, equipment and labor necessary to rehabilitate the existing manholes, at the locations shown on the Drawings, as detailed, and in conformance with the Specifications.

1.03 COORDINATION OF WORK

- A. All work shall be fully coordinated between manhole and pipe Contractors. Conflicts in the sequence of the work shall be coordinated through consultation with the Engineer.

1.04 APPLICATION STANDARDS

- A. Specifications of the following listed standards will be referred to hereinafter by standards abbreviation and specification number, which shall include the latest revision thereof.
 - 1. ASTM - American Society for Testing and Materials.
 - 2. NACE - National Association of Corrosion Engineers, NACE International
 - 3. ACI - American Concrete Institute.
 - 4. NACE - National Association of Corrosion Engineers.
 - 5. SSPC - Society of Protective Coatings.
 - 6. ICRI - International Concrete Repair Institute
 - 7. OSHA - Occupational Safety and Health Administration
 - 8. RCRA - Resource Conservation and Recovery Act

9. EPA - United States Environmental Protection Agency
10. EVT - Environmental Technology Verification
11. NASSCO - National Association of Sewer Service Companies
12. NSF - National Sanitation Foundation
13. CIGMAT - Center for Innovative Grouting Materials and Technology
14. AASHTO - American Association of State Highway and Transportation Officials

1.05 QUALITY ASSURANCE

- A. Items submitted for approval in accordance with requirements shown on the Drawings and details shall be of the manufacturer indicated, or an approved equal, in compliance with materials, operations, physical assembly and performance as specified herein.
- B. In addition to the correction period set forth in General Conditions, the manufacturer's standard warranties shall be provided.
- C. Applicator shall be certified by the manufacturer of the manhole rehabilitation system.
- D. Products from other manufacturers will be considered for substitution prior to the receipt of Bids. Requests for substitution by the Contractor after the Bids have been received will not be considered. The Engineer must receive complete requests for substitution from the Contractor not later than 10 days prior to the Bid Opening. Only bona fide bidding Contractors are eligible to request substitutions. Requests directly from equipment suppliers or their representatives will not be reviewed. The Engineer and Owner will review the requests and will issue an addendum listing the approved alternates, if allowed, approximately 7 days before the receipt of Bids. Requests for substitution must include the following information in order to be considered:
 1. Formal written request certifying that products to be substituted will match specified products in terms of structural properties, dimensions, quality level, and that they will perform the same function in the same manner and will achieve the same result. Any proposed additional modifications must be detailed and submitted with the request.
 2. All information specified to be provided in Paragraph A in Subsection 1.05 "Submittals" of this specification.
 3. A list of 3 or more of the geographically closest projects in satisfactory service for not less than 3 years that use products essentially identical to those being proposed for substitution. For each project, include the name, address, and phone number of the Owner, the Contractor, and the Engineer.
- E. Services of Manufacturer's Representative: A representative of the rehabilitation product manufacturer must be present at the first four complete lining system installations. The representative shall inspect the manholes to be lined for conformance with surface preparation requirements, environmental conditions at the time of placement, and for any other condition that may adversely affect the intended performance of the product.
- F. Contractor shall ensure that all materials used in repair and coating of structures are compatible.

1.06 SUBMITTALS

- A. Sanitary Manhole Rehabilitation.
 1. Technical data sheet on each product used, including applicable ASTM test results indicating the product conforms to and is suitable for its intended use per these specifications.
 2. Material Safety Data Sheets (MSDS) for each product used.
 3. Manufacturer's product data including, physical properties, warranty information, and requirements for surface preparation, repair, application, curing; and field quality control.
 4. Project specific guidelines and recommendations.
 5. Proof of any required federal, state or local permits or licenses necessary for the project.
 6. Detailed Minimum Liner Thickness Calculations ensuring that rehabilitation system is a fully structural system along with proposed plan for ensuring that the installed liner meets the minimum thickness requirements.

- a. The Minimum Liner Thickness Calculations shall be completed and stamped by a licensed professional engineer.
7. **Manufacturer Qualifications:** The Contractor shall provide documentation that the rehabilitation material to be used has been successfully installed in 2,000 manholes in the United States and has been in service for a minimum of five (5) years.
8. **Contractor and Applicator Qualifications:**
 - a. Proof of applicator certification by the manhole rehabilitation system manufacturer.
 - b. The manhole rehabilitation contractor shall provide evidence and references for successfully installing a minimum of 500 manholes using their proposed rehabilitation method in the United States.
 - c. The manhole rehabilitation contractor shall provide evidence and references for a minimum of one (1) year of experience installing specified rehabilitation products.
 - d. Manufacturer certification that Applicator has been trained and approved by manufacturer in the handling, mixing and application of the specified products.
 - e. Certification that the equipment to be used for applying the products has been manufactured or approved by the protective coating manufacturer and Applicator personnel have been trained and certified for proper use of the equipment.
 - f. List of recent successfully completed similarly sized manhole rehabilitation projects, including project name and location, names, addresses and telephone numbers of owner and engineer, and description of products used, substrates, and application procedures.
 - g. Proof of any necessary federal, state or local permits or licenses necessary for the project.
 - h. Detailed information about the procedures the Contractor intends to use in rehabilitating the manholes including; step-by-step description of the proposed rehabilitation operation; thickness of the materials to be utilized; the materials cure time; surface preparation requirements; and any other factors affecting installation.
 - i. Design details for any additional ancillary systems and equipment to be used in site and surface preparation and testing.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Containers shall be kept sealed until ready for use.
- C. Store materials to prevent physical damage and weather damage.
- D. Materials shall be stored at the manufacturers recommended temperature.
- E. Protect materials during transportation and installation to avoid physical damage.
- F. Materials shall be handled in a manner to insure installation of the material in an undamaged and structurally sound condition.
- G. Materials shall be handled according to their material safety data sheets.

1.08 PRE-APPLICATION MEETING

- A. A pre-application meeting shall be held on-site within 30 days of NTP date. Representatives from the Owner, Engineer, General Contractor, and Coating Applicator shall all be present. Items to be addressed:
 1. Address/clarify emergency procedures
 2. Review and discuss scope of work (SOW)
 - a. Inspect all structures to be rehabilitated and discuss any concerns or challenges with each structure.
 3. Review known critical hazards
 4. Establish list of critical point of contacts (POCS)
 5. Discuss and clarify inspector(s) responsibilities and authority
 6. Clarify the chain of command (Reporting System)

7. Discuss and Clarify areas of concern in the project specification (omissions, clarifications, testing)
8. Agree on critical hold points for inspections

1.09 WARRANTY

- A. The materials used for the project shall be certified by the manufacturer for the specified purpose. The manufacturer shall warrant the materials to be free from defects in raw materials for five (5) years after installation and from the date of acceptance by the Owner. The Contractor shall warrant the installation of the renewal component for a period of five (5) years. During the five (5) year warranty period if the rehabilitation system, fails, delaminates, peels or shows any defect, which may materially affect the integrity, strength, function and/or operation of the manhole structure, it shall be repaired at the Contractor's expense in accordance with procedures recommended by the manufacturer.
- B. Repair/Replacement.
 1. After a manhole has been rehabilitated and for a period of time up to five (5) years following completion and final acceptance of the project, the Owner may inspect all or portions of the rehabilitated manholes. The specific locations will be selected at random by the Owner and will include all types of structures from this project.
 2. If it is found that any of the rehabilitation system components have developed defects since the time of "Quality Assurance And Testing," the defects shall be repaired and/or the component shall be replaced as recommended by the manufacturer. If, after inspection of a portion of the rehabilitated manholes under the contract, problems are found, the Customer may inspect all manholes where rehabilitation systems have been applied/installed under this contract.
- C. All verified defects shall be repaired and/or replaced by the Contractor and shall be performed in accordance with the manufacturer's recommendations and per the original specifications, all at no additional cost to the Customer.

PART 2 PRODUCTS

2.01 MANHOLE REHABILITATION

- A. It is the intent of this section to provide for the waterproofing, sealing, structural reinforcement and corrosion protection of manholes and similar underground structures by the safe, quick and economical application of an ultra-high build 100% solids structural epoxy liner.
- B. This specification establishes the minimum standard for material and method of application for the structural reinforcement, sealing and corrosion protection of leaking and deteriorated manholes by lining with a 100% solids, high build structural grade epoxy. The structural epoxy liner shall be installed at a minimum thickness of 100 mils DFT (0.1").
- C. The Contractor shall submit Detailed Minimum Liner Thickness Calculations to the Owner/Consulting Engineer for review. Thickness calculations shall substantiate sufficient liner thickness to achieve desired structural rehabilitation. The minimum thickness of the Geopolymer lining material shall be 100 mils DFT (0.1").
 1. The Detailed Minimum Liner Thickness Calculations Shall be stamped by a licensed professional engineer.
 2. Seperate calculations will be required for the different type of structures included in the project. This includes but is not limited to: round manholes of varying diameter, rectangular diversion structures, rectangular flow control structures, etc.
- D. The structural epoxy lining system will be used on surfaces in order to protect against corrosion and seal from I&I.
- E. Manholes found to be structurally deficient shall be replaced with new precast reinforced concrete manholes as specified in the section entitled "Sanitary Sewer Systems".

