

ADDENDUM NUMBER: 1

Addendum Issue Date: **August 16, 2021**

Project Title: **City of Edgerton, Kansas, 7th & Nelson Sanitary Sewer Rehabilitation**

This addendum adds, deletes, changes or clarifies the following:

ADDENDA TO PLANS AND PROJECT MANUAL:

1. Replace the Proposal (pages 14-18) with the attached Proposal (pages 14-18).
2. Replace the Contract (pages 26-27) with the attached Proposal (pages 26-27).
3. Replace Section 02532 Manhole and Structure Interior Coatings with the attached Section 02532 Manhole and Structure Interior Coatings.
4. Replace Section 03360 Sewer Manhole Rehabilitation with the attached Section 03360 Sewer Manhole Rehabilitation.

NOTE: Bidders must acknowledge receipt of this Addendum by listing the addendum number and date, where provided, on the Bid Form.



CITY OF EDGERTON, KANSAS PROJECT MANUAL

7th and Nelson Sanitary Sewer Rehabilitation

PROJECT NO. 21-0002

July 29nd, 2021



CITY OF EDGERTON, KANSAS

MAYOR
DONALD ROBERTS

CITY COUNCIL
CLAY LONGANECKER
JOSH LEWIS
JODY BROWN
JOSHUA BEEM

CITY CLERK
ALEXANDRIA CLOWER

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CITY OF EDGERTON, KANSAS
7TH AND Nelson Sanitary Sewer Rehabilitation
2021

PROJECT MANUAL

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EDGERTON, KANSAS

7th and Nelson Sanitary Sewer Rehabilitation**ADVERTISEMENT FOR BID**

Sealed proposals for the 7TH AND NELSON SANITARY SEWER REHABILITATION, in the City of Edgerton, Kansas will be received from qualified bidders by the City of Edgerton, Kansas at 404 East Nelson (PO Box 255), Edgerton, Kansas 66021 until 2:00 PM on FRIDAY, AUGUST 27th, 2021 at which time and place all bids will be publicly opened and read. Bids received after the designated closing time will be returned unopened. All contractors who plan to submit a proposal on the project are requested to attend.

All proposals shall be made on a printed proposal form included in a bound Project Manual containing the specifications for the Work and shall be submitted in sealed envelopes addressed to the City of Edgerton, Kansas and marked "7TH AND NELSON SANITARY SEWER REHABILITATION."

This project will 4321 linear feet of 8" cured-in-place pipe (CIPP) in the vicinity of 7th and Nelson in Edgerton along with other related pipe and manhole rehabilitation improvements.

The Project Manual, consisting of the Bidding Documents (which shall include the advertisement for bid, instructions to bidders, proposal and statement of bidder's qualifications) and Contract Documents (which shall include the proposal, performance bond, statutory bond, contract, general conditions, special conditions, technical specifications, and any addenda authorized by the Owner), and the Plans may be examined at the office of the City Clerk, Edgerton City Hall, 404 East Nelson, Edgerton, Kansas 66021. Copies of Project Manual can be seen or purchased on-line at www.drexeltech.com in their electronic plan room, additional assistance is available at distribution@drexeltech.com. At the web site, information regarding this project can be found in the 'Public Jobs' link. Contractors desiring the Project Manual for use in preparing bids may also obtain a set of such documents from Drexel Technologies, 10840 West 86th Street, Lenexa, Kansas 66214, telephone (913) 371-4430. **Any questions regarding the project, plans, specifications or bid documents should be directed to Dan Merkh, Public Works Director at (913) 893-6231.**

Each bid shall be accompanied by a certified check or cashier's check drawn on a National Bank or a bank having membership in the Federal Reserve System or a bid bond made payable to "The City of Edgerton, Kansas" in an amount of not less than five percent (5%) of the total bid, which may be retained until a contract for the project shall have been awarded. Bid checks or bid bonds will be returned to the unsuccessful bidders if

and when their bids are rejected. An agent authorized to transact business in the State of Kansas shall write the bonds.

Each bidder shall upon request of the City of Edgerton, Kansas submit on the form furnished for that purpose, a statement of the bidder's qualifications, the bidder's experience record in the type of work embraced in this project, his organization and equipment available for the work contemplated and, when specifically requested by the City of Edgerton, a detailed financial statement.

The City of Edgerton shall have the right to take such steps as it deems necessary to determine the ability of the bidder to perform his obligations under the Contract and the bidder shall furnish the City of Edgerton all such information and data for this purpose as it may request. The right is reserved to reject any bid where an investigation of the available evidence or information does not satisfy the City of Edgerton, in its sole discretion, that the bidder is qualified to carry out properly the terms of the Contract.

The bidder to whom a contract for the Work is awarded will be required to furnish performance and statutory bonds acceptable to the City of Edgerton, Kansas, each in amount of one hundred percent (100%) of the Contract, in conformity with the requirements of the proposed Contract Documents. Each bond shall be written by an agent having an established office in Kansas.

The City of Edgerton, Kansas reserves the right to reject any or all bids for any reason or to waive any informalities in the bidding.

Bids may be held by the City of Edgerton, Kansas for a period not to exceed sixty (60) days from the date of the opening of the bids for the purpose of reviewing the bids and investigation of the qualifications of the bidder prior to the awarding of the Contract.

INSTRUCTIONS TO BIDDERS

1. GENERAL NOTICE

Sealed proposals for 7TH AND NELSON SANITARY SEWER REHABILITATION, in the City of Edgerton, Kansas will be received from qualified bidders by the City of Edgerton, Kansas at 404 East Nelson Street (PO Box 255), Edgerton, Kansas 66021 until 2:00 PM on FRIDAY, AUGUST 27th, 2021 at which time and place all bids will be publicly opened and read. Bids received after the designated closing time will be returned unopened. All Contractors who plan to submit a proposal on the project are requested to attend.

2. PLANS AND SPECIFICATIONS

The Project Manual, consisting of the Bidding Documents (which shall include the advertisement for bid, instructions to bidders, proposal and statement of bidder's qualifications) and Contract Documents (which shall include the proposal, performance bond, statutory bond, contract, general conditions, special conditions, technical specifications, and any addenda or change orders authorized by the Owner), and the Plans may be examined at the office of the City Clerk, Edgerton City Hall, 404 East Nelson Street, Edgerton, Kansas 66021. Copies of Project Manual can be seen or purchased on-line at www.drexeltech.com in their electronic plan room, additional assistance is available at distribution@drexeltech.com. At the web site, information regarding this project can be found in the 'Public Jobs' link. Contractors desiring the Project Manual for use in preparing bids may also obtain a set of such documents from Drexel Technologies, 10840 West 86th Street, Lenexa, Kansas 66214, telephone (913) 371-4430. **Any questions regarding the project, plans, specifications or bid documents should be directed to Dan Merkh, Public Works Director at (913) 893-6231.**

3. PROPOSALS

All proposals shall be made on the forms provided in this bound copy of the Project Manual. All proposals shall be legibly written in ink or typewritten, with all prices given in figures.

No alterations in proposals or in the printed forms will be permitted by erasures, deletions or interpolations unless each alteration is signed or initialed by the bidder. If initialed, the City of Edgerton ("Owner" or "City") may require the bidder to identify the alterations so initialed. Proposals carrying riders or qualifications to the bid as submitted will be rejected as irregular.

Each bidder shall enclose the bound copy of the Project Manual containing his proposal in a sealed envelope, addressed to "The City of Edgerton, Kansas," and marked "7TH AND NELSON SANITARY SEWER REHABILITATION" in the City of Edgerton, Kansas.

4. PROPOSAL GUARANTEE

Each proposal shall, as guarantee of good faith on the part of the bidder, be accompanied by a certified check or cashier's check, drawn on a National Bank, or on a bank having a membership in the Federal Reserve System, or a bid bond, in the amount of not less than five percent (5%) of the total bid. The proposal guarantee shall be made payable without conditions to "The City of Edgerton, Kansas" and the amount of the check will be retained by, and forfeited to, the Owners as liquidated damage if such proposal is accepted and the contract is awarded, and the bidder fails to enter into a contract in the form prescribed, with legally responsible sureties, within ten (10) days after such award is made by the Owners.

5. SIGNATURE OF BIDDER

Each proposal must be signed in ink by the bidder with his/her full name and with his/her business address or place of residence and telephone number. In the case of a firm, the name and residence of each member must be inserted, and in the case the proposal is submitted by, or on behalf of, a corporation, it must be signed in the name of the corporation by an official who is authorized to bind the bidder and who shall also affix the corporate seal of such corporation.

6. ONLY ONE PROPOSAL ACCEPTED

No bidder may submit more than one (1) proposal. Two proposals under different names will not be received from one firm or association.

7. RESPONSIBILITY OF AGENT

Any person signing a proposal as the agent of another or for others may be required to submit satisfactory evidence of his authority to do so.

8. QUALIFICATION OF BIDDERS

Each bidder shall upon request of the City of Edgerton, Kansas, submit on the form furnished for that purpose, a statement of the bidder's qualification, his/her experience record in constructing the type of repairs embraced in this project, his/her organization and equipment available for the work contemplated and when specifically requested by the City of Edgerton, a detailed financial statement. The City of Edgerton shall have the right to take such steps as it deems necessary to determine the ability of the bidder to perform his obligations under the Contract and the bidder shall furnish the City of Edgerton all such information and data for this purpose as it may request. Each bidder shall perform at least 50% of the Work without the use of subcontractors. Computation of Subcontractors Work will be consistent with GC-74, Computation of Subcontractors Work.

9. LOCAL CONDITIONS

Bidders shall read the Project Manual, examine the Plans, and make their own estimates of the existing facilities and the difficulties which will attend the execution of the Work called for by the proposed contract, including local conditions, uncertainty of weather,

and all other contingencies. Bidders shall satisfy themselves by personal examination of the location of the proposed Work, and by such means as they may choose, as to actual conditions and requirements. Information derived from the Project Manual, including the Plans, or from the Consulting Engineer, the City Engineer or their assistants shall not relieve the bidder of this responsibility.

10. INTERPRETATION OF CONTRACT DOCUMENTS

If any person contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the Project Manual, including the Plans and Project Specifications, incorporated therein, he/she may submit to the City Engineer a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt and actual delivery. Any interpretation of the documents included in the Project Manual will be made only by addendum duly issued and a copy of such addendum will be mailed or delivered to each person receiving a set of such Contract Documents. The Owner will not be responsible for any other explanations or interpretations of such Contract Documents which anyone presumes to make on behalf of the Owner before expiration of the ultimate time set for the receipt of bids.

11. COMPARISON OF BIDS

All bids shall be totaled for comparison by adding the amounts determined by multiplying the stipulated approximate quantity by the unit price named in the proposal for that item. In the case of alternate items, the Owner will have the ability to accept any or all alternates. If alternates are chosen by the Owner, these bid amounts shall be added to the total defined above with reductions for an "in lieu of" items as may be the case.

12. UNBALANCE OF BIDS

The unbalancing of bids will not be tolerated. Evidence of material unbalancing will be considered cause for rejection. No modification of bids already submitted will be considered unless such modifications are received prior to the hour set for opening.

13. BONDS

The contractor to whom the Work is awarded will be required to furnish the following Surety Bonds:

(a.) Performance Bond - A bond to the City of Edgerton, Kansas in the amount of one hundred percent (100%) of the amount of the Contract, and in accordance with Kansas Statutory requirements, guaranteeing faithful compliance with the terms of the Contract.

(b.) Statutory Bond - A bond to the State of Kansas, as required by statute, to guarantee the payment of labor and material bills.

All bonds shall be executed according to the sample forms hereto attached, signed by a surety company authorized to transact business in the State of Kansas, and acceptable as surety to The City of Edgerton, Kansas. Each bond must be accompanied by a "Power

of Attorney." The bonds shall be written by an agent authorized to transact business in the State of Kansas.

14. LIABILITY INSURANCE

Refer to Addendum A, Insurance Requirements, as an addendum to this contract.

15. RETURN OF PROPOSAL GUARANTEE

The bid checks or bonds of the three (3) lowest and best bidders may be retained for a period of not more than sixty (60) days pending the execution of the Contract and bonds by the successful bidder. All other bidders' checks or bonds will be returned immediately after the bids have been tabulated and the three lowest and best bids have been determined. Checks or bonds, which have been retained, will be returned when the contractor to whom the Contract has been awarded has furnished approved bonds and filed the necessary number of signed Contracts with the City of Edgerton, Kansas.

16. REJECTION OF BIDS

The City of Edgerton, Kansas reserves the right to reject any or all bids for any reason and to omit one or more items, or portions of items, of the proposal from the award of the Contract, in its sole discretion.

17. PAYMENTS

Payment for all Work performed under this Contract and material stored on the project site will be made as follows:

Estimates of the work completed will be made on the 25th day of each month after the Contractor commences work on this project. Ninety percent (90%) of the estimate will be paid within 30 days after the approval of the estimate, on the condition that the estimate includes lien waivers for work performed by the Contractor and all subcontractors up to and including 30 days prior to the estimate date. The final estimate will be paid within 30 days after the completion of and the acceptance of the construction by the City Council at a regularly scheduled City Council meeting, upon receipt of final lien waivers, and upon satisfaction of the terms of this Contract.

18. BOUND COPY OF PROJECT MANUAL

None of the documents contained in the Project Manual shall be removed prior to filing same with the City of Edgerton.

19. TAXES AND PERMITS

The Contractor shall secure and pay for all permits necessary for the prosecution of any and all parts of the Work from cities, county, state or other governing bodies having jurisdiction. The Contractor shall acquaint itself with and conform to the requirements, rules and regulations of said governing bodies.

The Contractor shall pay all taxes, except sales taxes, that may be lawfully assessed against the Owner or Contractor in the execution and performance of the Contract and Work covered thereby. The unit prices in the Proposal shall include all such taxes.

It is the intention of the Owner to secure an exemption certificate for this project permitting the Contractor to purchase materials without payment of the sales or compensating tax. All bidders shall make allowance for this exemption and shall prepare their bids to reflect the exemption from sales or compensating taxes.

The Contractor must furnish each supplier with a properly executed exemption certificate for the supplier's files. All suppliers' invoices for materials to be incorporated in the Work shall include the exemption certificate number. The Contractor must furnish the Owner with a copy of all invoices. When the project is completed, the Contractor shall file with the Owner, a certified statement that all exempt purchases made were entitled to be exempt of Kansas Retailer's Sales or Compensating Tax. The Owner shall file said statement with the State of Kansas.

The Contractor to whom an exemption certificate has been issued shall assume full responsibility for its proper use of the certificate number, and shall pay all costs of any legally assessed penalties relating to its improper use of the certificate number.