2.02 STRUCTURAL EPOXY

- A. Structural epoxy lining system must be a structural epoxy exhibiting the following features:

1. The structural epoxy must have undergone testing and verification by the US Environmental Protection Agency's, Environmental Technology Verification Program for Infrastructure Rehabilitation Technologies (EPA ETV).
 - a. The structural epoxy must be 100% solid, no VOCs.
 - b. The structural epoxy must be a high flexural strength, fiber-filled system; a fiber-reinforced-polymer (FRP) formulates technology.
 - c. The structural epoxy must be self-priming, requiring no primer.
 - d. The structural epoxy must adhere to concrete with adhesion testing results in PSI that outperformed the cohesion of concrete on both dry concrete and wet brick (CIGMAT CT-2/3).
 - e. The structural epoxy must be moisture tolerant up 100% and fully cure underwater.
 - f. The structural epoxy must withstand freeze-thaw and wet-dry cycles without causing adverse changes to the cure and performance properties.
 - g. The structural epoxy must be able to be applied by trowel (hand-applied) in order to mobilize and apply in limited access areas.
 - h. The structural epoxy must hang with vertical and overhead thickness capability of 1/16 inch to 3/8 inch in one pass without sag.
 - i. The structural epoxy must have an indefinite recoat window without preparation for simple repair requirements.
 - j. The structural epoxy shall be resistant to all forms of chemical or bacteriological attack found in municipal sanitary sewer systems, including severe hydrogen sulfide (up to 800ppm).
 - k. The coating system must be a dense structural epoxy (epoxide) coating system (16,000psi or greater) exhibiting elongation ((ASTM D2370)) of 5% (minimum) to 10% (maximum) to ensure properties which withstand minor movement, vibration, and access induced mechanical impact.

B. Approved material shall exhibit the following physical properties:

1. FRP-type, hybrid polymer
 - a. (epoxy/epoxide)
 - b. Solids by Volume ASTM D2697 100%
 - c. Solvent (VOC) ASTM D3960 none
 - d. Adhesion Strength (concrete, dry) CIGMAT CT-2/3 substrate failure
 - e. Adhesion Strength (brick, wet) CIGMAT CT-2/3 substrate failure
 - f. Adhesion Strength (steel) ASTM D4541 1,500+ psi
 - g. Water Absorption ASTM D1653 < 0.1 g/sq.m.
 - h. Acid Exposure (pH 1, H2SO4) CIGMAT CT-1 passed
 - i. Tensile Strength ASTM D638 5,500+ psi
 - j. Flexural Modulus ASTM D790 500,000+ psi
 - k. Flexural Strength ASTM D790 4,000+ psi
 - l. Compressive Strength ASTM D695 16,000+ psi
 - m. Elongation ASTM D2370 4-6%
 - n. Complete Cure 18 hours (77F)

C. Structural epoxy lining system shall be Epoxytec CPP #RC3 and/or CPP Sprayable #C311S by Epoxytech or approved equal.

2.03 WALL RESURFACER

- A. Specially formulated materials may be centrifugally cast in thickness from 1/2 inch to 2 inches with a robotic applicator, which does not require manhole entry or may be applied by spraying and troweling. Mortar shall be high strength, quick setting and corrosion resistant. All fins and protrusions shall be leveled and provide a smooth continuous liner that restores the concrete to a continuous plane. This material shall be PERMACAST from Action Products Marketing Corp., QM-1s Restore from Quadex, Sauereisen Substrate Resurfacer No. F-121, Strong-Seal Profile Plus Mix or approved equal. Mortar liner shall be followed by an application of a compatible corrosion resistant coating.

2.04 MANHOLE CHIMNEY SEALS

A. General

1. Manhole frame sealing includes the sealing of the frame joint area and the chimney above the cone of the manhole with either an applied internal flexible seal.
2. The contractor shall have a manufacturer's recommended expansion tool, removal tool if necessary and all other equipment/tools required to install the specified frame seals.
3. Frame sealing will be executed after the lining section is complete and coating is fully cured.

B. Materials

1. Polymer manhole chimney seals are designed to prevent leakage of water into the manhole through the frame joint area and the area above the manhole cone including all extensions to the chimney area. This typically occurs as the manhole ages, and in time undergoes vibration, impact, and movement. Therefore, polymer seals with the correct properties are often sought as a preventive measure to bridge this concern should the frame start moving beyond its original design capabilities.
2. Primer
 - a. Primer is encouraged on section of metal to increase the surface bond prior to applying the elastomer.
 - b. The material must be epoxy based, designed to set quickly within 15 minutes, and formulated for polyurethane bonding.
 - c. Specified material is Epoxytec 45 Primecoat (#PR45) by Epoxytec, or approved equal.
3. Polymer elastomer
 - a. The polymer elastomer chimney seal material shall be corrosion resistant and applied to the inside wall of the entire chimney area as specified in the contract documents.
 - b. The material must be a 2-component, hand-applied high build polyurethane.
 - c. Approved material shall exhibit the following physical properties:
 - 1) Shore Hardness ASTM C92 45 A
 - (a) Freeze / Thaw ASTM C666 300 cycles - no damage
 - (b) Bond Durability ASTM C920-87 No failure after 25% extension
 - (c) Tear Resistance ASTM D624-86 44 lbs./in.
 - (d) Ultimate Elongation ASTM D412 800%
 - 2) Specified material is Epoxytec Uroseal 45V (#J45V) by Epoxytec or approved equal.

2.05 ANNULAR SPACE AND ACTIVE LEAK CONTROL

- A. Pressure injected plugging material or hydraulic cement shall be used to repair annular spaces and actively leaking cracks.
- B. Pressure Injected Plugging Material
 1. Annular spaces around the gravity sewer lines and actively leaking cracks, joints, holes, or other defects shall be repaired by means of pressure injected hydrophobic polyurethane grout designed for use in a wet environment. The material must be capable of withstanding movement caused by thermal cycle changes and/or settling of the structure.
 2. The grout shall expand in the presence of water to effectively seal any voids within the wall and shall produce a stable soil mass outside the wall.
 3. Polyurethane grout shall meet or exceed the following material and performance criteria:
 - a. Material shall be 100% solids.
 - b. Material shall have a minimum confined and free rise density of 15 and 3 lbs/ft³, respectively, ASTM D1622.
 - c. Minimum tensile strength: 15.6 psi (perpendicular), ASTM D1623.
 - d. Minimum shear strength: 14.5 psi, ASTM C-2733

4. Polyurethane grout shall be "SealGuard II" as manufactured by SealGuard Inc.; "Hydroactive Polyurethane Grout No. F-370" as manufactured by Sauereisen; "Hydro Grout" as manufactured by Parson Environmental Products, Inc. or approved equal.
- C. Hydraulic Cement
1. Annular spaces around the gravity sewer lines and actively leaking cracks, joints, holes, or other defects shall be repaired by means of hand placed hydraulic cement.
 2. The hydraulic cement shall react with water to produce a fast setting, non-shrink, water resistant cement to effectively seal any voids within the wall and stop the infiltration of water from outside the wall.
 3. Hydraulic cement shall meet or exceed the following material and performance criteria:
 - a. Compressive strength (ASTM C-109): 750 psi @ 15 minutes
 - b. 3,700 A 1 day
 - c. 5,500 @ 28 days
 - d. Set time (ASTM C-266): 60-90 seconds
 4. Hydraulic cement shall be "Super Faststop" as manufactured by CONSPEC Marketing & Manufacturing Co.; "SikaSet Plug" as manufactured by Sika Corporation; "Parson Quick Plug" as manufactured by Parson Environmental Products, Inc. or approved equal.

2.06 MANHOLE FRAME AND COVER

- A. Manhole frame and covers shall be provided as specified herein. Frame and cover castings shall be the product of Clay & Bailey, Deeter, Neenah, or equal and shall conform to the requirements of Section 333500 of these specifications.

2.07 BONDING AGENTS

- A. Epoxy adhesives shall conform to ASTM C881, Types I and V, moisture insensitive, 100% solids and shall be the following products for the applications specified.
 1. For bonding freshly-mixed, plastic concrete to hardened concrete, Sikadur Hi-Mod Epoxy Adhesive, as manufactured by Sika chemical Corporation; Concsive 1001-LPL, as manufactured by Master Builders; or equal.
 2. For bonding to hardened concrete or masonry to steel, Colma-Dur Gel, Sikadur Hi-Mod Gel, or equal.

PART 3 EXECUTION

3.01 GENERAL

- A. All work shall be in strict accordance with the specifications and recommendation including application of all products as required and in accordance with manufacturer's directions.
- B. Contractor shall conform to all local, state and federal regulations including those set forth by OSHA, RCRA and the EPA and any other applicable authorities.
- C. Products are to be kept dry, in a climate controlled environment, protected from weather and stored under cover. Products are to be stored and handled according to their safety data sheets. When freezing temperatures are expected in the area, the Contractor shall take measures to keep applied materials warm (as per manufacturer's guidelines) and provide the required heat in the structure before repair work is started.
- D. Any invert(s), channels, drains, or other openings shall be covered during construction operations to prevent loose materials from collection.
- E. Bypassing and/or blocking of flow shall be done only with prior approval of the Owner. Contractor shall be responsible for transporting or pumping water to maintain operation of any flow, treatment, collection or distribution system while repairs or lining to structures are made.
- F. It shall be the contactor's responsibility to provide traffic control required by the particular location and/or jurisdiction.
- G. Use approved equipment designed, recommended and/or manufactured by the material supplier specifically for the application of all materials.

- H. Applicator shall initiate and enforce quality control procedures consistent with applicable ICRI, NACE, and/or SSPC standards and the repair/coating manufacturer's recommendations.
- I. Examination
 - 1. Examine surface to receive rehabilitation prior to applying any materials. Notify Owners in writing if surfaces are not acceptable for rehabilitation and/or lining.
 - 2. All structures to be repaired and coated shall be readily accessible to the Applicator.
 - 3. Any active flows shall be dammed, plugged or bypassed as required to ensure that the liquid flow is maintained below the surfaces to be coated and that concrete to be coated has not reached moisture levels surpassing 90%. Flows should be totally plugged and/or diverted when coating any invert. All extraneous flows into the structures at or above the area coated shall be plugged and/or diverted until the structural epoxy coating has set hard to the touch.
 - 4. Temperature of the surface to be coated must be maintained between 65F and 110F during application. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated. Specified surfaces should be shielded to avoid exposure of direct sunlight or other intense heat source. Where varying surface temperatures do exist, coating installation should be scheduled when the temperature is falling versus rising.
 - 5. New Portland cement concrete structures shall have endured a minimum of 28 days since installation, prior to commencing epoxy structural coating installation.
 - 6. Prior to commencing surface preparation, Contractor shall inspect all surfaces specified to receive the coating and notify Owner, of any noticeable disparity in the site, structure or surfaces which may interfere with the work, use of materials or procedures as specified herein.

3.02 SURFACE PREPARATION

- A. Surface preparation must be achieved immediately prior to utilizing any repair material and/or coatings; re-inspection and/or subsequent surface preparation may need to be repeated should conditions change after initial preparation.
- B. All receiving surfaces shall be thoroughly cleaned and made free of all foreign materials including dirt, grit, roots, grease, sludge and all debris or material that may be attached to the substrate.
- C. Surface preparation shall be performed on all specified surfaces to be lined or rehabilitated. Unless otherwise noted, all newly installed concrete structures should first undergo curing of minimum 28 days prior to surface preparation and rehab/lining execution.
- D. All existing liner shall be removed to a sound concrete surface prior to rehabilitation unless otherwise approved by engineer. All existing concrete and mortar that is not sound or has been damaged by corrosion shall be removed to a sound concrete surface or replaced.
 - 1. Maintain strict adherence to applicable NACE and SSPC recommendations regarding proper surface preparation. Surface preparation must achieve a clean and sound substrate in accordance with SSPC-SP 13/NACE No.6 "Surface Preparation of Concrete."
 - 2. Remove existing coal tar lining prior to application of new protective coatings.
 - 3. An ICRI profile of CSP 3 or higher shall be achieved.
 - 4. Manhole walls shall be cleaned with high pressure water cleaning equipment capable of a minimum of 5,000 psi at 25 or more gpm or the as recommended by the rehabilitation product manufacturer, whichever is greater. Other methods such as abrasive blasting, shotblasting, grinding, scarifying or acid etching may also be required.
 - 5. No surface water or active leaks are to be present. Prepared concrete surfaces shall be tested for residual moisture after cleaning and drying, and prior to the application of the coating. Drying may be required with forced air and/or dry heat to achieve moisture levels below 80% prior to coating.
 - 6. When grease and oil are present within the structure, an approved detergent or degreaser may be used integrally with the high pressure cleaning water if conditions dictate.

7. Protrusions such as from burrs, sharp edges, fins, and concrete spatter shall be removed during surface preparation.
 8. The manhole surface shall be tested to ensure that the pH is within the manufacturer's acceptable limits. Surface preparation shall yield a PH of 7 or higher. If the pH of the surface is not within acceptable limits, the Contractor shall neutralize the surface prior to proceeding with the rehabilitation. Surface preparation shall be in accordance with the manufacturer's recommendations.
 9. End result shall be a uniform, sound, clean neutralized surface that is not excessively damaged.
- E. Covers or fine screens shall be placed over manhole invert prior to cleaning to prevent extraneous material from entering sewer lines.
- F. All prepared surfaces shall be inspected prior to application of repair materials.
- G. Manhole wall repair shall include the plugging and/ or patching of all visible leaks, cracks, holes, voids, manhole steps, and deteriorated surfaces in the manholes. Concrete surface defects shall be filled flush and true with the specified grouting, plugging, or patching compound in accordance with ICRI Technical Guideline No. 03730 "Guide for Select Application Methods for the Repair of Concrete Surfaces".
1. Existing manhole steps shall be removed regardless of condition. The Contractor shall cut the steps so that they are flush with the prepared manhole wall surface, or remove the steps completely and fill the void with non-shrink grout.
 2. Any infiltration shall be stopped by using a material which is compatible with the specified repair method and is suitable for topcoating with the specified protective coating.
 3. The invert and bench areas shall be repaired as further indicated or as directed by the Engineer. All leaks in the flow channel shall be patched or grouted. The prepared surface shall be smooth and provide smooth flow through the channel. The repaired bench shall be sloped to allow for all areas to drain to the invert.
 4. All materials used in the plugging and patching process shall be allowed to fully cure according to the manufacturer's material specifications before continuing with the manhole rehabilitation.

3.03 ACTIVE LEAK CONTROL PROCEDURE

- A. A.Execution
1. When leaks are not readily identifiable upon cleaning operation, use blowers to dry interior for positive identification of leaks and weeping areas.
 2. Hydraulic cement
 - a. The work consists of hand applying a dry quick-setting cementitious mix designed to instantly stop running water or seepage in all types of concrete and concrete structures. The certified applicator shall apply material in accordance with manufacturers' recommendations.
 - b. The area to be repaired must be clean and free of all debris.
 - c. Proper applications should not require any special mixing of product or special curing requirements after application.
 3. Chemical grout
 - a. Application of materials shall be by injection method only.
 - b. Mixing and handling of all the chemical grout materials shall be in strict accordance with manufacturer's recommendations.
 - c. All excess chemical grout must be removed from the surface via mechanical grinding means and top patched with Hydraulic cement.

3.04 CONCRETE REPAIR METHODS

- A. All loose, cracked and corroded materials shall be removed from the area, exposing a sound substrate.

- B. The materials shall be formed, trowel-applied, or shotcrete sprayed utilizing proper equipment on to specified surfaces. Follow instructions as published by the material manufacturer. If spraying, consult manufacturer for proper instruction and material version.
- C. Concrete patching and rebuilding
 - 1. Execution
 - a. Once cured, and before applying any lining system materials, refer to material specifications for post-cure preparation and readiness instructions. Follow mixing, application and handling instructions as written per materials product technical data sheets and SDS.
 - b. Apply materials and allow proper curing times prior to coating/lining.
- D. Resurfacing
 - 1. Execution
 - a. Follow mixing, application and handling instructions as written per materials product technical data sheets and SDS.
 - b. The mortar kits come pre-proportioned, for hand applications- use full kits as supplied, do not add any extra water.
 - c. For spray applications, water may be added, but limited, as specified by the Manufacturer.
 - d. When mixed, a paste-like material will develop which may be troweled, sprayed, cast, pumped or gravity-flowed applied.
 - e. This mortar will harden quickly without any need for special curing. Therefore, execute finishing work by trowel immediately after applying or disbursing onto the substrate.
 - f. Either commence spraying or hand applying.
 - g. The epoxy-modified-mortar shall be applied at a 1/4 inch minimum, and 1/2 inch maximum (1/4" – 1/2") for existing infrastructure. And between 1/16 inch and 1/8 inch (1/16" – 1/8") for newly installed structures.
 - h. Finish with trowel.
 - i. Allow at least two (2) hours (77F) to cure, minimum, before applying the specified structural epoxy coating, but do not exceed thirty-six (36) hours. The window and condition to apply the structural epoxy coating remains open for 36 hours. Should this window expire, consult with manufacturer for written and approved guidance and instruction.
- E. Exposed reinforcing bars
 - 1. Execution
 - a. Prepare and clean via SSPC-SP 2 or 3 exposed reinforcing bars then clean with solvent (((SSPC-SP 1))).
 - b. Treat with an epoxy-based, rapid-setting, rust inhibiting primer.
 - c. Allow primer to cure.
 - d. Patch with concrete patching materials as specified in "Concrete patching and rebuilding" section. Follow product and manufacturer execution specifications accordingly.

3.05 MANHOLE ADJUSTMENT

- A. Adjust manhole frame and cover where indicated on the plans.
- B. Contractor shall use the least number of grade rings possible to adjust the manhole frame and cover, maximizing the use of 6", 8", and 12" grade rings.
- C. Manhole grade adjustments shall include a new frame and cover.
- D. All costs for salvaging, removing, and replacing the manhole frames and covers shall be included in the appropriate unit price bid item.

3.06 BYPASS PUMPING

- A. Maintain sanitary sewer service during the installation process, as required for acceptable completion of the work and / or to avoid damages due to sewer spills or overflows.
- B. Install and operate bypass pumping equipment to maintain sewage flow around the host infrastructure being rehabilitated, and to prevent backup or overflow in compliance with Owner requirements.
- C. Install all bypass and isolation material and equipment so as to not affect flow in upstream or downstream structures. The pump and bypass lines shall be of adequate capacity and size to handle the anticipated flow. Bypassing of sanitary sewer into the storm water system will not be permitted. For all bypass pumping, pump noise shall be kept to a minimum. See Section 015510 Temporary Bypass Pumping Systems for requirements.

3.07 APPLICATION OF REHABILITATION MATERIALS

- A. Application procedures shall conform to the recommendations of the manufacturer of the selected coating system, including material handling, mixing, application, environmental controls during application, safety and equipment.
- B. Spray equipment shall be specifically designed to accurately ratio and apply the specified materials and shall be regularly maintained and in proper working order. Air assisted spray application equipment may be acceptable only if the air source is filtered to completely remove all oil and extraneous water. Spray equipment shall be certified to spray the coating by the manufacturer.
- C. Prior to and during application, care should be taken to avoid exposure to air movement and direct sunlight or other intense heat source to the structure being coated. Where varying surface temperatures do exist, care should be taken to apply the coating when the temperature is falling rather than when it is rising.
- D. After the initial coat has cured, all protrusions, points, etc., shall be sanded down and removed by mechanical means to provide a smooth surface for the final coat to ensure the minimum thickness over the entire surface.
- E. Finished materials shall not be exposed to sunlight or air movement for longer than 15 minutes before covering or closing access.
- F. If coatings do not bond properly to the manhole surfaces, such coating shall be removed and replaced at no expense to the Owner.
- G. Follow manufacturer's instructions whenever more than 12 hours have elapsed between layer applications.
- H. Other than for application of cementitious products, surfaces shall be completely dry.
- I. All inverts shall be coated unless a mainline CIPP liner extends entirely across the manhole.
- J. The type or thickness of rehabilitation material required will not be known until the manholes have been cleaned and the amount of deterioration can be determined. Bid quantities are based upon preliminary investigation.