20. WITHDRAWAL OF BID

No bidder may withdraw its proposal for a period of 60 days after date and hour set for the opening herewith. A bidder may withdraw its proposal at any time prior to the expiration of the period during which proposals may be submitted by written request of the bidder, which must be signed in the same manner and by the same person who signed the proposal.

21. RELATIONS WITH OTHER CONTRACTORS

The Contractor shall cooperate with all other contractors who may be performing work on behalf of the Owner, and workers who may be employed by the Owner, on any work in the vicinity of the Work to be done under this Contract, and the Contractor shall so conduct its operations as to interfere to the least possible extent with the work of such contractors or workers. The Contractor shall be responsible for any injury or damage that may be sustained by other contractors or employees of the Owner, because of any fault or negligence on its part, and shall at its own expense, repair or pay for such injury or damage. Any difference or conflict which may arise between the Contractor and other contractors or between the Contractor and the workers of the Owner in regard to their work shall be adjusted and determined by the City Engineer.

If the work of the Contractor is delayed because of any acts or omissions of any other contractor or contractors, the Contractor shall have no claim against the Owner on that account other than for an extension of time. Extensions of time will be handled according to provisions in paragraph GC-48, Extensions of Time.

When two or more contracts are being executed at one time, in such manner that work on one contract may interfere with that on another, the City Engineer shall decide which contractor shall cease work and which shall continue, or whether the work on both contracts shall progress at the same time, and in what manner.

When the territory of one contract is the necessary or convenient means of access for the transportation or movement of persons, material or appliances required for the execution of another contract, such privileges of access or any other responsible privilege may be granted by the City to the contractor so desiring, to the extent that may be reasonably necessary.

22. NON-DISCRIMINATION, AFFIRMATIVE ACTION & FEDERAL REGULATION

- A. The Contractor shall be an equal opportunity employer as defined by Section 1000 (e) of Chapter 21, Title 42, of the United States Code Annotated, and comply with all Federal Regulations or acts regarding construction or employment when Federal Funds are used on the project.
- B. The Contractor shall observe the provision 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.
- C. 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 Kansas Commission on Civil Rights.
- D. 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. 1977 Supp. 44-1031, as amended, the Contractor shall be deemed to have breached the present Contract and it may be canceled, terminated or suspended, in whole or in part, by the Owner.
- E. 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 canceled, terminated or suspended in whole or in part, by the Owner.

The Contractor shall include the provisions of paragraphs (A) through (E) inclusively of this subsection in every subcontract or purchase order so that such provisions will be binding upon such subcontractor or vendor.

7TH AND NELSON SANITARY SEWER REHABILITATION

P R O P O S A L

To: The Governing Body
City of Edgerton, Kansas
404 East Nelson Street
Edgerton, Kansas 66021

Ladies and Gentlemen:

The undersigned bidder declares that he/she has carefully examined the Project Manual, including the Bidding Documents, Contract Documents and Plans, and that he/she has inspected the actual location of the Work, together with the total sources of supplies, and has satisfied itself as to all quantities and conditions and hereby proposes to furnish all materials, supplies, tools, equipment and plant, perform all necessary labor and construct, install and complete all Work stipulated in, required by, and in conformity with the Project Manual, including the Bidding Documents, Contract Documents and Plans for and in consideration of the Bid Schedule Proposal pages 15 through 18.

The undersigned is prepared to submit a financial and experience statement upon request.

The undersigned hereby agrees to furnish the required bond and to enter into a contract within ten (10) days from and after the acceptance of this proposal, and further agrees to achieve substantial completion of the entire **Base Bid** Work covered by this proposal within 90 calendar days. Final completion of the entire **Base Bid** Work shall be complete within 100 calendar days. The anticipated start date for this project is September 13th, 2021.

The undersigned hereby agrees that liquidated damages in the amount of \$1,200.00 per Calendar Day, shall be deducted from any moneys due the Contractor for each day that the Work or portion thereof shall remain uncompleted after the expiration of the Working Days provided above.

BID SCHEDULE PROPOSAL

TO: City of Edgerton
Johnson County, Kansas

The undersigned Bidder hereby proposes to furnish all materials, supplies, transportation, tools, equipment, facilities and to perform all necessary labor and construct, install and complete all work stipulated in, required by, and in conformity with the proposed Contract Documents (including all documents referred to therein) and any and all addenda thereto, for and in consideration of unit prices as follows (**Approx. Quantities** and **Total** are for Bid Comparison Only):

BASE BID					
<u>Item No.</u>	<u>Item Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Bid Price</u>	<u>Item Total</u>
-General					
1.	Mobilization (up to maximum of 10%)	1	L.S.		
-Sanitary Sewer - Pipe Rehabilitation					
2.	8" Cured-In-Place Pipe	4321	L.F.		
3.	5' Point Repair of 8" Sewer Pipe	3	EA		
4.	10' Point Repair of 8" Sewer Pipe	1	EA		
5.	30' Point Repair of 8" Sewer Pipe	1	EA		
6.	Short Lateral Full Wraps	25	EA		
-Sanitary Sewer - Manhole Rehabilitation					
7.	Replace Frame/Cover/Frame Seal	4	EA		
8.	Manhole Cementitious Liner	39.4	V.F.		
9.	Pipe Seal Rehab	4	EA		
10.	Raise Manhole	1	EA		
11.	Cementitious Liner Repair	11	EA		
12.	Exterior Wrap	2	EA		
13.	Bench Repair	2	EA		
14.	Clean Manhole	2	EA		
BASE BID TOTAL					

BASE BID TOTAL (WRITTEN):

HOMESTEAD INTERSECTION IMPROVEMENTS

Enclosed is a (Certified Check) (Cashier's Check) (Bid Bond) in the amount of _____ Dollars which the undersigned agrees to be forfeited to and become the property of the City of Edgerton, Kansas as liquidated damages should this proposal be accepted and the Contract be awarded to him/her and he/she fail to enter into a contract in the form prescribed, and to furnish the required bond within ten (10) days as above stipulated. Otherwise the proposal guarantee shall be returned to the undersigned upon the signing of the contract and delivery of the approved bonds to said City of Edgerton, Kansas.

RECEIPT OF ADDENDA:

I/We acknowledge receipt of the following addenda: _____

REQUIRED CONTRACT PROVISIONS: The Contractor is required to complete and submit pages 18 and 20 with their proposal. The City of Edgerton, Kansas will reject proposals that fail to contain completed Required Contract Provisions.

CERTIFICATION:

I CERTIFY THAT I AM AUTHORIZED TO REPRESENT THE CONTRACTOR IN PREPARING AND PRESENTING THIS PROPOSAL. I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING (INCLUDING BUT NOT LIMITED TO THE INFORMATION CONTAINED IN THE REQUIRED CONTRACT PROVISIONS REFERENCED ABOVE) IS TRUE AND CORRECT. EXECUTED ON _____ (DATE).

Dated in _____ this _____ day of _____ 20__.

SIGNATURE OF BIDDER:

(If an Individual): _____ doing
business as

(If a Partnership):

By: _____

Member of Firm _____

(If a Corporation):

By: _____

Name _____

Title _____

SEAL

Business Address of Bidder: _____

Phone: _____

Fax: _____

STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he/she desires.

1. Name of Bidder.
2. Permanent main office address.
3. When organized.
4. If a corporation or limited liability company, where incorporated.
5. How many years have you been engaged in the contracting business under your present firm or trade name?
6. Contracts on hand: (schedule these, showing amount of each contract and appropriate anticipated dates of completion.)
7. General character of work performed by your company.
8. Have you ever failed to complete or been accused of failing to complete any work awarded to you? If so, where and why?
9. Have you ever defaulted or been accused of defaulting on a contract? If so, where and why?
10. Have you been sued or sued an Owner within the past ten (10) years? If so, provide the case number and court, including county and state.
11. Have you been involved in arbitration in connection with a construction project within the past ten (10) years? If so, describe the project, nature of the arbitration and outcome.
12. List the more important projects recently completed by your company, stating the approximate cost of each, and the month and year completed.
13. List your major equipment available for this contract.
14. Experience in construction work similar in importance to this project.
15. Background and experience of the principal members of your organization, including the officers.

16. Credit available: \$_____.

17. Give bank reference.

18. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the City of Edgerton, Kansas?

19. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the City of Edgerton, Kansas in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated at _____ this _____ day of _____,
20__.

Name of Bidder: _____

By: _____

Title: _____

State of _____) SS
County of _____)

_____ being duly sworn deposes and says that he/she is
_____ of _____ (Name of Organization) and that the
answers to the foregoing questions and all statements therein contained are true and
correct.

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

Notary Public

My Commission expires _____, 20__.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____ as Principal, hereinafter referred to as the "Contractor," and _____ a corporation organized under the laws of the State of _____ and authorized to transact business in the State of Kansas, as surety, hereinafter referred to as the "Surety," are held and firmly bound unto the City of Edgerton, Kansas, hereinafter referred to as "City," in the penal sum of \$_____, lawful money of the United States of America, for the payment of which sum well and truly to be made we bind ourselves, and our heirs, executors, administrators, successors and assigns, jointly and severally by these presents.

WHEREAS, said Contractor has entered into a written Contract with the City dated _____, 20____, (the "Contract") for furnishing in a good, substantial and workmanlike manner all labor, materials, tools, equipment, appliances, transportation, superintendence and other facilities and accessories for the construction of certain improvements as designated, defined and described in the Contract and the award of Contract relating to the 7TH AND NELSON SANITARY SEWER REHABILITATION in the City of Edgerton, Kansas, all in accordance with the Project Manual, including the detailed Plans incorporated therein, on file in the office of the City Engineer for the City of Edgerton, Kansas; a copy of said Contract is or may be attached hereto and is incorporated herein and by reference made a part hereof to the same extent and effect as though it were copied verbatim herein. The Surety and the Contractor are bound for the full performance of the Contract including without exception all of its terms and conditions, both express and implied.

NOW, THEREFORE, if the Contractor, or the subcontractor or subcontractors of said Contractor, shall and will, in all particulars, well, truly and faithfully observe, perform, abide by and carry out each and every covenant, condition, obligation and part of the Contract and the conditions, specifications, Plans and other Contract Documents thereto attached or by reference made a part thereof, according to the true intent and meaning in each case; and if the Contractor shall protect and save harmless the City from all loss, damage and expense to the construction of said Work, or by or in consequence of any negligence, carelessness or misconduct in guarding and protecting the same, or from any improper or defective materials used in its construction, or any act or omission of the Contractor or its agents, servants, or employees; and if the Contractor shall protect and save harmless the City from all suits and claims of infringement or alleged infringement of patent rights of processes; and if the Contractor, for and during a period of two years from and immediately following the completion of said Contract and the acceptance thereof by the City, shall pay or cause to be paid to the City, all loss, damage and expense which may occur to the City by reason of defective materials used, or by reason of defective workmanship done in the furnishing of materials for and the construction of, the said Work; and if the Contractor shall refill all excavation in such manner that it shall be, and shall remain for the said period of two years, flush with the surfaces of streets

and adjacent property, and shall keep in repair for said period of two years all pavement, walks, curbs and gutters over and adjacent to said Work; and if the Contractor shall save and hold harmless the City from all loss, damage and expense occasioned by any failure whatsoever of the Contractor, then this obligation shall be and become null and void; otherwise it shall be and remain in full force and effect;

PROVIDED, FURTHER, that the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or the Work to be performed thereunder, or the specifications, Plans and other Contract Documents accompanying the same, shall in any way affect its obligations on this bond and it does hereby waive notice of any change, extension of time, alteration or addition to the terms of the Contract, or to the Work, or to the specifications, Plans and other Contract Documents;

PROVIDED, FURTHER, that whenever the Contractor is declared by City to be in default under the Contract, the City having performed its obligations thereunder, the Surety may promptly remedy the default or promptly notify the City in writing as to which of the following actions it shall take, such actions to be commenced within fourteen (14) days from the date of default notice from the City:

1. Commence completing the Contract in accordance with its terms and conditions, either itself, or through others acting on its behalf, during which time the City shall pay the Surety only those sums which would have been due and payable to the Contractor pursuant to the Contract had the Contractor not been in default; or
2. With the prior written consent of the City, commence the process of obtaining a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by the City and the Surety jointly of the lowest and best responsive, responsible bidder, arrange for a contract between such bidder and the City. The City shall pay the completing contractor from its own funds only those sums which would have been due and payable to the Contractor pursuant to the Contract had such Contractor not been in default. To the extent that the City is obligated to pay the completing contractor sums, which would not have been due and payable to the Contractor pursuant to the Contract, the Surety shall pay to the City such sums in a timely manner so that the City may utilize such sums in making timely payment to the completing contractor. No right of action shall accrue on this bond to or for the use of any person or corporation other than the City or successors of the City.

In addition to the duties set forth above, the Surety shall pay the City costs and expenses resulting from the Contractor's default, but in no event shall the Surety be required to pay any sum in excess of the Penal Sum set forth herein.

IN TESTIMONY WHEREOF, said Contractor has hereunto set his hand, and said Surety has caused these presents to be executed in its name; and its corporate seal to be

hereunto affixed by its attorney-in-fact duly authorized thereunto so to do at
_____ on this, the _____ day of
_____, 20__.

(SEAL)

Contractor

By _____

Title

(SEAL)

Surety Company

By _____
Attorney-in-Fact

Countersigned:

By _____
Kansas Resident Agent

(Accompany this bond with Attorney-in-Fact's authority form from the surety company
certified to include the date of the bond.)

STATUTORY BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____ as Principal, hereinafter referred to as the "Contractor," and _____ a corporation organized under the laws of the State of _____ and authorized to transact business in the State of Kansas, as surety, hereinafter referred to as the "Surety," are held and firmly bound unto the State of Kansas, in the penal sum of \$_____ lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves and our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents:

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT:

WHEREAS, the Contractor has entered into a written Contract with the City of Edgerton, Kansas on the _____, (the "Contract") for furnishing in a good, substantial and workmanlike manner all labor, materials, tools, equipment, appliances, transportation, superintendence and other facilities and accessories for the construction of certain improvements as designated, defined and described in the Contract relating to the 7TH AND NELSON SANITARY SEWER REHABILITATION in the City of Edgerton, Kansas, all in accordance with the Project Manual and the detailed Plans incorporated therein, on file in the office of the City Engineer for the City of Edgerton, Kansas and incorporated herein by reference.

NOW, THEREFORE, if the Contractor or its subcontractor or subcontractors shall pay all indebtedness incurred for supplies, materials, equipment, transportation or labor furnished, used or consumed in connection with or in or about the construction or making of the public improvements described in the above-mentioned Contract, including but not limited to gasoline, lubricating oils, fuel oils, greases and similar items used or consumed directly in furtherance of such public improvement, and shall pay all claims which might be the basis of a mechanic's lien against the property to be improved under the Contract, this obligation shall be void; otherwise, it shall remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed thereunder shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract. The Surety further agrees that any person to whom there is due any sum for labor furnished, transportation, materials, equipment or supplies used or consumed in connection with or in or about the construction of said improvements, or said person's assigns, may bring action on this bond for the recovery of said indebtedness; PROVIDED, that no action shall be brought on said bond after six (6) months from the completion of said public improvement.