3.08 INSTALLATION OF CHIMNEY SEAL

- A. Execution
 - 1. On the metal surfaces, prepare surface to a SSPC-SP 3 "Power Tool Cleaning" standard so that the preparation removes all loose mill scale, loose rust, loose paint, and other loose detrimental foreign matter by power wire brushing, power sanding, power grinding, power tool chipping, and power tool descaling.
 - a. After preparation, clean with SSPC-SP 1 "Solvent Cleaning" method to remove dust and debris.
 - b. Allow solvent or cleaner to dry out.
 - c. Apply one coat of epoxy primer.
 - 1) Primer shall be applied as directed on manufacturer published data sheets at 2-3 mils WTF.

- 2) Allow primer to cure until it is tack-free. This time depends on conditions; blowing forced air will assist the cure time.
2. To prepare other substrates, refer to concrete preparation sections of this specification as described for cementitious/brick/or mortar substrates. Should you have to prepare installed liner, solvent rub and wire brush to create scored abrasion prior to top coating with polymer elastomer.
3. Once the primer is tack-free, apply polymer elastomer as directed on manufacturer published data sheets at 125 mils (1/8") DFT for peak to valley.

3.09 CURING

- A. Cure materials in accordance with manufacturer's instructions. Cure time before subjecting manholes to flows shall be as recommended by the manufacturer.
- B. Opening to traffic shall be as recommended by the manufacturer, but not less than 24 hours after final application of rehabilitative or protection material.

3.10 INSPECTION AND TESTING

- A. Surface preparation inspection must take place prior to proceeding to material applications, this applies to both repair and lining applications.
 1. Applicator must record, and submit to coating manufacturer's representative or designated inspector:
 - a. PH level
 - b. Moisture content
 - c. Abrasive media type and/or preparation methods
 - d. ICRI conditions
- B. Contractor shall furnish all labor, tools, and equipment necessary to perform rehabilitated manhole testing as specified herein. The methods and equipment used to make the test shall be mutually determined by the Engineer and Contractor before any testing is started
- C. During application of coatings, a wet film thickness gage meeting ASTM D 4414 Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages, shall be used regularly to insure a monolithic coating and uniform thickness during application.
- D. After the protective coating has set hard to the touch it shall be inspected with high-voltage holiday detection equipment. Surface shall first be dried, an induced holiday shall then be made on to the coated concrete surface and shall serve to determine the minimum/maximum voltage to be used to test the coating for holidays at that particular area. The spark tester shall be initially set at 100 volts per 1 mil (25 microns) of film thickness applied but may be adjusted as necessary to detect the induced holiday (refer to NACE RPO188-99). All detected holidays shall be marked and repaired by abrading the coating surface with grit disk paper or other hand tooling method. The entire surface to which repair material is to be applied shall be roughened. Abrading only the high points on the surface profile is not acceptable. After abrading and cleaning, additional protective coating material can be hand applied to the repair area. All touch-up/repair procedures shall follow the protective coating manufacturer's recommendations.
- E. Measurement of bond strength of the coatings to the substrate shall be measured in accordance with ASTM D4541. Any areas detected to have inadequate bond strength shall be removed and replaced at no cost to the Owner. Further bond tests may be performed in that area to determine the extent of potentially deficient bonded area and repairs shall be made by the Contractor in strict accordance with manufacturer's recommendations. A minimum of one bond strength test shall be performed for each manhole. Selection of the point of measurement in the manhole shall be determined by the Engineer or the Owner's Representative.

- F. Manhole Testing. Manholes lined in their entirety shall be vacuum tested. All pipes entering manhole shall be plugged, taking care to securely brace the plugs to prevent being drawn into manhole. Attach the vacuum test device to the manhole top and draw a vacuum of 10 inches of mercury. With the valve at the vacuum line closed and the vacuum pump off, measure the time required for the vacuum to drop to 9 inches of mercury. Following are minimum allowable test times for manhole acceptance at the specified vacuum drop:

<u>Depth (Feet)</u>	<u>Time (Seconds)</u>
4	16
8	33
12	49
16	67
20	81
24	97

If the manhole fails the initial test, repairs and adjustments necessary due to extenuating circumstances (ie. Pipe joint, liner, plug sealing) shall be made. Retesting shall proceed until a satisfactory test is obtained.

- G. A final visual inspection shall be made by the Inspector and manufacturer's representative. Any deficiencies in the finished coating shall be marked and repaired.

END OF SECTION 330500

**SECTION 333500
SANITARY SEWER AND STORM DRAINAGE SYSTEMS**

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. ASTM D1784 - Standard Classification System and Basis for Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds; 2025.
- B. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2024, with Editorial Revision (2025).
- C. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe; 2014 (Reapproved 2021).

1.02 REQUIREMENTS

- A. The Contractor shall furnish all material, tools, equipment and labor necessary for material handling, cutting, installation and jointing of various types and sizes of pipe at the locations shown on the Drawings, or as detailed and in conformance with the specifications.

1.03 COORDINATION OF WORK

- A. All work shall be fully coordinated with other work and shop drawings must be checked with each of the various trades. Conflicts in the sequence of the work shall be coordinated through consultation with the Engineer.

1.04 APPLICABLE STANDARDS

- A. Specifications of the following listed standards will be referred to hereinafter by standards abbreviation and specification number which shall include the latest revision thereof.
 - 1. ANSI American National Standards Institute.
 - 2. ASTM American Society for Testing and Materials.
 - 3. AWWA American Water Works Association.
 - 4. AASHTO American Association of State Highway Transportation Officials.

1.05 QUALITY ASSURANCE

- A. Items submitted for approval in accordance with requirements shown on the Drawings and details shall be of the manufacturer indicated, or an approved equal, in compliance with materials, operations, physical assembly and performance as specified herein.
- B. In addition to the correction period set forth in General Conditions, the manufacturer's standard warranties shall be provided.

1.06 SUBMITTALS

- A. Pipe and Fittings: Certification of compliance, shop drawings.
- B. Precast Concrete Structures & Appurtenances: Shop drawings, certification of compliance.
- C. Coating and lining systems, non-shrink grout, polyethylene corrosion protection: Manufacturer's data and specification sheets and certification of compliance.
- D. Construction Sequence

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Store materials to prevent physical damage.
- B. Protect materials during transportation and installation to avoid physical damage.
- C. Pipe, fittings and accessories shall be handled in a manner to insure installation of the material in an undamaged and structurally sound condition.
- D. Particular care shall be taken to not harm pipe bell and spigot ends. Handling equipment and procedures shall be in accordance with the approved manufacturer's recommendation for proper handling of his products. Improper handling of pipe that results in damage to pipe will be grounds for rejection of the pipe for installation.

1.08 CONNECT TO EXISTING LINES

- A. Work shall be so scheduled and timed as to cause the least possible interference with the operation of the existing system.
- B. Adequate facilities for disposal of fluids which may be released during the connecting operations shall be available.
- C. Contractor shall provide the necessary pumps and temporary piping and associated accessories as required for pumping of wastewater around areas of construction so as to not impede the collection and treatment of the wastewater.
- D. Sewage and water contaminated with sewage shall be conveyed to sanitary sewers.

1.09 BYPASS PUMPING

- A. Bypass pumping shall be in accordance with section 015110 Temporary Bypass Pumping Systems.
- B. Where flow control is required to perform a specified repair or replacement operation, plugging or blocking shall be used wherever possible.
- C. If plugging or blocking is not feasible or at the Contractor's discretion, Contractor shall provide the necessary pumps and temporary piping and associated accessories as required for pumping of wastewater around areas of construction so as to not impede the collection and treatment of the wastewater. Backup pumping capability will be required.
- D. The design, installation, and operation of the temporary pumping system shall be the Contractor's responsibility. The temporary pumping system shall comply with the requirements of all codes and regulatory agencies having jurisdiction. Contractor shall be responsible for any spillage of raw sewage that results in civil or criminal charges from any local, state, or federal agency and will bear all costs for these charges and any restoration required.
- E. Contractor shall insure that the flow diversion pumping system is properly operated and maintained and shall provide responsible personnel to oversee the diversion pumping system at all times.
- F. Work shall be so scheduled and timed as to cause the least possible interference with the operation of the existing sewer collection and treatment system.
- G. Sewage and water contaminated with sewage shall be conveyed to sanitary sewers.

PART 2 PRODUCTS

2.01 PVC (POLYVINYL CHLORIDE) SEWER PIPE

- A. PVC sewer pipe shall conform to ASTM D3034 (SDR 26) for pipe sizes 8 inch through 15 inch and ASTM F679 (PS46), for 18-inch through 54-inch pipe sizes. All pipe joints shall be rubber gasketed bell and spigot. Pipe shall be made from PVC plastic having a cell classification of 12364, 12454, or 13343 having a minimum tensile modulus of 440,000 psi, as defined in ASTM D1784. Nominal laying length shall be 13 feet for 8" through 18" and 19 1/2 feet for 21-inch through 27-inch sizes.
- B. PVC pipe joints shall be bell and spigot design conforming to the requirements of ASTM D3212.
- C. Gaskets shall meet the requirements of ASTM F477. Solvent weld or non-gasket friction joints are not acceptable.
- D. PVC fittings shall be manufactured from the same material as the pipe and meet the requirements of ASTM D3034 for 4" through 15" and ASTM F679 - PS46 for 18" through 27". Fittings shall be so designed so that deflection under load is equal to or less than that of the connecting PVC pipe.