IN TESTIMONY WHEREOF, the Contractor has hereunto set his hand, and the Surety has caused these presents to be executed in its name, and its corporate seal to be hereunto affixed by its attorney-in-fact duly authorized thereunto so to do, at _____ on this _____ day of _____, 20__.

(SEAL)

Contractor

By _____

Title

(SEAL)

Surety Company

By _____
Attorney-in-Fact

Countersigned:

By _____
Kansas Resident Agent

(Accompany this bond with Attorney-in-Fact's authority form from the surety company certified to include the date of the bond.)

(To be filed by the Contractor with the Clerk of the District Court; filing fee to be paid by the Contractor and proof of filing to be provided to Owner.)

EDGERTON, KANSAS

HOMESTEAD INTERSECTION IMPROVEMENTS

CONTRACT

This agreement for the construction of the 7TH AND NELSON SANITARY SEWER REHABILITATION (hereinafter referred to as the "Contract"), made and entered into this _____ day of _____, 20__ by and between the City of Edgerton, Kansas, a municipal corporation organized and existing under the laws of the State of Kansas (hereinafter referred to as the "Owner") and _____ of _____, a corporation organized under the laws of the State of _____ and authorized to transact business in the State of Kansas, (hereinafter referred to as the "Contractor").

WITNESSETH:

THAT WHEREAS, the Owner has caused to be prepared, in accordance with law, Contract Documents, including Project Specifications and Plans, for the Work herein described and has approved and adopted these Contract Documents and has caused to be published, in the manner and for the time required by law, an advertisement inviting sealed proposals for furnishing materials, labor and equipment for, and in connection with, the construction of 7TH AND NELSON SANITARY SEWER REHABILITATION, in the City of Edgerton, Kansas, in accordance with the terms of this Contract; and

WHEREAS, the Owner in the manner prescribed by law has publicly opened, examined and canvassed the proposals submitted, and as a result of such canvass has determined and declared the Contractor to be the lowest and best bidder for constructing said Work, and duly awarded to the said Contractor this Contract therefore for the sum or sums named in the proposal attached to, and made a part of this Contract;

NOW, THEREFORE in consideration of the compensation to be paid to the Contractor, and of the mutual covenants, promises and agreements set forth herein, the parties hereto agree, the Owner for itself and its successors, and the Contractor for itself, its successors and assigns, or executors and administrators, as follows:

ARTICLE I. That the Contractor shall furnish at its own cost and expense all labor, tools, equipment and materials necessary to complete the Work and shall construct and complete in good first class manner the Work as designated, described and required by the Project Manual for the 7TH AND NELSON SANITARY SEWER REHABILITATION. All Work to be done under this Contract shall be under the direct supervision, and to the entire satisfaction of the Owner, and in accordance with the laws of the State of Kansas.

ARTICLE II. That the following documents, which may be attached hereto, are incorporated by reference as a part of this Contract to the same extent as if fully set forth herein: the Project Manual, consisting of the Bidding Documents (which shall include the advertisement for bid, instructions to bidders, proposal (including the bid schedule proposal), statement of bidder's qualifications and affidavit) and Contract Documents (which shall include the proposal, performance bond, statutory bond, contract, general conditions, special conditions, technical specifications, and any addenda or change orders authorized by the Owner), and the Plans.

ARTICLE III. That the Owner shall pay to the Contractor for the performance of the Work embraced in this Contract, and the Contractor will accept in full compensation therefore the sum (subject to adjustment as provided by the Contract) of _____, in cash or its equivalent, for all Work covered by and included in the Contract, in the manner provided in the General Conditions hereto attached.

ARTICLE IV. That the Contractor will commence work on a date to be specified in a written order form from the Owner, and will complete all Work covered by this Contract as set forth in the proposal.

IN WITNESS WHEREOF, the parties hereto have caused the Contract to be executed and made effective the day and year first above written and the Contractor has executed four (4) counterparts of this Contract in the prescribed form and manner.

OWNER

CITY OF EDGERTON, KANSAS

Attest:

By Donald Roberts, Mayor

Alexandria Clower, City Clerk

(SEAL)

Contract Approved as to Form:

Lee Hendricks, City Attorney

CONTRACTOR

Bonds Approved as to Form:

By _____

Title: _____

Lee Hendricks, City Attorney

(SEAL)

ADDENDUM A: INSURANCE REQUIREMENTS

Contractor shall procure and maintain at its sole cost and expense, the following insurance coverage with minimum acceptable limits as follows:

(1) COMMERCIAL GENERAL LIABILITY

\$1,000,000 Per Occurrence

\$2,000,000 Aggregate

Coverage shall be written on ISO occurrence form CG 0001 or equivalent, and shall cover liability arising from premises, operations, independent contractors, products- completed operations, and personal and advertising injury, and include explosion, collapse, and underground coverage. Such coverage shall also contain a "per project" aggregate endorsement. It shall also name City, its officers, employees, Mayor, and City Council Members, and agents as additional insureds on a primary basis, not contributing with any insurance maintained by the additional insured, using ISO additional insured endorsements CG 2010 and CG 2037, or their equivalent, copies of which are required to be attached to the certificate of insurance. Contractor shall maintain this coverage for itself and for all additional insureds for the duration of the project and maintain Completed Operations for coverage for itself and for each additional insured for at least 3 years after completion of the Work. Pollution Liability, if applicable, must also be included or separate policy provided reflecting same limits and terms as above.

(2) AUTOMOBILE LIABILITY

\$1,000,000 Per Accident

Coverage shall apply to all owned, hired, and non-owned automobiles used in the completion of the work set forth in the contract. It shall also name City, its officers, employees, Mayor, and City Council Members, and agents as additional insureds.

(3) WORKERS COMPENSATION - STATUTORY & EMPLOYERS LIABILITY

\$500,000 Each Accident

\$500,000 Policy Limit - Disease

\$500,000 Each Employee – Disease

Coverage shall apply to all workers and employees related to the work, including sole proprietors, partners, members of an LLC, and officers of a corporation, regardless of whether or not such persons come under the statutory requirements to carry this coverage.

(4) UMBRELLA / EXCESS LIABILITY

\$4,000,000 Per Occurrence

\$4,000,000 Aggregate

A combined single limit of excess liability to apply over and above General Liability, Pollution Liability (if applicable), Auto Liability, and Employers Liability, with terms and conditions consistent with those of the underlying coverage, not any more restrictive. It shall also name City, its officers, employees, Mayor, and City Council Members, and agents as additional insureds on a primary basis, not contributing with any insurance maintained by the additional insured.

(5) BUILDERS RISK / INSTALLATION FLOATER

This coverage, is required for building projects in an amount equal to the Replacement Cost of the work or the Contract Amount, whichever is greater. Street and drainage projects will be insured for an amount adequate to provide for removal, repair, or replacement of damaged, unacceptable, or otherwise destroyed work, including labor costs, completed as part of the Contract. It shall include the interest of all entities who are deemed to have an insurable interest in the work and these shall be listed as an insured or additional insured. Coverage shall be "all-risk" and include insurance for loss and damage to the work itself, and materials and equipment in transit. Property of the City in the care, custody and control of Contractor shall also be included in such policy, if applicable. Coverage shall allow for partial utilization of the work by City and shall include testing and startup. Coverage shall be maintained in effect until final payment is made unless otherwise agreed to in writing by the City. Contractor shall be responsible for any deductible or self-insured retention.

(6) WAIVER OF SUBROGATION

Contractor, and in addition, its insurers, through policy endorsement, and to the fullest extent permitted by law, waives all rights against City, its officers, employees, Mayor, and City Council Members, and agents for recovery of damages to the extent that these damages are covered by commercial general liability, commercial umbrella liability, business auto liability or workers compensation and employers liability insurance maintained per the requirements stated above.

(7) CERTIFICATE OF INSURANCE/MISCELLANEOUS PROVISIONS

Prior to commencing the work, Contractor shall furnish an acceptable certificate(s) of insurance, identifying insurers that write Contractor's coverages, with minimum Best's Guide Rating of A- and Class VIII or better, and authorized to do business in the state of Kansas. Certificate will evidence the required

coverage and endorsements stated above, with copies of the additional insured endorsements attached. Should any of the above described policies be cancelled, non-renewed, or be materially altered, which would have an adverse effect on the coverage required by the above terms of this contract, the insurance company(ies) shall notify the City in writing at least 30 days prior to such event. This cancellation provision shall be indicated on the certificate of insurance. If any information concerning reduction of coverage is not furnished by the insurer, it shall be furnished by the Contractor with reasonable promptness according to the Contractor's information and belief. City also reserves the right to obtain copies of Contractor's policies to validate coverage in effect if certificates are ambiguous. Annually, Contractor agrees to provide City with a new and replacement formal certificate of insurance. Not less than five (5) days prior to the expiration date, Contractor will provide City with renewal certificate and new additional insured endorsements, naming City, its officers, employees, Mayor and City Council Members, and agents as additional insured. If any portion of the work is to be subcontracted, Contractor shall require that the subcontractor(s) shall comply with the same indemnification agreement terms and be required to provide and maintain all insurance coverages and provisions as stated above, with a formal certificate of insurance provided to City evidencing same. Acceptance of any certificate that does not comply with the above requirements shall not operate as a waiver of Contractor's obligations hereunder. And the fact that insurance is obtained by Contractor shall not be deemed to release or diminish the liability of Contractor including, without limitation, liability under the indemnity provisions of this contract. Damages recoverable by City shall not be limited by the amount of the required insurance coverage. Contractor shall notify City in writing as soon as possible after any bodily injury or property damage occurrence that could potentially lead to any lawsuit or after it receives notice or knowledge of any demand, claim, cause of action, lawsuit, or action arising out of the work performed under this contract.

GENERAL CONDITIONS

GC-1. SCOPE: The conditions set forth herein are general in scope and are intended to contain requirements and conditions generally required in the Work, but may contain conditions or requirements which will not be required in the performance of the Work under contract and which therefore are not applicable thereto. Where any stipulation or requirement set forth herein applies to any such non-existing condition, and is not applicable to the Work under contract, such stipulation or requirement will have no meaning relative to the performance of said Work.

GC-2. CONTRACT DOCUMENTS: It is expressly understood and agreed that the bound volume of Contract Documents, as defined in GC-3, and other drawings and data which may be furnished by the Contractor and approved by the Owner, and such other additional drawings which may be furnished by the Consulting Engineer as are necessary to make clear, and to define in greater detail, the intent of the Contract Documents, are each and all included in this Contract and the Work shall be done fully in accordance therewith.

GC-3. DEFINITIONS: Whenever any word or expression, defined in this Paragraph GC-3, or pronoun used in its stead, occurs in the Contract Documents or the Bidding Documents, it shall have and is mutually understood to have the meaning herein given.

"Bidding Documents" shall mean and include the advertisement for bid, instructions to bidders, proposal (including the bid schedule proposal) and statement of bidder's qualifications.

"Calendar Days" shall be defined as each day falling within a given month, including Saturday, Sunday or Holidays.

"City Engineer" or "Engineer" shall mean the City Engineer of the City of Edgerton, Kansas.

"Consulting Engineer" shall mean the engineer who has been employed by the Owner to provide professional services with regard to this Work or his duly authorized agents, such agents acting severally within the scope of the particular duties entrusted to them.

"Contract" or "Contract Documents" may be used interchangeably and shall mean and include the proposal, performance bond, statutory bond, contract, general conditions, special conditions, technical specifications, and any addenda or change orders authorized by the Owner.

"Contractor" shall mean the party entering into contract for the performance of the Work covered by this Contract and his duly authorized agents or legal representatives.

"Date of Signing the Contract" or words equivalent thereto, shall mean the date upon which the Contract, executed by the Contractor, is signed by the Owner.

"Observer" shall mean the Consulting Engineer or technical observer or observers duly authorized by the Consulting Engineer or the Owner, limited to the particular duties entrusted to him/her or them.

"Owner" or "City" shall mean the City Council acting as Governing Body of the City of Edgerton, Kansas.

"Plans" or "The Plans" shall mean and include all drawings which may have been prepared by the Owner as a basis for proposals, all drawings submitted by the successful bidder with its proposal and by the Contractor to the Owner, if and when approved by the City Engineer, and all drawings submitted by the Owner to the Contractor during the progress of the Work, as provided for herein.

"Project Manual" shall mean the Bidding Documents and the Contract Documents.

"Project Specifications" shall mean the general conditions, special conditions, and technical specifications.

"Resident representative" shall mean the qualified technical representative designated by the Consulting Engineer, City Engineer or Owner to observe the Work on a continuous basis and to be present at the site of the Work when required. This term may be synonymous with "Observer".

"Standard Specifications" for this Work shall be the Kansas City Metropolitan Chapter American Public Works Association (APWA) Standard Specifications and Design Criteria latest revision. If any item of work or portion thereof is not covered by the APWA specifications, then the latest edition of the KDOT State Road and Bridge Construction specifications will apply. If an item in the Standard Specifications calls for a bid, and a bid item is not provided for in the Contractor's proposal, such items shall be considered a subsidiary obligation of the various bid items for the Work. When reference is made to a Standard Specification, such specification shall govern as though it were repeated verbatim herein. If any conflict should arise between the Standard Specifications and the Project Specifications, the Project Specifications shall govern.

"Work" shall mean the work to be done and the equipment, supplies, and materials to be furnished under this Contract, unless some other meaning is indicated by the context.

"Working Day" shall be any day the Contractor is not restricted from prosecuting the "Controlling Item of Work" because of KDOT, LPAs or weather as defined in the 2015 KDOT Standard Specifications.

Whenever in these Contract Documents the words "as ordered," "as directed," "as required," "as permitted," "as allowed," or words or phrases of like import are used it shall be understood that the order, direction, requirement, permission, or allowance of the Owner and City Engineer is intended.

Similarly the words "approved," "reasonable," "suitable," "acceptable," "properly," "satisfactory," or words of like effect and import, unless otherwise particularly specified herein shall mean approved, reasonable, suitable, acceptable, proper, or satisfactory in the judgment of the Owner and City Engineer.

Whenever any statement is made in the Contract Documents containing the expression "it is understood and agreed," or an expression of like import, such expression means the mutual understanding and agreement of the parties executing the Contract.

GC-4. VERBAL STATEMENTS NOT BINDING: It is understood and agreed that the written terms and provisions of this Contract shall supersede all verbal statements of any and every official and/or other representative of the Owner, and such statements shall not be effective or be construed as entering into, or forming a part of, or altering in any way whatsoever, the written Contract.

GC-5. TITLES AND SUBHEADINGS: The titles or subheadings used in this Contract are understood to be for convenience of reference only, and shall not be taken or considered as being a part thereof, or as having any bearing on the interpretation thereof.

GC-6. COPIES OF CONTRACT: Sufficient copies of the Contract Documents shall be prepared, each containing the Contractor's proposal as submitted, the bond properly executed, and the Contract signed by both parties thereto. These executed counterparts of the Contract Documents are to be filed with the Owner, Contractor, Consulting Engineer, and the Surety Company executing the bond. The original proposal submitted by the Contractor will be retained by the Owner, in addition to the copy thereof in the Owner's copy of the executed documents.

GC-7. SCOPE, NATURE AND INTENT OF SPECIFICATIONS AND PLANS: The Plans, which are incorporated by reference into the Contract Documents, are intended to supplement, but not necessarily duplicate, the other documents which comprise the Contract Documents. Should anything be omitted from the Plans or the other documents comprising the Contract Documents which is necessary to a clear understanding of the Work, or should it appear that various provisions are in conflict, the Contractor shall secure written instructions from the City Engineer before proceeding with the construction affected by such omissions or discrepancies. It is understood and agreed that the Work shall be performed and completed according to the true spirit, meaning and intent of the Contract Documents.

The Contractor's responsibility for construction covered by conflicting requirements, not provided for by addendum prior to the time of opening bids for the work represented thereby, shall not extend beyond the construction in conformity with the cheaper of the said conflicting requirements. Any increase in cost of work required to be done in excess of the cheaper of the conflicting requirements will be paid for as extra work as provided for herein.

GC-8. SILENCE OF CONTRACT DOCUMENTS: The apparent silence of the Contract Documents as to any detail, or the apparent omission from them of a detailed description concerning any point, shall be regarded as meaning that only the best general practice is to be used. All interpretations of these Contract Documents shall be made on the basis above stated.

GC-9. FIGURED DIMENSIONS TO GOVERN: Dimensions and elevations shown on the Plans shall be accurately followed, even though they differ from scaled measurements. No work shown on the Plans, if the dimensions are not indicated, shall be executed until the required dimensions have been obtained from the City Engineer.

GC-10. CONTRACTOR TO CHECK PLANS AND SCHEDULES: The Contractor shall check all dimensions, elevations and quantities shown on the Plans and schedules given thereto by the Consulting Engineer, and shall notify the City Engineer of any discrepancy between the Plans and the conditions on the ground, or any error or omission in Plans, or in the layout as given by stakes, points or instructions, which may be discovered in the course of the Work. The Contractor will not be allowed to take advantage of any error or omission in the Contract Documents, including the Plans. Full instructions will be furnished by the City Engineer should such error or omission be discovered, and the Contractor shall carry out such instructions as if originally specified.

GC-11. DRAWINGS TO BE FURNISHED BY CONTRACTOR: The Contractor shall furnish all shop, fabrication, assembly, foundation and other drawings required by the Project Specifications, including but not limited to, drawings of equipment and devices offered by the Contractor for approval of the Consulting Engineer, in sufficient detail to adequately show the construction and operation thereof, drawings showing essential details of any change in design of construction proposed for consideration of the Owner, by the Contractor in lieu of the design or arrangement required by the Contract, or any item of extra work thereunder, and all required wiring and piping layouts.

Not less than two (2) preliminary copies of each such drawing shall be submitted to the Consulting Engineer for his review and approval, together with the same number of copies of each drawing required by the Consulting Engineer to be revised. On final approval, the Consulting Engineer shall be furnished with a total of not less than five (5) copies, and more when required, of each drawing as finally approved, such number to include any copies of preliminary or revised drawings which are approved as submitted. After due approval in writing by the Consulting Engineer, all such drawings shall become a part

of the Contract Documents and the work or equipment shown by such drawings shall be in conformity with said drawings unless otherwise required by the Owner.

No work shall be performed in connection with the fabrication or manufacture of material or equipment shown by any drawing thereof, nor shall any accessory, appurtenance or device not fabricated or manufactured by the Contractor or its subcontractor, be purchased until the drawing or drawings thereto have been approved as stipulated, except at the Contractor's own risk and responsibility.

The Consulting Engineer's check and approval of drawings submitted by the Contractor will cover only general conformity to the Contract Documents and will not constitute a blanket approval of all dimensions, quantities, and details of the material or equipment shown, nor shall such approval relieve the Contractor of its responsibility for errors contained in such drawings.

GC-12. LINES AND GRADES: All work performed under this Contract shall be done to the lines, grades, and elevations shown on the Plans. The Contractor shall keep the City Engineer informed, a reasonable time in advance of the times and places at which it wishes to do work, in order that lines and grades may be furnished and necessary measurements for record and payment may be made with the minimum of inconvenience and delay to the City Engineer, and delay to the Contractor.

GC-13. WORK DONE WITHOUT LINES OR GRADES: Any work done without being properly located and established by base lines, offset stakes, bench marks or other basic reference points located, established, or checked by the City Engineer, may be ordered removed and replaced at the Contractor's cost and expense.

GC-14. CONTRACTOR FURNISHED STAKING: The Contractor shall be responsible for and provide all staking and furnish stakes, labor, and other materials as required for the proper staking out of the work; and in making measurements and surveys; and in establishing temporary or permanent reference marks in connection with said work. The stakes furnished for the staking of the work shall be of such type, size, and quality as to be acceptable to the City Engineer.

All work performed under this contract shall be done to the lines, grade, and elevations shown on the plans.

Any work done without being properly located and established by base lines, off-set stakes, bench marks, or other basic reference points may be ordered removed and replaced at the Contractor's expense.

The Contractor shall be responsible for all monuments, property corners, bench marks, reference points and stakes, and in case of willful or careless destruction of same, will be charged with the resulting expense of replacement, and he/she shall be responsible for

any mistakes or loss of time that may be caused by their unnecessary loss or disturbance. In the event that the loss of stakes causes a delay in the work, the Contractor shall have no claim for damages or extensions of time. In the case of any permanent monuments, property corners, or benchmarks that have been moved or destroyed, the Contractor shall furnish at its own expense such materials, surveyors, and assistance as are necessary for the proper repairs of monuments, property corners, or bench marks that have been moved or destroyed.

GC-15. LEGAL ADDRESS OF CONTRACTOR: Both the business address of the Contractor given in the bid of proposal upon which this Contract is founded, and the Contractor's office in the vicinity of the Work, are hereby designated as the places to which all notices, letters, and other communications to the Contractor may be mailed or delivered. The delivery at either of the above named addresses, or the depositing in any mail box regularly maintained by the Post Office, of any notice, letter, or other communication so addressed to the Contractor, shall be deemed sufficient service thereof upon the Contractor, and the date of said service shall be the date of such delivery or mailing.

Such addresses may be changed at any time by an instrument in writing, executed by the Contractor and presented and delivered to the City Engineer. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter or communication upon the Contractor personally.

GC-16. CONTRACTOR'S OFFICE AT SITE OF WORK: During the performance of this Contract, the Contractor may be required to maintain a suitable office at or near the site of the Work which shall be the headquarters of a representative authorized to receive drawings, instructions or other communications or articles from the Owner or the Owner's agents, and any such communication given to said representative, or delivered at the Contractor's office at the site of the Work in the Contractor's absence, shall be deemed to have been given to the Contractor.

GC-17. RESPONSIBILITY OF CONTRACTOR: The Contractor shall furnish all transportation, tools, equipment, machinery and plant, and all suitable appliances, requisite for the execution of this Contract and shall be solely answerable for the same and for the safe, proper and lawful construction, maintenance and use thereof. The Contractor shall cover and protect its work from damage and all injury to the same, before the completion and acceptance of the Work under this Contract. The Contractor shall be solely answerable for all damage to the Owner or the property of the Owner, to other contractors or other employees of the Owner, to the neighboring premises, or to any private or personal property, due to improper, illegal, or negligent conduct of the Contractor or its subcontractors, employees, or agents in and about said Work, or in the execution of the Work covered by this Contract, or any extra work undertaken as herein provided. The Contractor shall be responsible to the Owner for any defect in, or the improper use of, any scaffolding, shoring, apparatus, ways, works, machinery or plant.

GC-18. PATENTS: It is mutually agreed by and between the parties to this Contract that all royalties and fees for and in connection with patents, or patent infringement, claims for materials, articles, apparatus, devices or equipment (as distinguished from processes) used in or furnished for the Work shall be included in the Contract amount and the Contractor shall satisfy all demands that may be made at any time for such, and the Contractor shall at its own cost and expense, defend any and all suits or proceedings that may be instituted at any time against the Owner for infringement or alleged infringement of any such patents involved in the Work, and in case of an award of damages, Contractor shall pay such award; final payment to the Contractor by the Owner will not be made while any such suit or claim remains unsettled. The Contractor, however, shall not be liable for the payment of any damages or other cost in connection therewith, for the infringement or alleged infringement of any patented process required by the Owner in the design of the Work to be done under this Contract.

GC-19. INDEPENDENT CONTRACTOR: The right of general administration of the Owner shall not make the Contractor an agent of the Owner, and the liability of the Contractor for all damages to persons, firms, and corporations, arising from the Contractor's execution of the Work, shall not be lessened because of such general administration, but as to all such persons, firms and corporations, and the damages, if any, to them or their property, the Contractor herein is an independent contractor in respect to the Work.

GC-20. RELATIONS WITH OTHER CONTRACTORS: The Contractor shall cooperate with all other contractors who may be performing work in behalf of the Owner and workers who may be employed by the Owner, on any work in the vicinity of the Work to be done under this Contract, and the Contractor shall so conduct its operations as to interfere to the least possible extent with the work of such contractors or workers. The Contractor shall be responsible for any injury or damage that may be sustained by other contractors or employees of the Owner, because of any fault or negligence on its part, and shall at its own expense, repair or pay for such injury or damage. Any difference or conflict which may arise between the Contractor and other contractors, or between the Contractor and the workers of the Owner, in regard to their work, shall be adjusted and determined by the City Engineer. If the Work of the Contractor is delayed because of any acts or omissions of any other contractor or contractors, the Contractor shall have no claim against the Owner on that account other than for an extension of time.

When two or more contracts are being executed at one time in such manner that work on one contract may interfere with that on another, the City Engineer shall decide which contractor shall cease work and which shall continue, or whether the work on both contracts shall progress at the same time, and in what manner.

When territory of one contract is the necessary or convenient means of access for the transportation or movement of men, materials, or appliances required for the execution of another contract, such privileges of access or any other responsible privilege may be

granted by the City Engineer to the contractor so desiring, to the extent which may be reasonably necessary.

GC-21. DEFENSE OF SUITS: In case an action at law or suit in equity is brought against the Owner, the Consulting Engineer, or any of their officers or agents for, or on account of the failure, omission or neglect of the Contractor to do and perform any of the covenants, acts, matters, or things by this Contract undertaken to be done or performed, or for any injury or damage caused by the negligence or alleged negligence of the Contractor or its subcontractors or their employees or agents, the Contractor shall indemnify and save harmless the Owner, the Consulting Engineer, and their officers and agents, of and from all losses, costs, damages, expenses, judgments, or decrees whatever arising out of such actions or suits as may be brought as aforesaid.

GC-22. METHOD OF OPERATION: The Contractor shall give to the City Engineer full information in advance, as to its plans for carrying on any part of the Work. If at any time before the beginning or during the progress of the Work, any part of the Contractor's plant or equipment or any of its methods of executing the Work appear to the City Engineer to be inadequate, the City Engineer may order the Contractor to increase or improve its facilities or methods and the Contractor shall promptly comply with such orders but neither compliance with such orders nor failure of the City Engineer or Owner to issue such orders shall relieve the Contractor from its obligation to secure the degree of safety, the quality of work, and the rate of progress required by the Contract. The Contractor alone shall be responsible for the safety, adequacy and efficiency of its plant, equipment and methods.

The approval by the City Engineer of a plan or method of work proposed by the Contractor shall not relieve the Contractor of any responsibility therefore, and such approval shall not be considered as an assumption by the Owner, City Engineer, or an officer, agent or employee thereof, of any risk or liability, and the Contractor shall have no claim under this Contract on account of the failure or inefficiency of any plan or method so approved. Such approval shall be considered, and shall mean, that the City Engineer has no objection to the Contractor's use or adoption, at the Contractor's own risk and responsibility, of the plan or method so proposed by the Contractor.

GC-23. SUGGESTIONS TO CONTRACTOR ADOPTED AT ITS OWN RISK: Any plan or method of work suggested by the City Engineer, or other representative of the Owner, to the Contractor, but not specified or required, if adopted or followed by the Contractor, in whole or in part, shall be used at the risk and responsibility of the Contractor, and the City Engineer and the Owner will assume no responsibility therefore.

GC-24. AUTHORITY AND DUTY OF THE CITY ENGINEER: It is mutually agreed by and between the parties to this Contract, that the City Engineer shall act as the representative of the Owner and shall observe, as required, the Work included herein. In order to prevent delays and disputes and to discourage litigation, it is further agreed by and

between the parties to this Contract that the City Engineer shall in good faith and to the best of his ability, determine the amount and quantities of the several kinds of work which are to be paid for under this Contract; that he/she shall determine, where applicable, questions in relation to said Work and the construction thereof; that he/she shall, where applicable, decide questions which may arise relative to the execution of this Contract on the part of said Contractor; that his decisions and findings shall be the conditions precedent to the right of the parties hereto to any action on the Contract, and to any rights of the Contractor to receive any money under this Contract; provided, however, that should the City Engineer render any decision or give any direction which, in the opinion of either party hereto is not in accordance with the meaning and intent of this Contract, either party may file with the City Engineer within thirty (30) days, its written objection to the decision or direction so rendered and, by such action, may reserve the right to submit the question so raised to dispute resolution as herein provided.

The City 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 he/she will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents. The City Engineer will not be responsible for the acts or omissions of Contractor or any subcontractor or any of their agents or employees, or any other person at the site or otherwise performing any of the Work.

GC-25. PROJECT REPRESENTATIVE AND OBSERVATION: It is agreed by the Contractor that the Owner shall be and is hereby authorized to appoint or employ such Resident representatives or Observers as the Owner may deem proper, to observe the materials furnished and the Work performed under this Contract, and to see that said materials are furnished, and said Work performed, in accordance with the Contract Documents. The Contractor shall furnish all reasonable aid and assistance required by the City Engineer or by the Resident representatives for the proper observation and examination of the Work and all parts thereof.