2.02 MANHOLES

- A. Precast reinforced concrete manholes, risers and tops shall conform to the applicable requirements of ASTM C 478. Reinforcement shall be welded steel cage. Steel hoop reinforcement is specifically not allowed.
- B. Portland cement shall be ASTM Designation C 150, Type II. The minimum shell thickness shall be 5-inches for 4 feet diameter manholes, 6-inches for 5 feet diameter manholes and 7-inches for 6 feet diameter manholes. All interior and exterior surfaces shall have smooth surfaces free of surface voids. Precast structures with textured or rough surfaces will not be accepted.
- C. The base slab and the first barrel or riser section of all four and five feet diameter manholes shall be cast monolithically.
- D. When cast in place base slabs or precast barrel sections that are cast into the base slab are used, the minimum thickness of the base slab below the bottom of the riser or barrel section shall be 8-inches.
- E. Joint sealant shall be approved preformed mastic sealant. Sealant shall conform to the requirements of AASHTO M198 and shall be Kent seal or Ram Neck or pre-approved by the Engineer. Where specifically indicated, trowelable mastic sealant shall be a butyl rubber sealant, Trowelable EZ-Stik #3 as manufactured by Press-Seal Gasket Corporation or approved equal.
- F. Cast iron castings shall conform to the requirements of ASTM A 48, Class 35B or higher. In addition, suppliers shall grind all burrs smooth, thoroughly clean. Manhole ring and cover Neenah No. R-1769-A, Deeter No. 1048, Clay & Bailey No. 2032M or approved equal (minimum wt. of cover 175 lbs., and ring 210 lbs.). Watertight manhole ring and cover shall be Neenah No. R1916-F with anchor bolt holes or approved equal, minimum total weight of 450 lbs. Manhole ring and cover for Type II manholes shall be slab type, Neenah No. R6065 for 6" deep and 6065A for 8" deep, Deeter No. 1180 for 6" deep or approved equal. Provide stainless steel bolts and fasteners. The designation "Sanitary Sewer" or "Storm Sewer" shall be cast in 2-1/2" high block letters flush with the traffic surface on all manhole covers as appropriate for the individual manhole's use.
- G. Concrete adjusting rings (6-inch maximum) shall be standard manufactured product of the precast manhole manufacturer and conform to the requirements of ASTM C 478.
- H. Flexible manhole and pipe connector shall meet all material and performance requirements of ASTM C923 for pipe outside diameter 4" through 60". Gasket material shall be produced from a polyisoprene blend compound. Natural rubber gaskets will not be acceptable.
 - 1. Manhole to pipe connectors cast into the manhole wall at the manhole's manufacturing facility shall be "A-Lok X-CEL" as manufactured by A-Lok Products, Inc. or approved equal. The connection shall be made by inserting the end of the pipe through the connector.
 - 2. Existing concrete structure to pipe connectors installed in the field shall be "G3 Boot System" as manufactured by A-Lok Products, Inc., "LCT" Manhole Adapter Gasket as manufactured by Romac Industries, Inc., or approved equal.
 - 3. Existing brick structure to pipe connectors installed in the field shall be "CMA Concrete Manhole Adapter" as manufactured by Fernco or approved equal.
 - 4. The A-Lok X-CELL and G3 Boot System shall be used for flexible connections between the pipe and manhole.
 - 5. Fernco's CMA Concrete Manhole Adapter shall be used for rigid connections between the pipe and structure.
- I. New PVC pipe to existing VCP pipe connectors shall be a flexible coupling with stainless steel band clamps, as required and approved by the Engineer. Connectors shall be manufactured by Fernco Joint Sealer Co. or approved equal.

2.03 CONCRETE ADDITIVE FOR MANHOLES

- A. All concrete used in all sanitary manholes and grade rings, including shaping and grout shall be treated with an antimicrobial additive, ConmicShield®, which shall be used to render the concrete uninhabitable for bacteria growth. The liquid antibacterial additive shall be an EPA registered material and the registration number shall be submitted for approval prior to use in the project. The antibacterial additive shall have successfully demonstrated prevention of MIC in sanitary sewers for ten or more years.
- B. The antibacterial shall be used by factory certified precast concrete plants.
- C. The antibacterial shall be added at the rate of one (1) gallon per cubic yard of concrete in lieu of one (1) gallon of mix water. The antibacterial shall be added at the same time water is introduced to the concrete mix at the plant. Ideally, the antibacterial should be premixed with the mix water prior to introducing into the concrete mix. Avoid mixing with Air Entrainment Admixtures. If Air Entrainment must be used, add antibacterial first. For dry mixes when much less mix water is used, the thorough incorporation of the antibacterial is better when premixed with mix water prior to introducing into the concrete mix. For dry cast ratios, mix for at least 10 minutes or until thoroughly mixed.
- D. A chemical injection pump and meter system may be utilized to inject the proper amount of antibacterial into the mix water at the time of production.
- E. Identification. ConmicShield® color identifier-indicator (ConmicShield® ID) shall be applied to the interior of each piece and plainly stencil the name of the antimicrobial additive on the interior and exterior of each piece.
- F. Field Repairs: Field repairs to the precast concrete shall be made using ConmicShield® Joint Set Grout pre-portioned and factory packaged that requires the addition of no other components. This repair grout may be used for filling joints, lift holes, damaged areas, benches and similar.
- G. Verification & Testing:
 - 1. The precast producer shall retain three cured pieces of concrete from each daily batch made with ConmicShield®. The pieces shall have a minimum dimension of 1 square inch. Pieces may be obtained from remnants of cylinder break tests. The specimens shall be placed in plastic baggies and clearly labeled with the date, batch number, pipe or manhole dimensions and specific project.
 - 2. One set of samples shall be retained by the precast producer and one set shall be sent to ConShield Technologies, Inc. The samples from the third set of samples shall be retained for use in the random testing requirements.
 - 3. A random sample from every 30 yards produced shall be tested. The random sample shall be selected from the third set from every daily batch. Specimens shall be tested by an independent bacteriological laboratory for the presence of ConmicShield® additive as needed or as specified by the engineer. The testing shall be the responsibility of the precaster but shall be coordinated with ConShield Technologies.
 - 4. Testing by an independent lab shall proceed as follows:
 - a. Specimens shall be conditioned in such a manner as to lower the pH to levels conducive to the promotion of the rapid growth of the indicator bacteria.
 - b. Specimens shall be inoculated with measurable amount of the indicator bacteria and incubated in a closed container at 25 Centigrade for 24 hours;
 - c. Inoculated specimens shall be swabbed and examined;
 - d. If any bacteria are living on the specimens at the end of the 24 hour period, the test is NEGATIVE for the presence of ConmicShield®; if there are no living bacteria then the test is POSITIVE for the presence of ConmicShield®.
 - 5. The report shall be sent to the respective parties and the Engineer.
- H. Acceptance. Acceptance shall be a letter of certification from the precaster to the project owner stating that the correct amount and correct mixing procedure were followed for all antimicrobial concrete.

- I. Manufacturers. ConmicShield®, liquid antimicrobial additive shall be obtained from ConShield Technologies, Inc. EPA Registration 75174-2-47000; Phone: (877) 543-2094.

2.04 NON-SHRINK GROUT

- A. Nonshrink grout shall be a prepackaged, inorganic, non-gas liberating, nonmetallic, nonstaining, cement based grout requiring only the addition of water. Manufacturer’s instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of nonshrink grout specified herein shall be that recommended by the manufacturer for the particular application.
- B. Nonshrink grouts shall have a minimum 28 day compressive strength of 5000 psi, shall have no shrinkage (0.0 percent) and a maximum 4.0 percent expansion in the plastic state when tested in accordance with ASTM C 827, and shall have no shrinkage (0.0 percent) and a maximum of 0.2 percent expansion in the hardened state when tested in accordance with CRD C 621.
- C. Non-shrink grout shall be Cormix “Supreme”, L&M “Crystex”, Master Builders “Masterflow 713 Grout” or “Set Grout”, Sauereisen Cements “F-100 Level Fill Grout”, UPCO “Upcon Super Flow”, or Five Star Products Inc. “Five Star Grout”, without exception.
- D. The grout consistency shall be that necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where “dry pack” is called for in the Contract Documents, it shall mean a grout of the above described consistency; the type of grout to be used shall be as specified herein for the particular application.
- E. EPrepackaged grouts shall have ingredients measured by means recommended by the manufacturer.

2.05 EXPANSION PIPE PLUG

- A. Expansion pipe plugs 4” - 18” diameter shall be Hand-Tite Pipe Plug as manufactured by R.C. Graham Co.

PART 3 EXECUTION

3.01 EXCAVATION, BACKFILL, AND COMPACTION

- A. Excavation, Backfill, and Compaction shall be in accordance with applicable requirements of Section 312310.

3.02 GENERAL PIPE INSTALLATION

- A. Pipe shall be protected during handling against impact shocks and free fall and the pipe interior shall be free of extraneous material.
- B. Pipe Handling: Pipe, manholes and appurtenances shall be handled in a manner to insure installation of the material in an undamaged and structurally sound condition. Particular care shall be taken to not harm pipe coatings. Handling equipment and procedures shall be in accordance with the approved manufacturer's recommendation for proper handling of its products. Improper handling of pipe that results in damage to pipe or coatings will be grounds for rejection of the pipe for installation. The Engineer will be the final judge as to the acceptability of any material on the project. Cutting of pipe is discouraged. The Contractor is urged to plan his job to minimize the necessity for cutting. Prior to installation each pipe shall be inspected for defects and cracks. All defective, unsound or damaged pipe shall be rejected. The interior of all pipes and fittings shall be thoroughly cleaned and kept clean thereafter. All joints surfaces shall be kept absolutely clean during the jointing process. Pipelines and runs intended to be straight shall be laid straight and to grade. Grade changes and alignment deflections shall be made as shown on the drawings.
- C. Laying Pipe: Pipe shall not be laid in wet trench. At times when the laying of the pipe is not in progress, the open ends of the pipe shall be closed in such a manner that water due to rainfall or infiltration cannot enter. All joints shall be completed. Except where necessary for making connections with other lines, closures, or as authorized by the Engineer, pipe shall be laid with the bells facing upstream.

- D. Aligning Pipe: Tangent runs intended to be straight shall be laid straight. Horizontal and vertical deflections shall be by angular divergence of the axis of adjacent pipe at the joint in accordance with manufacturer's recommendations. Shorter lengths of pipe may be used to increase the number of available joints.