The Contractor shall comply with the directions and instructions of the City Engineer, or a Resident representative or Observer so appointed, when the same are consistent with the obligations of this Contract and the Plans and Specifications thereof. However, should the Contractor object to any order given by any Resident representative or Observer, the Contractor may make written appeal to the City Engineer for his decision.

Resident representatives, Observers, and other properly authorized representatives of the Owner or Consulting Engineer shall be free at all times to perform their duties, and intimidation or attempted intimidation of any one of them by the Contractor or by any of its employees, shall be sufficient reason, if the Owner so decides, to terminate the Contract.

Such observation shall not relieve the Contractor from any obligation to perform said Work strictly in accordance with the Contract Documents or modifications thereof as

herein provided, and work not so constructed shall be removed and made good by the Contractor at its own expense, and free of all expense to the Owner, whenever so ordered by the City Engineer.

GC-26. NO WAIVER OF RIGHTS: Neither the observation by the Owner or the Owner's officials, employees, or agents, nor any order by the Owner for payment of money, nor a payment for, or acceptance of, the whole or any part of the Work by the Owner, nor any extension of time, nor any possession taken by the Owner or its employees or agents, shall operate as a waiver of any provision of this Contract, or of a power herein reserved to the Owner, or a right to damages herein provided, nor shall any waiver of any breach in this Contract be held to be a waiver of another or subsequent breach.

GC-27. SUPERINTENDENT OF WORK: The Contractor shall provide and maintain, continually on the site of Work during its progress, adequate and competent superintendents of all operations for and in connection with the Work being performed under this Contract, either personally or by a duly authorized superintendent or other representative.

The superintendent, or other representative of the Contractor on the Work, who has charge thereof, shall be fully authorized to act for the Contractor, and to receive whatever orders as may be given for the proper prosecution of the Work, or notices in connection therewith. Use of subcontractors on portions of the Work shall not relieve the Contractor of its obligation to have a competent superintendent on the Work at all times.

GC-28. ORDERS TO CONTRACTOR'S AGENT: Whenever the Contractor is not present on any part of the Work where it may be desired to give directions, orders may be given by the City Engineer or his representative, and shall be received and obeyed by the superintendent or foreman who may have charge of the particular part of the Work in reference to which such orders are given.

GC-29. PROTECTION OF PROPERTY AND PUBLIC LIABILITY: The Contractor shall assume full responsibility for protection of all public and private property, structures, sewers and utilities, both above and below ground, along, beneath, above, across or near the site or sites of the Work being performed under this Contract, or which are in any manner affected by the prosecution of the Work or the transportation of men or materials in connection therewith. Barriers shall be kept in place at all times to protect persons other than those engaged on or about the Work from accident, and the Contractor will be held responsible for all accidents to persons or property through its negligence or that of its employees.

The Contractor shall indemnify, defend, and save harmless the Owner and the Consulting Engineer against all damages or alleged damages to such property, structures and utilities, together with all claims for damages for personal injury, including accidental death, arising out of its operations in connection with this Contract. All property so

damaged shall be repaired or replaced to a condition equal to its condition immediately prior to the time of damage, and to the satisfaction of the Owner.

The Contractor shall give reasonable notice to the owner or owners of public or private property and utilities when such property is liable to injury or damage through the performance of the Work, and shall make all necessary arrangements with such owner or owners relative to the removal and repairs or protection of such property or utilities.

All permits and licenses required in the prosecution of any and all parts of the Work shall be obtained and paid for by the Contractor.

The Contractor shall satisfactorily shore, support, and protect any and all structures and all pipes, sewers, drains, conduits and other facilities, belonging to the owners of the utility involved and shall be responsible for any damage resulting thereto. The Contractor shall not be entitled to any damages, including but not limited to, damages due to delays in utility relocation, or extra pay on account of the postponement, interference, or delay caused by any such structures and facilities being on the line of the Work, whether they are shown on the Plans or not.

Any claim made against the Contractor, allegedly relating to the Work herein, shall be paid or submitted to Contractor's insurance carrier within ten (10) days of the Contractor receiving notice of said claim.

GC-30. EASEMENTS AND RIGHT-OF-WAY: Permanent and Temporary (Construction) easements will be provided by the Owner as shown on the Plans. The Contractor shall confine its operations to the easements provided and shall carefully note where buildings, structures or other obstructions will limit its working space. In the event that easements are not available or if they have not been secured or if entry to property is denied by court order, injunction, litigation or for any other reason, the Contractor shall cease operations in such area and confine its work to other areas approved by the Owner. In the event of any delay arising from delays in securing easements, the Contractor shall have no claims against the Owner for damages arising from such delay except for extension of time as provided in paragraph GC-48.

GC-31. INSURANCE: Refer to Addendum A, Insurance Requirements, as an addendum to this contract.

GC-32. MODIFICATIONS AND ALTERATIONS: In executing the Contract, the Contractor agrees that the Owner shall have the right to make such modifications, changes, and alterations as the Owner may see fit, in the line, grade, form, arrangement, dimensions, extent or plan of the Work agreed to be done, or any part thereof, or in the materials to be used therein, either before or after the beginning of the construction thereof, without affecting the validity of the Contract and the performance bond thereunder.

Where such modifications, changes, and/or alterations reduce the quantity of work to be done, they shall not constitute a basis for a claim for damages or for anticipated profits on the work involved in such reduction. Where the amount of work required by the modifications, changes, and/or alterations increase the quantity of work to be performed, and is within the scope of the Specifications under a fair interpretation thereof, such increase shall be paid for, according to the quantity of work actually done, at the unit price or prices therefore where such unit prices are included in the Contract, otherwise such additional work shall be paid for as hereinafter provided for Extra Work.

In case the Owner shall make any modifications, changes, or alterations which would replace or otherwise make useless any work already done under the terms of the Contract, the Owner shall reimburse the Contractor for any material used or labor performed in connection therewith, and for any actual loss occasioned thereby due to actual expenses incurred in preparation for the Work as originally planned, as determined by the City Engineer.

All orders for modifications, changes, or alterations in the Work as herein provided shall be in writing, either by the City Engineer under authority of the Owner or by the Owner direct.

GC-33. EXTRA WORK: The term "extra work," as used in this Contract shall be understood to mean and to include all work that may be required by the City Engineer or Owner to be performed by the Contractor to accomplish any change or alteration in, or addition to, the Work shown by the Plans, or required or reasonably implied by the Project Specifications, which is not covered by the proposal and not otherwise provided under "Modifications and Alterations."

It is agreed that the Contractor shall perform all extra work under the direction of the City Engineer, when and as so ordered in writing by the City Engineer or Owner, and it is further agreed that the compensation to be paid the Contractor for performing extra work shall be determined by one or more of the following methods:

Method "A" by agreed unit prices, or

Method "B" by agreed lump sum; or

Method "C" If neither Method "A" nor "B" be agreed upon before the extra work is started, then the Contractor shall be paid the actual field cost of the work plus fifteen percent (15%).

Where extra work is performed under Method "C", the term "actual field cost" of such extra work is hereby defined to be and shall include (a) the cost of all workers, such as foremen, timekeepers, mechanics, and laborers, for the time actually employed or used in the performance of the said extra work; (b) any transportation charges necessarily incurred in connection with any equipment authorized by the City Engineer for use on said work and similar operating expenses; (c) all incidental expenses incurred as a direct

result of such extra work, including payroll taxes and ratable proportion of premiums on construction bonds and, where the premiums therefore are based on payroll costs, public liability and property damage, worker's compensation, and other insurance required by the Contract. The City Engineer may direct the form in which accounts of the actual field cost shall be kept and may also specify in writing, before the extra work commences, the method of doing the extra work and the type and kind of machinery and equipment, if required, which shall be used in the performance of extra work under "Method C." In the event that machinery and heavy construction equipment be required for such extra work, the authorization and basis of payment for the use thereof shall be stipulated in the written extra work order.

The fifteen percent (15%) of the actual field cost to be paid to the Contractor shall cover, and be full compensation for, the Contractor's profit, overhead, general superintendents, and field office expense, and all other elements of cost not embraced within the "actual field cost" as herein defined.

No claim for extra work of any kind will be allowed unless ordered in writing by the City Engineer or Owner. In case an order or instructions, either oral or written, appear to the Contractor to involve extra work for which it should receive compensation, the Contractor shall make a written request to the City Engineer for a written order authorizing such extra work. Should a difference of opinion arise as to what does or does not constitute extra work, or concerning the payment thereof, and the City Engineer insists on its performance, the Contractor shall proceed with the extra work after making a written request for a written extra work order and it shall keep an accurate account of the actual field cost thereof as provided for in Method "C" in the foregoing paragraph. The Contractor will thereby preserve the right to submit the matter of payment to dispute resolution as hereinafter provided.

GC-34. EXTRA WORK A PART OF CONTRACT: If extra work orders are given in accordance with the provision of this Contract, such extra work shall be considered a part hereof and subject to each and all of its terms and requirements.

GC-35. DISPUTES: The City and Contractor agree that disputes relative to the Work or this Contract should first be addressed by negotiations between the parties. If direct negotiations fail to resolve the dispute, the party initiating the claim that is the basis of the dispute shall be free to take such steps as it deems necessary to protect its interests; provided, however, that notwithstanding any such dispute, the Contractor shall proceed with its services under this Contract as though no dispute exists unless otherwise agreed to by the City; and provided further, that no arbitration proceedings shall be initiated by Contractor without the prior written consent of the City.

It is understood and agreed by the parties to the Contract that no requirement or statement herein shall be interpreted as curtailing the power of the City Engineer to determine the amount, quality and acceptability of work and materials.

GC-36. PROVISION FOR EMERGENCIES: In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, Contractor without special instruction or authorization from the City Engineer or Owner, is obligated to act, at its discretion, to prevent threatened damage, injury or loss. The Contractor shall give City Engineer prompt written notice of significant changes in the Work or deviations from the Contract Documents caused thereby. A Change Order shall thereupon be issued covering the changes and deviations involved. If Contractor believes that additional work performed in an emergency which arose from causes beyond the Contractor's control entitles it to an increase in the Contract price and an extension of the Contract time, the Contractor may make a claim therefore as provided in GC-32, "Modifications and Alterations," GC-33, "Extra Work," and GC-48, "Extensions of Time."

GC-37. ASSIGNMENT AND SUBLETTING OF CONTRACT: The Contractor shall not assign or sublet the Work, or any part thereof, without the previous written consent of the City Engineer, nor shall it assign, by power of attorney or otherwise, any of the money payable under this Contract unless by and with the like consent of the Owner to be signified in like manner. In case the Contractor assigns all, or any part of any moneys due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the Contractor shall be subject to all prior liens of all persons, firms and corporations for services rendered or materials supplied for the performance of the Work called for in this Contract.

Should any subcontractor fail to perform in a satisfactory manner the work undertaken by him/her, his subcontract shall be immediately terminated by the Contractor upon notice from the Owner. The Contractor shall be as fully responsible to the Owner for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the omissions of persons directly employed by the Contractor. Nothing contained in this Contract shall create any contractual relation between any subcontractor and the Owner.

GC-38. RIGHT OF OWNER TO TERMINATE CONTRACT: If the Work to be done under this Contract shall be abandoned by the Contractor, or if this Contract shall be assigned otherwise than as herein provided, or if the Contractor should be adjudged as bankrupt, or if a general assignment of its assets be made for the benefit of its creditors, or if a receiver should be appointed for the Contractor or any of its property, or if at any time the City Engineer shall certify in writing to the Owner that the performance of the Work under this Contract is being unnecessarily delayed, or that the Contractor is willfully violating any of the conditions or covenants of this Contract, or that it is executing the same in bad faith or otherwise not in accordance with the terms of said Contract, or if the Work be not substantially completed within the time named for its completion or within the time to which such completion date may be extended, then the Owner may serve written notice upon the Contractor and its surety of said Owner's intention to

terminate this Contract and, unless within five (5) days after the serving of such notice a written appeal is received by the Owner, the Contractor shall cease and terminate. In the event of such termination, the Owner shall immediately serve notice thereof upon the surety and the Contractor, and the surety shall have the right to take over and complete the Work, provided however, that if the surety does not commence performance thereof within thirty (30) days from the date of said notice of termination, the Owner may take over the Work and prosecute same to completion, by contract or otherwise for the amount and at the expense of the Contractor, and the Contractor and its surety shall be liable to the Owner for any and all excess cost sustained by the Owner by reason of such prosecution and completion, and in such event the Owner may take possession of, and utilize in completing the Work, all such materials, equipment, tools and plant as may be on the site of the Work and necessary therefore.

GC-39. SUSPENSION OF WORK ON NOTICE: The Contractor shall delay or suspend the progress of the Work or any part thereof, whenever it shall be so required by written order of the Owner or City Engineer, and for such periods of time as it or he/she shall require; provided, that in the event of such delay or delays or of such suspension or suspensions, the total days allowed for the Work shall be extended for a period equivalent to the time lost by reason of such suspension or suspensions, but such order of the Owner or City Engineer shall not otherwise modify or invalidate in any way, any of the provisions of this Contract. In the event that the Work shall be stopped by order of the Owner or City Engineer, any expense which, in the opinion and judgment of the City Engineer, is caused thereby shall be paid by the Owner to the Contractor.

GC-40. LOSSES FROM NATURAL CAUSES: All loss or damage arising out of the nature of work to be done, or from the action of the elements, or from floods or overflows, or from ground water, or from unusual obstructions or difficulties, or any other natural or existing circumstances either known or unforeseen, which may be encountered in the prosecution of the Work shall be sustained and borne by the Contractor at its own cost and expense.

GC-41. LAWS AND ORDINANCES: The Contractor shall keep itself fully informed of all existing and current regulations of the Owner, and county, state and national laws which in any way limit or control the actions or operation of those engaged upon the Work, or affecting the materials supplied to or by them. The Contractor shall at all times observe and comply with all ordinances, laws and regulations and shall protect and indemnify the Owner and the Owner's officers and agents against any claims or liability arising from or based on any violation of the same.

GC-42. SANITARY REGULATIONS: In general, the operations of the Contractor shall be in full conformity with all of the rules and regulations of boards and bodies having jurisdiction with respect to sanitation. The Contractor shall supply safe and sufficient drinking water to all of its employees. The Contractor shall obey and enforce all sanitary

regulations and orders, and shall take precautions against infectious diseases and the spread of the same.

GC-43. CHARACTER OF WORKERS: The Contractor shall employ only workers who are competent to perform the work assigned to them, and in the case of skilled labor, who are adequately trained and experienced in their respective trades and who do satisfactory work.

When the City Engineer shall notify the Contractor that any worker on the Work is, in his opinion, incompetent, unfaithful, or disorderly or who uses threatening or abusive language to any person representing the Owner when on the Work, such worker shall be immediately discharged from the Work and shall not be re-employed thereon except with the consent of the City Engineer.

GC-44. SUNDAY, HOLIDAY AND NIGHT WORK: No work shall be done between the hours of 10 P.M. and 7 A.M. nor on weekends or legal holidays, without the written approval or permission of the City Engineer in each case, except such work as may be necessary for the proper care, maintenance and protection of work already done or of equipment, or in the case of an emergency.

Night work may be established by the Contractor, as a regular procedure, with the written permission of the City Engineer. Such permission, however, may be revoked at any time by the City Engineer if the Contractor fails to maintain at night adequate equipment for the proper prosecution and control of the Work and all operations performed thereunder.

GC-45. UNFAVORABLE CONSTRUCTION CONDITIONS: During unfavorable weather, or other unfavorable conditions for construction operations, the Contractor shall pursue only such portions of the Work as will not be damaged thereby. No portions of the Work, the satisfactory quality or efficiency of which will be affected by any unfavorable conditions, shall be constructed while these conditions exist, unless, by special means or precautions approved by the City Engineer, the Contractor shall be able to perform the Work in a proper and satisfactory manner.

GC-46. BEGINNING, PROGRESS AND TIME OF COMPLETION OF WORK: The Contractor shall, within ten (10) days of the date specified in a written notice from the Owner, commence the Work to be done under this Contract; and the rate of progress shall be such that the Work shall have been completed in accordance with the terms of the Contract on or before the termination of the construction period named in the proposal, subject to any extension or extensions of such time made as hereinafter provided. The Contractor may be required to furnish the City Engineer with a tentative schedule setting forth in detail the sequences it proposes to follow, and giving the dates on which it expects to start and complete separate portions of the Work. If at any time, in the opinion of the City Engineer, proper progress is not being maintained, such changes shall be made in the schedule of operations as the City Engineer shall direct or approve.

GC-47. HINDRANCES AND DELAYS: In executing the Contract, the Contractor expressly covenants and agrees that, in undertaking to complete the Work within the time therein fixed, it has taken into consideration and made allowances for all hindrances and delays incident to such Work, including, but not limited to, delays caused by adverse weather conditions, delays in securing materials or workers, or otherwise. No charge shall be made by the Contractor for hindrances or delays from any cause during the progress of the Work, or any portion thereof, included in this Contract, except as provided in the paragraph on "Suspension of Work on Notice" of these General Conditions, and no extension of time shall be granted to the Contractor for hindrances or delays from any cause, except as set forth in GC-48, Extensions of Time.

GC-48. EXTENSIONS OF TIME: Except as provided in GC-47, Hindrances and Delays, the right of the Contractor to proceed shall not be terminated, nor will the Contractor be charged with liquidated damages for delays in the completion of the Work if the Contractor has notified the City Engineer, in writing, within seven (7) Calendar Days of the cause of the delay, and the delay arises out of one or more of the following acts, events or causes beyond the control of, and through no fault or negligence of, the Contractor: acts or delays of the Owner or Consulting Engineer, or of any employee of either; acts of any other governmental entity in its sovereign or contractual capacity; fires; floods; epidemics; quarantine restrictions; employee strikes or lock-outs; extraordinary adverse weather events not reasonably anticipatable; acts of the public enemy; or by any cause which the City Engineer shall decide would justify the delay. Neither adverse weather conditions nor the inability to timely obtain materials or workers (including subcontractors) shall be considered beyond the control of the Contractor.

In the event one of the aforementioned acts or events causes the Contractor to be delayed in the final completion of the Work, an extension of time sufficient to compensate for such delay in the final completion of the Work shall be granted by the Owner, the amount of such extension to be determined by the City Engineer, in the City Engineer's sole discretion. Each extension of time shall be evidenced by a change order for the period of time caused by such delay.

GC-49. LIQUIDATED DAMAGES: It is mutually understood and agreed by and between the parties to this Contract that time is of the essence of this Contract, and that in the event the Contractor shall fail in the performance of the Work specified and required to be performed within the period of time stipulated therefore in the Contract binding said parties, after due allowance for any extension or extensions of time which may be granted under the provisions of GC-48 Extensions of Time, the Contractor shall pay unto the Owner, as stipulated liquidated damages and not as a penalty, the sum stipulated therefore in the Special Conditions, Proposal or other Contract Documents for each and every day that the Contractor shall be in default.

In case of joint responsibility for any delay in the final completion of the Work covered by this Contract, where two or more separate contracts are in force at the same time and cover work on the same project and at the same site, the total amount of liquidated damages assessed against all contractors under such contracts, for any one day of delay in the final completion of the Work will not be greater than the approximate total of the damages sustained by the Owner by reason of such delay in completion of the Work, and the amount assessed against any one contractor for such one day of delay will be based upon the individual responsibility of such contractor for the aforesaid delay as determined by, and in the judgment of, the Owner.

The Owner shall have the right to deduct said damages from any moneys in its hands, otherwise due or to come due, to said Contractor, or to sue for and recover compensation for damages for non-performance of this Contract at the time stipulated herein and provided for.

GC-50. TEST OF MATERIALS OFFERED BY CONTRACTOR: All specified and required tests for approval of source of material shall be made at the expense of the Contractor by a properly equipped laboratory of established reputation, whose work and testing facilities shall be approved by the Owner. Approval of materials based on acceptable tests will apply only while such material as furnished equal or exceed the tested samples or test specimens in quality and minimum requirements. Any change in origin, method of preparation, or manufacture of such materials will require new tests and approval thereof. Reports of all tests shall be furnished to the Owner in as many certified counterparts as may be required by the Owner. Any tests specified in the Contract Documents of finished work or material shall be performed by the Contractor. Failure of such tests shall be deemed evidence of defective work and such work shall be replaced or repaired until satisfactory tests have been secured. All special tests required by law, ordinance, statute or regulations of any public body having jurisdiction shall be performed by and at the expense of the Contractor.

GC-51. WORK IN OR ACROSS STREET OR HIGHWAY RIGHT-OF-WAY: All Work performed and all operations of the Contractor or its employees, and subcontractors, if any, within the limits of street or highway rights-of-way shall be in conformity with the requirements, and be under the control, through the Owner, of the street or highway authority owning, or having jurisdiction and control over such rights-of-way in each case.

GC-52. MAINTENANCE OF TRAFFIC: Local traffic on all streets shall be carried through construction whenever possible. Detours of traffic will be permitted when necessary and with the prior permission of the City Engineer. Streets may be closed for short periods of time under authority of proper permit issued by the city or authority having jurisdiction. However, the Contractor shall conduct its work so as to interfere as little as possible with public travel, whether vehicular or pedestrian, on such streets. The Contractor, before closing of private driveways, shall give proper notification to county and city police and fire units and to the Fire District. The Contractor shall give adequate notice to the

owner(s) thereof and, where necessary, shall provide temporary access to private property.

GC-53. BARRICADES AND LIGHTS: All streets, roads, highways, and other public thoroughfares which are closed to traffic, under the authority of a proper permit, shall be protected by means of effective barricades on which shall be placed acceptable warning signs; such barricades, shall be located at the nearest intersecting public highway or street on each side of the blocked section of such public thoroughfare.

All open trenches and other excavations shall be provided with suitable barriers, signs and lights to the extent that adequate protection is provided to the public against accident by reason of such open construction. Obstructions such as material piles and equipment shall be provided with similar warning lights and signs.

All barricades and obstructions shall be illuminated by means of amber lights at night and all lights used for this purpose shall be kept burning from sunset to sunrise. Materials stored upon or alongside public streets and highways shall be so placed, and the Work at all times shall be so conducted, as to cause the minimum obstruction and inconvenience to the traveling public.

All barricades, signs, lights and other protective devices in public rights-of-way shall be installed and maintained in conformity with applicable statutory requirements and as required by the authority having jurisdiction thereover.

GC-54. BORROW AND WASTE AREAS: All borrow material shall be obtained by the Contractor at its own cost and expense. The borrow area and materials shall be approved by the City Engineer, and shall be friable material suitable for compaction.

All waste areas shall be located off the site and arrangements and payment for use of such areas shall be the sole responsibility of the Contractor.

GC-55. PARKING AREAS, DRIVES AND WALKS: All existing parking areas, drives and walks, within the project limits, shall be adjusted to conform to the lines and grades shown on the Plans. Any of the above structures that are removed or damaged during construction shall be reconstructed of materials that will create a quality equal to or better than the condition existing prior to construction.

GC-56. STREET SIGNS AND TRAFFIC AIDS: All existing street signs and traffic aids, within the project limits, shall be carefully removed, stored and as soon as practicable, reset in concrete as directed by the City Engineer, at the Contractor's own cost and expense, except that when traffic, local or through, is to be carried during construction, all stop signs shall be temporarily located at the Contractor's own cost and expense.

GC-57. CLEAN-UP: The project site shall be kept as clean, neat and orderly as possible at all times. Stockpiling of debris and unsuitable materials beyond normal working demands shall not be allowed. Immediately after construction operations are complete, all equipment, debris and unsuitable materials shall be completely removed from the site in order to minimize the damage to finished work and inconvenience to the public and adjoining property owners.

GC-58. WATER USED: All water used in the course of the work shall be hauled in or purchased from the local water company's distribution system at the Contractor's own cost and expense.

GC-59. PERMITS: The Contractor shall secure all permits that may be required to construct the Work included in this Contract. All cost in connection therewith shall be borne by the Contractor.

GC-60. RIGHT-OF-WAY LIMITS: The Contractor shall confine its construction operations to right-of-way limits and easements provided for the project. Equipment or materials shall not be stored beyond these limits without the express written approval of the owner of such property. The City Engineer shall be informed as to any arrangements the Contractor makes on its behalf in such matters.

GC-61. TESTING OF COMPLETED WORK: Before final acceptance, all mechanical and electrical equipment and devices shall be tested and each part shall be in good condition and working order, or shall be placed in such condition and order at the expense of the Contractor. All tests of such completed work required under this Contract shall be made in the presence of the City Engineer or his authorized representatives. All unsatisfactory work, all faulty or defective work and all work not conforming to the requirements of the Contract Documents at the time of acceptance thereof, or of such inspections, tests or approvals shall be considered defective. Prompt notice of all defects shall be given to the Contractor. All defective work, whether or not in place may be rejected or corrected.

GC-62. REMOVAL OF REJECTED MATERIALS AND STRUCTURES: The Contractor shall remove from the site of the Work, without delay, all rejected and condemned materials or structures of any kind brought to or incorporated in the Work, and upon the Contractor's failure to do so, or to make satisfactory progress in so doing, within forty-eight (48) hours after the service of a written notice from the City Engineer ordering such removal, the rejected material or structures may be removed by the Owner and the cost of such removal be taken out of the money that may be due or may become due to the Contractor on account of or by virtue of this Contract. No such rejected or condemned material shall again be offered for use by the Contractor under this or any other contract under this project.

GC-63. PLACING WORK IN SERVICE: If desired by the Owner, portions of the Work may be placed in service when completed and the Contractor shall give proper access to the

Work for this purpose; but such use and operation shall not constitute an acceptance of the Work, and the Contractor shall be liable for defects due to faulty construction until the entire Work under this Contract is finally accepted and for a period of one year or longer thereafter, as stipulated in paragraph GC-65, Defective Workmanship and Materials, or as stipulated in the Special Conditions.

GC-64. DISPOSAL OF TRASH AND DEBRIS: The Contractor shall not allow the site of the Work to become littered with trash and waste material, but shall maintain the same in a neat and orderly condition throughout the construction period. The City Engineer shall have the right to determine what is or is not trash or waste material. On or before the completion of the Work the Contractor shall, without charge therefore, carefully clean out all pits, pipes, chambers or conduits, and shall tear down and remove all temporary structures built by the Contractor, and shall remove all rubbish of every kind from the tracts or grounds which it has occupied and shall leave them in first-class condition as determined by the City Engineer.

GC-65. DEFECTIVE WORKMANSHIP AND MATERIALS: During a period of two years, or longer if stipulated in the Special Conditions, from and after the date of the final acceptance by the Owner of the Work embraced by this Contract, the Contractor shall make all needed repairs arising out of defective workmanship or materials, or both, which in the judgment of the Owner, shall become necessary during such period. If, within ten (10) days after the mailing of a notice in writing to the Contractor or its agent, the Contractor shall neglect to make or undertake with due diligence to make the aforesaid repairs, the Owner is hereby authorized to make such repairs at the Contractor's expense, provided however, that in case of an emergency in which, in the judgment of the Owner, delay would cause serious loss, hazard or damage, repairs may be made without notice being sent to the Contractor, and the Contractor shall pay the cost thereof.

GC-66. EQUIPMENT GUARANTY: All mechanical and electrical equipment and devices, and every part thereof, which are furnished by the Contractor under the terms of this Contract shall be guaranteed by the Contractor and its surety against defective workmanship, faulty design, mechanical and physical defects, leakage, breakage and other damages or failure, under normal operation of the equipment and devices under specified conditions, for a period of two years from and after the date of acceptance thereof by the Owner, and each item of equipment or part thereof, thus proving to be defective within the specified period shall be promptly replaced by and at the expense of the Contractor, when notified by the Owner.

GC-67. MONTHLY ESTIMATES/FINAL PAYMENT: The Contractor will, on the 25th day of each month, make an estimate in writing of the amount of work performed during the preceding period and the value thereof at the unit prices contracted. From the amounts so ascertained, there shall be deducted ten percent (10%) to be retained until after completion of the entire Work to the satisfaction of the City Engineer and Owner, except that no amount less than \$500.00 will be so submitted unless the total amount of the

Contract remaining unpaid is less than \$500.00. The Contractor shall submit with Contractor's written estimate, lien waivers for work performed up to and including thirty (30) days prior to the estimate date.

Deductions will be made from partial payments if the Contract includes a provision for a lump sum or a percentage deduction. Lump sum deductions will be that portion of the stated lump sum computed on the ratio that the amount earned bears to the Contract amount. Percentage deductions will be computed at the stated percentage of the amount earned.

The final estimate will be paid within 30 days after the completion of and the acceptance of the construction by the Owner at a regularly scheduled City Council meeting, upon receipt of final lien waivers, and upon satisfaction of the terms of this Contract.

GC-68. COMPLETION FINAL PUNCH LIST: Upon receipt of the final punch list from the Owner or City Engineer, the Contractor shall complete all items listed within 30 calendar days.

GC-69. PHRASEOLOGY: In this Contract, the singular includes the plural, the plural includes the singular and any gender includes the other gender.

GC-70. WAIVER: The failure of either party to insist upon the strict performance of any of the terms or conditions of this Contract or to exercise any option, right or remedy herein contained, should not be construed as a waiver or relinquishment for the future of such term, provision, option, right or remedy, but the same shall continue and remain in full force and effect. No waiver by either party of any term or provision hereof shall be deemed to have been made unless expressed in writing and signed by the waiving party.