3.03 PIPE INSTALLATION

- A. Bedding Pipe: Pipe shall be placed in bedding material as specified in Section 312310 Excavation, Backfill, and Compaction.
- B. Laying Pipe: Lay pipe upgrade starting at the low point and with spigot end of pipe pointing downstream with bell holes excavated as required. Inspect each length and reject damaged or defective lengths. All pipe shall be laid with ends abutting and true to line and grade and shall be fitted and matched so that when laid together they will form a smooth and uniform invert. As the work progresses, the interior of the pipe shall be cleared of all superfluous materials.
- C. Pipe jointing shall be accomplished as follows:
 1. All surfaces of the portions of the pipe to be joined shall be clean and dry. Lubricants and primers shall be used as recommended by the pipe manufacturer. The joints shall then be placed, fitted, joined and adjusted so as to obtain a water tight joint. Where possible the proper seating of the gasketed joints shall be visually inspected prior to placement of the next section of pipe. Pipe or piped joints found to be defective shall be removed from the trench, marked as defective and returned to the manufacturer.
- D. The downstream end of new line extensions shall be plugged in a positive manner by use of inflatable plugs or other means acceptable to the Engineer until construction, cleaning, and testing is completed and the new construction is accepted by the Engineer.
- E. Service (Wye) Connections. Install fittings for service connections in all types of pipe at locations and in the manner designated by the manufacturer and approved by the Engineer.
- F. Riser Pipes shall be constructed of approved sewer pipe and fittings as specified herein and as detailed on the Drawings. Each riser pipe shall be plugged with an Engineer approved plugging device.
- G. House service lines shall be constructed of approved sewer pipe and fittings as specified herein and as detailed on the Drawings. Connections between new and old work shall be made by means of suitable adapters approved by the Engineer.
- H. Sewer lines and stubs indicated on the Drawings to be plugged for future connection, shall be plugged with an Engineer approved plugging device. The plugging device shall be corrosion resistant, designed for long term burial and prevent infiltration for the duration of its use. It shall allow easy removal for future connection with no damage to the existing line or stub. The plug shall be as manufactured by Hand-Tite, Inc. or approved equal.

3.04 SEPARATION OF WATER MAINS AND SEWERS

- A. Gravity Sanitary Sewers. When potable water pipes and gravity sanitary sewers are laid parallel to each other, the horizontal distance between them shall be not less than 10 ft (3.0 m). The distance shall be measured from edge to edge. The laying of water pipes and sanitary sewers shall be in separate trenches with undisturbed earth between them. When a water pipe and a sanitary sewer cross and the sewer is 2 ft (0.6 m) or more (clear space) below the water pipe, no special requirements or limitations are provided herein. At all other crossings, the sanitary sewer is to be constructed of one of the following materials (or approved equal) and pressure tested to assure water tightness pursuant to Chapter VI of the KDHE Minimum Standards of Design of Water Pollution Control Facilities.
 1. PVC pipe conforming to ASTM D3034 with minimum wall thickness of SDR41, ASTM F679, ASTM F789, or ASTM F794, with gasketed push-on joints in conformance with ASTM D3212.
- B. Joints in the sewer pipe shall be located as far as practical from the intersected water main.

- C. Where a water main is laid across or through an area where there is an existing sanitary sewer, which is not constructed of one of the above specified materials and is 2 ft (0.6m) or less below the water pipe, the existing sewer shall be encased in concrete with a minimum of 6 in (15 cm) thickness for a 10 ft (3.0 m) distance on each side of the crossing or the crossed section of sewer replaced to meet the above specified construction requirements.
- D. Pressure Sewer Lines. When force mains run parallel to water lines, the separation distance shall be as far as practical, but at least a 10 ft (3.0m) horizontal separation shall be maintained. There shall be at least a 2 ft (0.6 m) vertical separation at crossings with the water main crossing above the sewer force main.

3.05 MANHOLES - GENERAL

- A. Excavation and backfill around manholes shall be in accordance with the applicable paragraphs in Section 312310, Excavation, Backfill, and Compaction. Install manholes on a 8-inch layer of gravel bedding used for sewer pipe bedding. Bedding shall extend a minimum of 6-inches beyond the outer edge of the base
- B. Handle with care to avoid damage to joint ends of each section. Damaged sections may be subject to rejection at the discretion of the Engineer. All manhole construction shall be watertight. The invert, walls and steps shall be cleaned of excess grout and laitance.
- C. Floors of the manholes shall be shaped and smoothed so that flow channels will be formed such that the manhole will be self-cleaning and free of areas where solids may be deposited. The floors shall have a slope of one (1) inch per foot on areas outside of the flow channels.
- D. Connection to existing sewer mains shall be done in an approved manner. Cutting into existing sewer shall be done in such a manner as to prevent damage to sewer not being removed. New invert channel(s) shall be constructed as required and in accordance with the requirements herein and as shown on the Drawings.

3.06 MANHOLES - PRECAST CONCRETE

- A. Manholes, wetwell and valve vault shall be constructed of precast reinforced manhole sections, concentric or eccentric reducer cone section and flat tops as detailed.
- B. All precast structures shall be set plumb and level on a 8-inch thick (minimum) layer of compacted $\frac{3}{4}$ " gravel.
- C. All section joints shall be set and sealed with an approved joint sealant.

3.07 MANHOLE CASTINGS

- A. All castings and frames shall be placed in the positions indicated on the Drawings.
- B. Manhole Castings shall be set on a full mortar bed or sealed with a troweled-on butyl rubber mastic sealant, Press-Seal Gasket Corporation "Trowelable EZ-Stik #3". In situations where the exterior walls of the manhole will be exposed to weather or where bolt down covers are required, the manhole casting shall be bolted to the precast cone section or flat slab top using $\frac{3}{4}$ " diameter stainless steel threaded rod, nuts and washers epoxy anchored into the concrete.
- C. Castings and frames shall be set true to line and to correct elevations.

3.08 CONNECTION TO MANHOLES.

- A. Connections to new manholes shall utilize flexible connections. Flexible connections allow for limited differential settlement to occur between the pipe and manhole. The uniform compaction of the bedding material under the pipe and up to the spring line or top of the pipe as detailed is essential to the control of this differential settlement. Resilient connectors shall be used with all flexible connections. A flexible preformed mastic sealant shall be installed around the bottom half of the exterior pipe surface between the resilient connector and the invert. This flexible sealant shall be installed to separate the pipe from the invert to maintain the flexibility of the pipe/manhole connection. Pipes installed with flexible connections shall not have concrete encasement at the outside of the manhole.

- B. Connection to Existing Structures shall be done in such a manner as to prevent damage to existing structures. Hole for installation of pipe shall be approximately 4 inches larger in diameter than the outside diameter of the pipe to be installed. Annular space around the pipe or resilient connector, as required, shall be filled solid with non-shrink grout. New invert channels shall be constructed as required and shall conform with the requirements herein. For installing a new manhole on an existing pipe, a clamp-on resilient connector shall be installed on the pipe prior to grouting into the manhole wall.

3.09 NON-SHRINK GROUT

- A. All mixing, surface preparation, handling, placing, consolidation, curing and other means of execution for prepackaged grouts shall be done in strict accordance with the instructions and recommendations of the manufacturer.
- B. Grout shall be placed in such a manner, for the consistency necessary for each application, so as to assure that the space to be grouted is completely filled.
- C. The finish of the grout surface shall match that of the adjacent concrete.

3.10 CLEANING AND TESTING

- A. General:
 - 1. After all installations are complete, including all backfill and compaction, all piping and appurtenances shall be cleaned of foreign materials. Flushing of foreign materials from a newly completed section of interceptor sewer into section already in service will not be allowed. If ductile iron pipe is utilized the Contractor shall take care not to damage the internal linings. If lining is damaged during either installation or cleaning it shall be repaired in strict accordance with and approved by the pipe manufacturer’s technical field service personnel.
 - 2. Contractor shall furnish all labor, tools, potable water, and equipment necessary to perform leakage and deflection tests as specified herein. The methods and equipment used to make the test shall be mutually determined by the Engineer and Contractor before any testing is started. For the purpose of testing, a section of the line shall be considered as the length of line between manholes. Any section that fails the test shall be repaired and retested by the Contractor until the leakage and/or deflection limits is within the allowable limits. Water used for exfiltration testing shall not be allowed to be disposed of through the completed sewer line. The Contractor shall provide the required pumps to dispose of test water to the nearest storm sewer or waterway.
 - 3. If inspection or test shows defects, such defective work or material shall be replaced and inspection and tests repeated. Repairs to piping and appurtenances shall be made with new material at no additional cost to the Owner.
 - 4. All visible leaks shall be repaired.
- B. Gravity Lines:
 - 1. Lines shall be checked for alignment by lamping and visual inspection and deflection by mandrel testing. The pipe between manholes shall not be more than 1/4 of the pipe diameter out of alignment.
 - 2. Deflection limits for flexible sewer pipe shall not exceed five (5) percent of the nominal diameter of the pipe. Deflection limits shall be verified by passing a mandrel through the section of sewer line not less than 30 days after completion of the installation.
 - 3. Perform deflection test using a properly sized mandrel without mechanical pulling devices.
 - 4. Under no circumstances shall the mandrel test be performed prior to the completion of all compaction operations required for surface preparation, regardless of the time of completion of the pipe installation.
 - 5. The sewer mandrel shall be fabricated with a diameter not less than 95 percent of base or average diameter of the pipe as determined by the ASTM standard to which the pipe is manufactured. The mandrel shall be certified by an independent testing laboratory. The current certification shall be submitted and approved by the Engineer prior to using the mandrel.
 - 6. Air Test:

- a. In addition to the visual inspection, the Contractor shall perform a low pressure air test on all pipe installed.
 - b. Testing methods for PVC pipe shall conform to the applicable requirements of ASTM F1417.
 - c. Testing methods for concrete pipe shall conform to the applicable requirements of ASTM C 924.
 - d. Testing methods for vitrified clay pipe shall conform to the applicable requirements of ASTM C828.
 - e. For making the low pressure air tests, the Contractor shall use equipment specifically designed and manufactured for the purpose of testing sewer pipelines using low pressure air. The equipment shall be provided with an air regulator valve or pressure relief valve set so that the internal air pressure in the pipeline cannot exceed 9 psig. All air used shall pass through a single control panel.
 - f. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be tested. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
 - g. The Contractor shall be extremely cautious when testing with low pressure air. It is extremely important that the various plugs be installed in such a way as to prevent blowouts. Inasmuch as a force of 250 lbf (112N) is exerted on an 8-inch (230 mm) plug by an internal pipe pressure of 5 psi (34 kPa), it should be realized that sudden expulsion of a poorly installed plug or of a plug that is partially deflated before the pipe pressure is released can be dangerous.
 - h. NO ONE shall be allowed in the manholes during testing.
 - i. The section of pipe between successive manholes shall be sealed with suitable plugs. Do not overpressure the line. Do not exceed 9.0 psig. One of the plugs shall have an orifice through which to pass air into the section of pipe being tested. The air supply source (air compressor) shall have a 9 psig pressure relief valve. The air supply line shall have a positive on-off valve and suitable means for readily disconnecting it at the control panel. A second orifice in the plug shall be used for constantly reading the internal pressure of the pipe. This orifice shall be continuously connected to a pressure gauge having a range of from 0 to 10 psi. The gauge shall have minimum divisions of 0.10 psi and shall have an accuracy of ± 0.04 psi.
 - j. The line under test shall be slowly pressurized to approximately 4 psi. Regulate the air supply so that the pressure is maintained between 3.5 and 4.0 psig for at least 2 minutes. The air temperature should stabilize in equilibrium with the temperature of the pipe walls. Disconnect the air supply and decrease the pressure to exactly 3.5 psi before starting the test.
 - k. Determine the time required for the pressure to drop from 3.5 psi to 2.5 psi, and compare this interval to the required time to decide if the rate of air loss is within the allowable. Tables 1 and 2 show the minimum holding times for PVC pipe listed by diameter. If the pressure drops 1.0 psig before the appropriate time shown in Table 1 has elapsed, the air loss rate shall be considered excessive and the pipe section has failed the test. For testing of long sections or sections of larger diameter pipes, or both, a timed-pressure drop of 0.5 psig shall be used in lieu of the 1.0 psig drop as shown in Table 2.
 - l. Upon completion of the test, open the bleeder valve and allow all air to escape. Plugs should not be removed until air pressure in the test section has been reduced to atmospheric pressure.
7. An infiltration/exfiltration test may be performed with prior approval by the Engineer.
- a. Infiltration Test: An infiltration test shall be performed when the crown of the sewer line is below the ground water table. The amount of water leaking into the sewer shall be measured by the use of appropriately sized weirs designed specifically for this purpose and approved by the Engineer. The allowable leakage shall not be more than 50 gallons per day, per mile of pipe, per inch nominal diameter. The section of pipe to be tested shall be pumped dry before the start of the test.

- b. Exfiltration Test: In areas where the crown of the pipe is above the ground water level, an exfiltration test shall be performed. The section of sewer to be tested shall be filled with water so that the water table in the upstream manhole is at least 4 feet above the flowline or 2 feet above the top of the pipe, whichever is greater. The amount of water added during the test period to maintain the water level shall be measured and it shall not exceed a rate of 50 gallons per day, per mile of pipe, per inch of nominal diameter. PVC joints shall be repaired by removal and replacement of the pipe section or pipe joint as directed by the Engineer. D.I.P. joints found to be defective shall be repaired by disassembly of the pipe joint, replacement of the joint and or pipe gasket and reassembly of pipe section utilizing a ductile iron mechanical joint long sleeve with internal pipe filler. Bell clamps will not be an acceptable method of joint repair.

C. Manholes:

- 1. Manholes structure shall be either vacuum or hydrostatically tested. Vacuum or hydrostatic testing is recommended prior to backfilling, where feasible, to assist in locating leaks. The final test and acceptance shall be based only on a test after the manhole is backfilled and the cast manhole ring is in place. Existing manholes where new connections are made will not be required to be vacuum or hydrostatically tested. These manholes shall be visually inspected for water tightness with any leakage noted and corrected prior to manhole acceptance.
- 2. Vacuum Test - A vacuum test shall be performed on all new manholes. Plug all manhole entrances and exits other than the manhole top access using suitably sized and rated pneumatic or mechanical pipeline plugs. Follow manufacturer's recommendations and warnings for proper and safe installation of such plugs, taking care to securely brace the plugs and the pipe. Attach the vacuum test device to the cast manhole ring and draw a vacuum to 10" of mercury. With the valve at the vacuum line connection closed and the vacuum pump off, measure the time required for the vacuum to drop to 9" of mercury. The manhole passes the test if the time is greater than 60 seconds for a 48" diameter manhole, 75 seconds for a 60" diameter manhole, and 90 seconds for a 72" diameter manhole. If the manhole fails the test, the Contractor shall locate the leak and make proper repairs with non-shrink grout. The manhole shall be retested until acceptable test results are obtained.
- 3. Hydrostatic Test - Manholes may be tested using internal or external hydrostatic pressure with prior approval by the Engineer. External hydrostatic testing shall only be used where the groundwater level is at least 4 feet above the invert of the manhole. In all other cases, the internal hydrostatic test procedures must be followed. Sewers connected to the manhole shall be adequately plugged. For the internal hydrostatic test, the manhole shall be filled with water to the top or to a maximum depth of 25-feet above the invert. Water gain or loss shall not exceed 1.14 gallons per day per vertical foot of manhole for either external or internal hydrostatic testing. Infiltration and exfiltration shall be determined after 24 hours of hydrostatic testing by determining the gain or loss of water in the manhole. Contractor shall be responsible for retrieving any plugs or material accidentally washed down a sewer.

3.11 BYPASS PUMPING

- A. Bypass pumping shall be in accordance with section 015110 Temporary Bypass Pumping Systems.
- B. Where plugging is used, the Contractor shall monitor upstream manholes for excessive surcharge conditions. The Contractor shall take immediate action and utilize all means necessary to quickly alleviate the surcharge conditions.

END OF SECTION 333500

Bidders Name: _____

**DOCUMENT 330
BID FORM**

TO: The City of Topeka, Kansas
Contracts & Procurement Division
215 S.E. 7th St., Room 60
Topeka, Kansas 66603

Project No. and Description: 291130.02 SW Huntoon Street Before Project Sanitary
Improvements

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with Owner in the form included in the contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

2. Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for sixty (60) days after the day of Bid opening. Bidder will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within ten days after receipt of the award of contract and Contract Documents from the Owner.

3. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:

a. Bidder has examined copies of all the bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Date	Number
_____	_____
_____	_____
_____	_____
_____	_____

b. Bidder has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

c. Bidder has studied carefully all reports and drawings of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in paragraph 4.2 of the General Conditions, and accepts the determination set forth in the Supplementary Conditions (if applicable) of the extent of the technical data contained in such reports and drawings upon which Bidder is entitled to rely.

d. Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests and studies (in addition to or to supplement these referred to in (c) above) which pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance or furnishing of the Work as Bidder considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.2 of the General Conditions; and no additional examinations, investigations, explorations, tests, reports or similar information or data are or will be required by Bidder for such purposes.

e. Bidder has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports or similar information or data in respect of said Underground Facilities are or will be required by Bidder in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.

f. Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

g. Bidder has given Engineer (either the Design Engineer or the City Engineer as defined in Article 2 of the Agreement) written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Bidder.

h. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other bidder or over Owner.

Project No. and Description: 291130.02 SW Huntoon Street Before Project Sanitary Improvements

4. Bidder will complete the Work for the following price(s):

Item No.	Description	Quantity	Unit	Unit Price	Extension
1	Contractor Construction Staking	1	LS		
2	Erosion Control	1	LS		
3	Abandon Manhole In-Place	6	EA		
4	4 ft. Dia. Sanitary Manhole Rehabilitation	24	EA		
5	Standard Manhole, Type II, 4ft. Dia. (0'-6')	6	EA		
6	Additional Depth for Std. Manhole, Type II, 4 ft. Dia	15	VF		
7	Open Cut Point Repair	1	EA		
8	Remove and Replace 6" Reinforced Concrete	125	SY		
9	Remove and Replace 2" Asphalt on 7" Concrete Base	50	SY		
10	Cured-In-Place Pipe (CIPP) 8"	1454	LF		
11	Cured-In-Place Pipe (CIPP) 9"	599	LF		
12	Cured-In-Place Pipe (CIPP) 10"	2352	LF		
13	Cured-In-Place Pipe (CIPP) 12"	1716	LF		
14	Cured-In-Place Pipe (CIPP) 15"	407	LF		
15	Bypass Pumping	1	LS		
16	Traffic Control	1	LS		

TOTAL BID \$ _____

5. Quantities are estimated. Final payment will be based on actual quantities unless otherwise stated in the Contract Documents.
6. Bidder agrees that the Work will be substantially complete in accordance with the time requirements given in the Agreement and General Conditions.
7. Bidder accepts the provisions of the Agreement for Liquidated Damages in the event of failure to complete the work on time.
8. The following documents are attached to and made a condition of this Bid:
 - a. Required Bid Security in the form of a certified or bank check or a bid bond in accordance with the provisions of the Instructions to Bidders.
 - b. List of Subcontractors; Costs and Suppliers.
9. The terms used in this Bid which are defined in the General Conditions included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

SUBMITTED on _____, 20 _____.

Name of Bidder a(n) _____
(individual, partnership, corporation)

Address of Bidder

Telephone Number

By: _____, (Corporate Seal)
Authorized Person

Title

Project Number: 291130.02

Contractor's Name: _____

List of Subcontractors; Costs

The Bidder is required to identify each Subcontractor and the Subcontractor's cost. Do not list alternate subcontractors for the same work. The Contractor shall list only one subcontractor for each such portion of Work as is defined by the Contractor in his bid. Contractor shall not substitute any person as subcontractor in the place of a subcontractor listed below, except as provided in Document 100.

The Bidder understands that if Bidder fails to specify a subcontractor for any portion of the Work to be performed under the contract or specifies more than one subcontractor for the same portion of the Work, Bidder shall be deemed to have agreed that Bidder is fully qualified to perform that portion and cannot sublet or subcontract that portion of the Work, except as provided in Document 100.

Subcontractor: _____
Amount: _____ (\$ _____)
(words)

Subcontractor: _____
Amount: _____ (\$ _____)
(words)

Subcontractor: _____
Amount: _____ (\$ _____)
(words)

Subcontractor: _____
Amount: _____ (\$ _____)
(words)

Subcontractor: _____
Amount: _____ (\$ _____)
(words)

Subcontractor: _____
Amount: _____ (\$ _____)
(words)

Project Number: 291130.02

Contractor's Name: _____

List of Suppliers (cont.)

Each Supplier performing more than 5 % of the Total Bid shall also be furnished. . Do not list alternate suppliers for the same work.

Supplier
Name: _____
Material: _____

Supplier
Name: _____
Material: _____

Supplier
Name: _____
Material: _____

Supplier
Name: _____
Material: _____

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Name: _____
Material: _____

Supplier
Name: _____
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Name: _____
Material: _____

Supplier
Name: _____

Material: _____

Supplier

Name: _____

Material: _____

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Bartlett & West

Performance Bond

Any singular reference to Contractor, Surety, Owner of other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address): City of Topeka
215 SE 7th Street
Topeka, KS 66603

CONTRACT

Date:
Amount:
Description (Name and Location):

BOND

Date (Not earlier than Contract Date):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent or representative.

CONTRACTOR AS PRINCIPAL
Company: (Corp. Seal)

SURETY
Company: (Corp. Seal)

Signature: _____
Name and Title:

Signature: _____
Name and Title:
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL
Company: (Corp. Seal)

SURETY
Company: (Corp. Seal)

Signature: _____
Name and Title:

Signature: _____
Name and Title:

EJCDC No. 1910-28-A (1996 Edition)
Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects.

1. The CONTRACTOR and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Contract, which is incorporated herein by reference.

2. If the CONTRACTOR performs the Contract, the Surety and the CONTRACTOR have no obligation under this Bond, except to participate in conferences as provided in paragraph 3.1.

3. If there is no OWNER Default, the Surety's obligation under this Bond shall arise after:

3.1. The OWNER has notified the CONTRACTOR and the Surety at the addresses described in paragraph 10 below, that the OWNER is considering declaring a CONTRACTOR Default and has requested and attempted to arrange a conference with the CONTRACTOR and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Contract. If the OWNER, the CONTRACTOR and the Surety agree, the CONTRACTOR shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive the OWNER's right, if any, subsequently to declare a CONTRACTOR Default; and

3.2. The OWNER has declared a CONTRACTOR Default and formally terminated the CONTRACTOR's right to complete the Contract. Such CONTRACTOR Default shall not be declared earlier than twenty days after the CONTRACTOR and Surety have received notice as provided in paragraph 3.1; and

3.3. The OWNER has agreed to pay the Balance of the Contract Price to:

3.3.1. The Surety in accordance with the terms of the Contract;

3.3.2. Another contractor selected pursuant to paragraph 4.3 to perform the Contract.

4. When the OWNER has satisfied the conditions of paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1. Arrange for the CONTRACTOR, with consent of the OWNER, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the OWNER for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by the OWNER and the contractor selected with the OWNER's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the Bonds issued on the Contract, and pay to the OWNER the amount of damages as described in paragraph 6 in excess of the Balance of the Contract Price incurred by the OWNER resulting from the CONTRACTOR Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances;

4.4.1. After investigation, determine the amount for which it may be liable to the OWNER and, as soon as practicable after the amount is determined, tender payment therefor to the OWNER; or

4.4.2. Deny liability in whole or in part and notify the OWNER citing reasons therefor.

5. If the Surety does not proceed as provided in paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the OWNER to the Surety demanding that the Surety perform its obligations under this Bond, and the OWNER shall be entitled to enforce any remedy available to the OWNER. If the Surety proceeds as provided in paragraph 4.4, and the

OWNER refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the OWNER shall be entitled to enforce any remedy available to the OWNER.

6. After the OWNER has terminated the CONTRACTOR's right to complete the Contract, and if the Surety elects to act under paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the OWNER shall not be greater than those of the CONTRACTOR under the Contract, and the responsibilities of the OWNER to the Surety shall not be greater than those of the OWNER under the Contract. To a limit of the amount of this Bond, but subject to commitment by the OWNER of the Balance of the Contract Price to mitigation of costs and damages on the Contract, the Surety is obligated without duplication for:

6.1. The responsibilities of the CONTRACTOR for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional and delay costs resulting from the CONTRACTOR's Default, and resulting from the actions or failure to act of the Surety under paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of the CONTRACTOR.

7. The Surety shall not be liable to the OWNER or others for obligations of the CONTRACTOR that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the OWNER or its heirs, executors, administrators, or successors.

8. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after CONTRACTOR Default or within two years after the CONTRACTOR ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to the Surety, the OWNER or the CONTRACTOR shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the Contract was performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1. Balance of the Contract Price: The total amount payable by the OWNER to the CONTRACTOR under the Contract after all proper adjustments have been made, including allowance to the CONTRACTOR of any amounts received or to be received by the OWNER in settlement of insurance or other Claims for damages to which the CONTRACTOR is entitled, reduced by all valid and proper payments made to or on behalf of the CONTRACTOR under the Contract.

12.2. Contract: The agreement between the OWNER and the CONTRACTOR identified on the signature page, including all Contract Documents and changes thereto.

12.3. CONTRACTOR Default: Failure of the CONTRACTOR, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. OWNER Default: Failure of the OWNER, which has neither been remedied nor waived, to pay the CONTRACTOR as required by the Contractor or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY---Name, Address and Telephone)
AGENT or BROKER: OWNER'S REPRESENTATIVE (Engineer or other party):

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Bartlett & West

Payment Bond

Any singular reference to Contractor, Surety, Owner of other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address): City of Topeka
215 SE 7th Street
Topeka, KS 66603

CONTRACT

Date:
Amount:
Description (Name and Location):

BOND

Date (Not earlier than Contract Date):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent or representative.

CONTRACTOR AS PRINCIPAL

Company: (Corp. Seal)

Signature: _____
Name and Title:

SURETY

Company: (Corp. Seal)

Signature: _____
Name and Title:
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL

Company: (Corp. Seal)

Signature: _____
Name and Title:

SURETY

Company: (Corp. Seal)

Signature: _____
Name and Title:

EJCDC No. 1910-28-B (1996 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects.

1. The CONTRACTOR and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the OWNER to pay for labor, materials and equipment furnished for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to the OWNER, this obligation shall be null and void if the CONTRACTOR:

2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2. Defends, indemnifies and holds harmless the OWNER from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Contract, provided the OWNER has promptly notified the CONTRACTOR and the Surety (at the addresses described in paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the CONTRACTOR and the Surety, and provided there is no OWNER Default.

3. With respect to Claimants, this obligation shall be null and void if the CONTRACTOR promptly makes payment, directly or indirectly, for all sums due.

4. The Surety shall have no obligation to Claimants under this Bond until:

4.1. Claimants who are employed by or have a direct contract with the CONTRACTOR have given notice to the Surety (at the addresses described in paragraph 12) and sent a copy, or notice thereof, to the OWNER, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2. Claimants who do not have a direct contract with the CONTRACTOR:

1. Have furnished written notice to the CONTRACTOR and sent a copy, or notice thereof, to the OWNER, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and

2. Have either received a rejection in whole or in part from the CONTRACTOR, or not received within 30 days of furnishing the above notice any communication from the CONTRACTOR by which the CONTRACTOR had indicated the claim will be paid directly or indirectly; and

3. Not having been paid within the above 30 days, have sent a written notice to the Surety and sent a copy, or notice thereof, to the OWNER, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the CONTRACTOR.

5. If a notice required by paragraph 4 is given by the OWNER to the CONTRACTOR or to the Surety, that is sufficient compliance.

6. When the Claimant has satisfied the conditions of paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

6.1. Send an answer to the Claimant, with a copy to the OWNER, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2. Pay or arrange for payment of any undisputed amounts.

7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8. Amounts owed by the OWNER to the CONTRACTOR under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any Performance Bond. By the CONTRACTOR furnishing and the OWNER accepting this Bond, they agree that all funds earned by the CONTRACTOR in the performance of the Contract are dedicated to satisfy obligations of the CONTRACTOR and the Surety under this Bond, subject to the OWNER's priority to use the funds for the completion of the Work.

9. The Surety shall not be liable to the OWNER, Claimants or others for obligations of the CONTRACTOR that are unrelated to the Contract. The OWNER shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by paragraph 4.1 or paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the OWNER or the CONTRACTOR shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the OWNER or the CONTRACTOR, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the Contract was performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is, that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, the CONTRACTOR shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS.

15.1. Claimant: An individual or entity having a direct contract with the CONTRACTOR or with a Subcontractor of the CONTRACTOR to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of the CONTRACTOR and the CONTRACTOR's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2. Contract: The agreement between the OWNER and the CONTRACTOR identified on the signature page, including all Contract Documents and changes thereto.

15.3. OWNER Default: Failure of the OWNER, which has neither been remedied nor waived, to pay the CONTRACTOR as required by the Contract or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY---Name, Address and Telephone)
AGENT or BROKER: OWNER'S REPRESENTATIVE (Engineer or other party):