GC-71. AMENDMENTS: This Contract may not be amended unless such amendment is in writing and signed by both parties hereto.

GC-72. INVALIDITY: In the event that any provision in this Contract shall be adjudicated invalid under applicable laws, such invalid provision shall automatically be considered reformed and amended so as to conform to all applicable legal requirements, or, if such invalidity cannot be cured by reformation or amendment, the same shall be considered stricken and deleted, but in neither such event or events shall the validity or enforceability of the remaining valid portions hereof be affected thereby.

GC-73. CASH BASIS AND BUDGET LAWS: The right of the City to enter into this Contract is subject to the provisions of the Cash Basis Law (K.S.A. §§10-1112 and 10-1113), the Budget Law (K.S.A. § 79-2935), and other laws of the State of Kansas. This Contract shall be construed and interpreted in such a manner as to ensure the City shall at all times remain in conformity with such laws. Further, the City reserves the right to unilaterally sever, modify, or terminate this Contract at any time if, in the opinion of its

legal counsel, the Contract may be deemed to violate the terms of any laws of the State of Kansas.

GC-74. COMPUTATION OF SUBCONTRACTORS' WORK: Prior to the Owner's approval of the Contract bid, the successful bidder shall submit to the Owner a list of names of all subcontractors proposed for each portion of the work and shall designate the entirety of work each is to perform. Compliance with the percentage of work to be performed, as set forth in the Instructions to Bidders, will be determined by the City Engineer by assessing whether the General Contractor or a subcontractor will be performing the major item of work associated with each line item in the proposal. Bid items where the General Contractor will perform the major item of work will be totaled and compared to the bid total to verify compliance with this provision. (Example: If a subcontractor is going to be placing curb and gutter, the total line item amount for curb and gutter will be credited to the subcontractor portion of the work even if subsidiary efforts are performed by the General Contractor)

The City Engineer shall, prior to Owner's approval of the Contract bid, notify the bidder in writing if after due investigation there is reasonable objection to any proposed subcontractor. The Contractor will be allowed to substitute a subcontractor acceptable to the Owner at no additional cost to the Owner.

GC-75. NON-DISCRIMINATION, AFFIRMATIVE ACTION & FEDERAL REGULATION

A. The Contractor shall be an equal opportunity employer as defined by Section 1000 (e) of Chapter 21, Title 42, of the United States Code Annotated, and comply with all Federal Regulations or acts regarding construction or employment when Federal Funds are used on the project.

B. The Contractor shall observe the provision 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.

C. 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 Kansas Commission on Civil Rights.

D. 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. 1977 Supp. 44-1031, as amended, the Contractor shall be deemed to have breached the present Contract and it may be canceled, terminated or suspended, in whole or in part, by the Owner.

E. 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 canceled, terminated or suspended in whole or in part, by the Owner.

The Contractor shall include the provisions of paragraphs (A) through (E) inclusively of this subsection in every subcontract or purchase order so that such provisions will be binding upon such subcontractor or vendor.

SPECIAL CONDITIONS

SC-1 GENERAL

1. All pavement, surfacing, driveways, entrances, buildings, utility poles, guy wires, fence, and other surface structures affected by construction operations in connection with performance of the Contract, together with underground sprinkler systems, underground wire pet fence, and private utility lines, sod and shrubs in yards, parks and parking shall be maintained, and if removed or otherwise damaged shall be restored to the original or better condition at no additional cost to the Owner, as determined and approved by the City Engineer.
2. The Contractor shall be held responsible for all damage to roads, highways, streets, curb and gutter, driveways, sidewalks, shoulders, ditches, embankments, bridges, culverts, and other property caused by the Contractor or any of its subcontractors in hauling or otherwise transporting materials to or from the several sites of the Work, regardless of the location of such damage. The Contractor shall make all arrangements for the payment for such damage or for the repair or replacement of such damaged surfaces or structures. Said arrangement shall be satisfactory and acceptable to the owner or owners of such damaged surfaces or structures, or to their legally responsible officers, agents, or other representative, and said payment shall be at the Contractor's own expense, unless otherwise provided by the Contract.
3. Some existing utility lines have been plotted on the Plans from available records, but other installations may be present. The relationship between proposed work and existing facilities, structures, and utilities must be considered approximate, and it is the Contractor's responsibility to determine their exact location and existence. Any and all utility lines, both above ground and underground, shall be protected from damage during the process of the Work. If the Contractor damages existing facilities, structures or utility line, it shall immediately make a report of such damage to the Owner and City Engineer.
4. The Contractor shall submit a phasing and traffic control plan for review and approval to the City Engineer. The Contractor shall maintain access to local residences at all times (except when removing or placing driveways or as noted on the Plans). The Contractor will take necessary measures, such as temporary surfacing, when required, to provide access on streets and drives affected by construction operations. The cost of said measures is considered a subsidiary item in the bid and no separate payment will be made to the Contractor. The Contractor shall notify all property owners by door hanger at least 48 hours in advance of any work impacting access to their property.
5. Traffic control devices and procedures shall meet or exceed the standards required by the latest edition Manual on Uniform Traffic Control Devices (MUTCD) and shall

be approved by the City Engineer prior to beginning work. All signs shall be maintained 24 hours per day throughout the duration of the project. All traffic control shall be paid for per lump sum basis. No payment will be made for additional traffic control.

6. The Contractor shall confine its construction operations within the project area. Equipment and materials shall not be stored beyond the immediate working area without the written approval of the owner of such property. The City Engineer shall be supplied a copy of any such arrangement signed by both parties.
7. The Contractor shall be required to coordinate all work with utilities involved. Some utilities may require relocation in order for the Contractor to complete the Work intended by the Contract Documents. The Contractor shall be responsible for such coordination of Work with each of the utilities, both below and above ground. The Contractor is to fully cooperate with the utilities, even if a delay may occur. Requests for extensions of time relating to such delays will be governed by the provisions of General Conditions GC-48, "Extensions of Time." The Contractor shall not be allowed to make monetary claims for damages caused by utility conflicts.
8. Any delay or extra cost to the Contractor caused by utilities or other obstructions not shown by the Plans, or found in locations different than indicated, or, in the case of pipelines, not of the material as originally anticipated by the Contractor, shall not constitute a claim for extra work, additional payments, extension of time, or damages.
9. Contractor shall keep open trenches properly protected during and after working hours. The Contractor is also responsible for keeping the trench covered to protect against weather so no delay occurs. Contractor shall replace unsatisfactory material, at its expense, if it fails to produce adequate weather protection of open trenches.
10. The Contractor shall review each plan sheet thoroughly to understand the proposed Work. All work not listed as a pay item shall be considered subsidiary to the Contract Documents, therefore, no additional payment will be made.
11. Contractor may be required to remove trees, bushes, shrubs and other vegetation within the limits of the Work area. All trees, bushes, and shrubs shall remain unless absolutely necessary for installation of items shown on the Plans. The Contractor shall attempt to save all trees when adjacent to or near a construction area. The Contractor shall be responsible for trees that die because of any unnecessary root removal or Contractor negligence. Any unnecessarily removed tree, bush or shrub shall be replaced with a nursery plant of similar type. This item of work shall be considered subsidiary to the Contract, therefore there will be no additional payment for this work. All tree removals shall be approved by the City

Engineer prior to commencement of construction.

12. The Contractor shall be required to haul off all pavement to be removed from the Work site as indicated on the Plans. Material to be hauled off shall be taken to an approved dumpsite. All costs for hauling shall be subsidiary to the construction items of the Work.
13. The Contractor shall provide the City Engineer with a proposed work schedule including the days of the week and hours of each day of expected construction operations. The work schedule must be approved prior to beginning of any work on the site. All required material reports must be submitted with the proposed work schedule.
14. Upon award of the Contract, the Contractor shall immediately prepare and submit for approval by the City Engineer, a construction phasing schedule that will ensure completion of the project within the Contract time. The schedule shall be submitted prior to issuance of the notice to proceed. No work on this Contract shall begin until said schedule is approved. The City reserves the right to adjust the Contractor's schedule to coordinate with other projects.
15. The Contractor shall immediately point out any discrepancies, conflicts, errors, or omissions in the Plans or other Contract Documents to the City Engineer and shall not perform any related work until the discrepancy is resolved.
16. Changes in the Work:

Quantity Variations: Where changes in the Work involve a change in the quantity of any bid item, the Contract price shall be revised by extension of the quantities and unit price of all bid items so changed subject to written approval of the City Engineer.

Field Orders: The City Engineer may order minor changes in the Work through field orders, which in no specific, concrete or substantial way increase or decrease the Work; and such minor changes in the Work shall not involve an addition to or deduction from the Contract price.

Clarifications, Modifications or Corrections: From time to time the City Engineer may also issue written orders to Contractor for needed clarifications, modifications or corrections. Should a difference of opinion arise as to whether the order constitutes extra work for which additional compensation is due, and the City Engineer insists on its performance, the Contractor shall proceed with the Work after making a written request for a change order, and it shall keep an accurate account of the actual field cost thereof as provided for in GC-33, "Extra Work." The Contractor will thereby preserve the right to submit a claim therefore.

Additional Time: No change in the Work shall entail additional time unless the City

Engineer determines that additional time is required and specifically so provides in the change order. No change in the Work shall entitle the Contractor to delay damages.

Notification to Sureties of Modifications to the Contract: Contractor shall be responsible for notifying its surety(ies) of any modifications to the Contract price or time, and said surety(ies) shall not seek discharge as a result of any failure on Contractor's part to notify surety(ies).

Substantial Changes to the Work: In the event unit prices provided for in the Contract are subsequently altered by a change order that is substantially inequitable to either the Owner or the Contractor, the unit prices shall be re-evaluated and adjusted in accordance with the following:

- a) If the total cost of a particular item of unit price work amounts to twenty-five percent (25%) or more of the Contract price or the variation in the quantity of that particular item of unit price work performed by Contractor differs by more than thirty-three percent (33%) from the estimate quantity of such item indicated in the Contract; and
- b) If there is no corresponding adjustment with respect to any other item of work; and
- c) If Owner believes that the quantity variation entitles it to an adjustment in the unit price and, the parties are unable to agree as to effect of any such variations in the quantity of unit price work performed;

then either Owner or Contractor may request the City Engineer to make an adjustment in the Contract price.

TECHNICAL SPECIFICATIONS

The specifications that shall govern the materials furnished and work performed in the construction of the project covered by this contract shall be the latest revision of the Kansas City Metropolitan Chapter of APWA Construction and Material Specifications, as though fully set forth herein. If any item of work or portion thereof is not covered by the APWA specifications, then the KDOT "Standard Specifications for State Road and Bridge Construction, Current Edition" and the most current Special Provisions shall apply.

No attempt has been made in the above designated specifications to segregate work to be performed by any trade, contract or proposal item under any one specification section. Any segregation between trade or craft jurisdiction limits and the establishment of subcontract limits will be solely a matter of agreement between the CONTRACTOR and his employees and his SUBCONTRACTORS. The specifications will govern the construction of the entire work, and the provisions thereof will govern each item of the work to which such provisions apply.

Exhibit A

Specifications and Drawings

The following Specifications govern Contractor's performance of the Work, which are the standard technical specifications for this project, and which by this reference these specifications are made a part of this Agreement as if fully set out:

- APWA Standard Specifications and Design Criteria as approved and adopted by the Kansas City Metropolitan Chapter of the APWA:

Section 2100 – Grading and Site Preparation
Section 2150 – Erosion and Sediment Control
Section 2200 – Paving
Section 2300 – Incidental Construction
Section 2400 – Seeding and Sodding
Section 2500 – Sanitary Sewers

Available at:

<http://kcmetro.apwa.net/chapters/kcmetro/specifications.asp>.

Project Special Provisions

These Project Special Provisions amend or supplement the APWA Standard Specifications, Project Specifications, General Conditions and Special Conditions as noted. Where any part of the above-mentioned documents are so modified by these Project Special Provisions, the unaltered provisions shall remain in effect. See the attached document.

Project Specifications and Drawings

The following specifications governing the Work are as follows and by this reference these drawings are made a part of this Agreement as if fully set out:

<u>Spec Description</u>	<u>Spec No.</u>
Measurement and Payment	01100
Submittals	01300
Sewer Cleaning and TV Inspection	02150
Manhole and Structure Interior Coatings	02532
Cured-In-Place Pipe (CIPP) Liner	02537
Thermoformed Pipe Method (Fold and Form)	02538
Cured-In-Place Pipe (CIPP) Service Lateral Connection	02770

Temporary Bypass Pumping	02960
Sewer Manhole Rehabilitation	03360

The following drawings governing the Work are as follows and by this reference these drawings are made a part of this Agreement as if fully set out:

<u>Sheet Description</u>	<u>Sheet No.</u>
Title Sheet	1
Rehabilitation Recommendation	2-4
Pipe Rehabilitation	5
Pipe Rehabilitation Schedule	6
Tap Rehabilitation Schedule	7

**PROJECT SPECIAL PROVISIONS
to the
STANDARD SPECIFICATIONS**

SPECIAL PROVISIONS TABLE OF CONTENTS

- A. Communication to Residents
- B. Traffic Control
- C. Construction Staging
- D. Erosion Control
- E. Existing Utility Coordination and Investigation
- F. Pipe Liner Alternative Material

PROJECT SPECIAL PROVISIONS

A. Communication to Residents

1.0 General.

- 1.1** The Contractor is responsible for communicating with residents 1 weeks prior to commencement of construction.

2.0 Requirements.

- 2.1** The Contractor shall provide door hangers notifying residents of the project work that will be completed in the vicinity. The work will be conducted to minimize the disruption to traffic, and street closures, and be coordinated with residents to provide access to properties.

3.0 Measurement and Payment

- 3.1 Measurement:** This item will not be measured.

- 3.2 Payment:** Payment for this work shall be considered incidental to the contract and no separate payment will be made to the Contractor.

B. Traffic Control

- 1.0 General.** The Contractor is responsible for preparing traffic control plans and submitting to the Engineer for approval prior to construction.

2.0 Requirements.

- 2.1** The Contractor shall be responsible for providing temporary access to residents during non-working hours. This will consist of offset barricades and temporary access to driveways when feasible.

- 2.2** The Contractor shall be restricted to normal City working hours.

- 2.3** The Contractor shall be responsible for installation, maintenance during construction, relocating as construction progresses and removal of all traffic control items.

3.0 Measurement and Payment

- 3.1 Measurement:** This item will not be measured.

3.2 Payment: Payment for this work shall be considered incidental to the contract and no separate payment will be made to the Contractor.

C. Construction Staging

1.0 General. The Contractor shall provide construction staging.

2.0 Requirements.

2.1 The Contractor's staging area shall be used for material storage and employee parking.

3.0 Measurement and Payment

3.1 Measurement: No measurement will be made for these items.

3.2 Payment: Payment for this work shall be considered incidental to the contract and no separate payment will be made to the Contractor.

D. Existing Utility Coordination and Investigation

1.0 General. The locations of utilities are not guaranteed to be either accurate or complete. It shall be the Contractor's responsibility to determine and verify the field location and depth of all utilities prior to construction.

2.0 Measurement and Payment

2.1 Measurement: No measurement will be made for this item.

2.2 Payment: Payment for this work shall be considered incidental to the contract and no separate payment will be made to the Contractor.

E. Pipe Liner Alternative Material

2.0 General. Cured-in-place (CIPP) pipe liner is noted on the plans, bid form, and specifications. A specification for an alternative pipe rehabilitation method has been provided, 02538 – Thermoformed Pipe Method (Fold and Form). Contractor may use either CIPP or Thermoformed Pipe Method for pipe rehabilitation.

3.0 Measurement and Payment

3.1 Measurement and Payment: Payment for Thermoformed Pipe pipe shall be paid per lineal foot in accordance with the installed measured length, and shall include re-establishing connected service laterals. Payment under this bid item shall include full compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, any and all testing, and all other work

incidental to the complete performance of this item and as required by the drawings and specifications.

END OF PROJECT SPECIAL PROVISIONS SECTION

SECTION 01100 – MEASUREMENT AND PAYMENT

01101 PAYMENT:

- A. Payment shall be to the Contractor for work completed in accordance with applicable sections of the "GENERAL CONTRACT CONDITIONS".
- B. The construction cost of all work included in this contract, as defined on the Drawings and in these Detailed Specifications, shall be included in the Contractor's unit prices set forth in the bid. The unit price for each of the several items in the proposal shall include its pro rata share of overhead so that the sum of the products obtained by multiplying the unit prices so set forth by the amount of work as actually constructed shall constitute full payment to the contractor for performance of the work included in this section of the specifications.
- C. Measurement and payment for each work item shall be in accordance with the following:

7th and Nelson Sanitary Sewer Rehabilitation

BASE BID

Bid Items #1- Mobilization – Payment for mobilization shall be paid per lump sum in accordance with the plans and specifications and shall include full compensation to the Contractor for all labor, equipment and materials necessary, including but not limited to: Compensation for the deployment of laborers and equipment to the site, site preparation, tree removal, temporary orange construction fence, removal and seeding of construction access roads and entrances, final site clean-up, surface restoration, seeding and demobilization.

Bid Item #2 – 8" Cured-In-Place Pipe – Payment for cured-in-place pipe shall be paid per lineal foot in accordance with the installed measured length, and shall include re-establishing connected service laterals. Payment under this bid item shall include full compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, any and all testing, and all other work incidental to the complete performance of this item and as required by the drawings and specifications.

Bid Items #3 to 5 – Point Repair of 8" Sewer Pipe (Lengths of Point Repair 5', 10', or 30', as required by drawings) – Payment for point repair shall be paid per each at the unit price set forth in the Bid Schedule. Unit price shall include re-establishing connected service laterals. The unit price set forth in the Bid Schedule shall include full

compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, any and all testing, and all other work incidental to the complete performance of this item and as required by the drawings and specifications.

Bid Item #6 – Short Lateral Full Wraps – Payment for service lateral connection shall be paid per each at the unit price set forth in the Bid Schedule. The unit price set forth in the Bid Schedule shall include full compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, any and all testing, and all other work incidental to the complete performance of this item and as required by the drawings and specifications.

Bid Items #7 – Replace Frame/Cover/Frame Seal – Payment for replacement of frame/cover/frame seal shall be paid per each at the unit price set forth in the Bid Schedule. The unit price set forth in the Bid Schedule shall include full compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, and all other work incidental to the complete performance of this item and as required by the drawings and specifications.

Bid Items #8 – Manhole Cementitious Liner – Payment for manhole cementitious liner shall be paid per vertical foot in accordance with the installed measured height. Payment under this bid item shall include full compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, any and all testing, and all other work incidental to the complete performance of this item and as required by the drawings and specifications.

Bid Item #9 – Pipe Seal Rehab – Payment for pipe seal rehab shall be paid per each at the unit price set forth in the Bid Schedule. The unit price set forth in the Bid Schedule shall include full compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, and all other work incidental to the complete performance of this item and as required by the drawings and specifications.

Bid Items #10 –Raise Manhole – Payment for raise manhole shall be paid per each at the unit price set forth in the Bid Schedule. The unit price set forth in the Bid Schedule shall include full compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, and all other work incidental to the complete performance of this item and as required by the drawings and specifications.

Bid Items #11 – Cementitious Liner Repair – Payment for cementitious liner repair shall be paid per each manhole at the unit price set forth in the Bid Schedule. The unit price set forth in the Bid Schedule

shall include full compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, and all other work incidental to the complete performance of this item and as required by the drawings and specifications.

Bid Items #12 – Exterior Wrap – Payment for exterior manhole chimney wrap shall be paid per each at the unit price set forth in the Bid Schedule. The unit price set forth in the Bid Schedule shall include full compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, and all other work incidental to the complete performance of this item and as required by the drawings and specifications.

Bid Items #13 – Bench Repair - Payment for bench repair shall be paid per each at the unit price set forth in the Bid Schedule. The unit price set forth in the Bid Schedule shall include full compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, and all other work incidental to the complete performance of this item and as required by the drawings and specifications.

Bid Items #14 – Clean Manhole - Payment for cleaning manhole shall be paid per each at the unit price set forth in the Bid Schedule. The unit price set forth in the Bid Schedule shall include full compensation to the Contractor for all labor, equipment, materials, transportation, disposal fees, and all other work incidental to the complete performance of this item and as required by the drawings and specifications.

- D. The Owner reserves the right to make modifications in the work included in this contract to the extent that the total contract price is not altered by more than 20 percent. Alterations which result in modifications beyond this limit will be made only with the concurrence of the Contractor.

SECTION 01300 - SUBMITTALS

1. PROGRESS SCHEDULE. On or before the preconstruction conference, Contractor shall submit to Engineer for review a schedule of the proposed construction operations. The progress schedule shall indicate the sequence of the Work, the time of starting and completion of each part, and the time for making connections to existing piping, structures, or facilities.

At least every 30 days the schedule shall be revised as necessary to reflect changes in the progress of the Work.

Owner may require Contractor, at Contractor's expense, to add to his plant, equipment, or construction forces, as well as increase the working hours, if operations fall behind schedule at any time during the construction period.

2. PROGRESS REPORTS. A progress report shall be furnished to Engineer with each Application for Payment. If the Work falls behind schedule, Contractor shall submit additional progress reports at such intervals as Engineer may request.

Each progress report shall include sufficient narrative to describe current and anticipated delaying factors, their effect on the progress schedule, and proposed corrective actions. Any Work reported complete, but which is not readily apparent to Engineer, must be substantiated with satisfactory evidence.

Each progress report shall include three prints of the accepted graphic schedule marked to indicate actual progress.

3. SCHEDULE OF VALUES. As provided in the General Conditions, the Contractor shall prepare and submit to the Engineer for approval within thirty (30) days after the award of the Contract, a Schedule of Values for and covering the Lump Sum Price Bid as shown in the Proposal. The Schedule of Values shall show the estimated total number of construction units for each kind of work and the value of each unit.

Each price listed shall include all overhead, other costs, Contractor's profit and the total estimated value of the items of work listed in the Schedule of Values shall equal the Contract Lump Sum Price covered by the estimate. Overhead and profit are not to be listed as separate items.

An unbalanced schedule of values providing for overpayment of Contractor on items of Work which would be performed first will not be approved. The Schedule of Values shall be revised and resubmitted until acceptable to the Engineer. Final acceptance by Engineer shall indicate only consent to the Schedule of Values as a basis for preparation of applications for progress payments, and shall not constitute an agreement as to the value of each indicated item.

4. LABOR STANDARDS PROVISION. The Contractor shall furnish the City, within seven (7) days after the regular payment date of the weekly payroll period, a statement with respect to wages paid to each of the Contractor's employees, and wages paid to each of the subcontractor's employees. The Contractor shall be responsible for the submission of the copies of payrolls of his employees and all of his subcontractors' employees.

The payroll shall be submitted on U.S. Department of Labor Wage and Hour Division Form WH-347 only. The payrolls will not be accepted on any other form.

The copy shall be accompanied by a statement signed by the Contractor indicating that the payrolls are correct and complete, that wage rates contained therein are not less than those determined by the Missouri Department of Labor and Industrial Relations. The definition of "employee" shall not apply to persons in classification higher than that of laborers or mechanics and those who are the immediate supervisor of such employees.

5. SUBSTITUTES AND "OR-EQUAL" ITEMS. Whenever a material or article is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, the specified item mentioned shall be understood as establishing the type, function, and quality desired. Requests for review of equivalency will not be accepted from anyone except Contractor, and such requests will not be considered until after the Contract had been awarded. Other manufacturers' products will be accepted provided sufficient information is submitted to allow Engineer to determine that the products proposed are equivalent to those named.

Whenever the names of proprietary products or the names of particular manufacturers or vendors are used, it shall be understood that the words "or equal" following the enumeration, if not specifically stated, are implied.

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

7. SHOP DRAWINGS AND ENGINEERING DATA.

7.01. General. Shop Drawings and engineering data covering all equipment and fabricated and building materials which will become a permanent part of the Work under this Contract shall be submitted to Engineer for review, at the Engineer's address given in the Agreement. The data shall include drawings and descriptive information sufficient detail to show the kind, size, arrangement, and operation of component

materials and devices; the external connections, anchorages, and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment.

All submittals, regardless of origin, shall be stamped with the approval of Contractor and identified with the name and number of this Contract, Contractor's name, and references to applicable specification paragraphs and Contract Drawings. Each submittal shall indicate the intended use of the item in the Work. When catalog pages are submitted, applicable items shall be clearly identified and inapplicable data crossed out. The current revision, issue number, and date shall be indicated on all drawings and other descriptive data.

Contractor's stamp of 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 he has reviewed and coordinated each submittal with the requirements of the Work and the Contract Documents.

Contractor shall accept full responsibility for the completeness of each submission. When an item consists of components from several sources, Contractor shall submit a complete initial submittal including all components.

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.

Two (2) copies of each drawing and necessary data shall be submitted to the Engineer. Engineer will return an electronic copy to Contractor via E-mail. Facsimile (fax) copies or E-mail will be acceptable. Engineer will not accept submittals from anyone but Contractor. Submittals shall be consecutively numbered in direct sequence of submittal and without division by subcontracts or trades.

7.02. Certificate of Compliance. Where indicated in these specifications, each submittal shall include a certificate of compliance prepared by the manufacturer or Supplier of the submitted data, certifying that the item covered is in compliance with Contract Documents. The certificate of compliance shall be a separate document and shall include identification of all deviations from the Contract Documents.

7.03. Engineer's Review of Drawings and Data. 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 shall not relieve Contractor of Contractor's responsibility for errors, omissions, or deviations in the drawings and data, nor of sole responsibility for compliance with the Contract Documents.

Engineer's submittal review period shall be 7 consecutive calendar days in length and shall commence on the first calendar day immediately following the date of arrival of the submittal or resubmittal in 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.

When the drawings and data are returned marked "NOT ACCEPTABLE" or "RETURNED FOR CORRECTION", the corrections shall be made as noted thereon and as instructed by Engineer and four (4) corrected copies resubmitted. Facsimile (fax) copies will not be acceptable. The Contractor may submit an electronic version of submittals in pdf format.

When the drawings and data are returned marked "EXCEPTIONS NOTED", "NO EXCEPTIONS NOTED", or "RECORD COPY", no additional copies need be furnished unless requested by Engineer at time of review.

7.04. Resubmittal of Drawings and Data. Contractor shall accept full responsibility for the completeness of each resubmittal. Contractor shall verify that all corrected data and additional information previously requested by Engineer are provided on the resubmittal.

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.

Requirements specified for initial submittals shall also apply to resubmittals. Resubmittals shall bear the number of the first submittal followed by a letter (A, B, etc.) to indicate the sequence of the resubmittal.

Resubmittals shall be made within 7 days of the date of the letter returning the material to be modified or corrected, unless within 3 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.

Any need for more than one resubmission, or any other delay in obtaining Engineer's review of submittals, will not entitle Contractor to extension of the Contract Times 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 specified herein and to return the submittal to Contractor.

7.05. Distribution of Submittals. If the submittals are not approved the distribution will be as follows:

- 1 electronic copy to Contractor
- 1 electronic copy to Owner
- 1 copy to Engineer

If the submittals are approved the distribution will be as follows:

- 1 electronic copy to Contractor
- 1 electronic copy to Owner
- 1 copy to Engineer
- 1 electronic copy to Resident Project Representative

8. CONSTRUCTION PHOTOGRAPHS. Contractor shall have suitable photographs taken along the entire construction area showing the condition of the terrain previous to any alterations by the Contractor and before any construction is started. The photographs shall be taken at intervals of not more than 100 feet and at other intervals deemed necessary to record possible field conflicts. Each photograph shall be no smaller than 2-1/2" x 4" and shall be identified by name and number of the Contract, name of Contractor, description and location of view, and date photographed.

The principal reason for obtaining good photographs is so that items such as cracked curbs, shrubs and sodded areas, broken pavement areas or plugged culverts in driveways, etc., lying along the construction route may be more clearly shown and recorded. This will to some degree preclude the possibility of post-construction litigation with property owners adjacent to the Work.

One (1) print of each view shall be supplied to the City without charge as soon as is practicable after the photographs are taken. The photographs will be submitted, enclosed in clear plastic, in a 3-ring binder. The photographer shall keep the negatives available in case additional prints may be required. Polaroid photographs will not be acceptable.

9. PRE-CONSTRUCTION AND POST CONSTRUCTION CLOSED CIRCUIT TELEVISION VIDEOS. Contractor shall have suitable Closed Circuit Television Video of the existing sanitary sewer within the limits of construction previous to any alterations by the Contractor and before any construction is started and again after construction has been completed. Continuous video shall be taken to record possible damage or identify condition of existing system prior to and post construction. The video shall be in accordance with NASSCO PACP format and the inspection shall be completed by a NASSCO PACP certified inspector. Color audio-video tapes shall be produced as follows:

Audio: Each recording shall begin with a verbal description of the current date, project location, and municipality, and be followed by the general location.

Video: Transparent information must appear on the viewing screen. This information will consist of the date and time of recording and provide continuous footage of the sewer pipe from an upstream or downstream manhole. The date information will contain the month, day, and year.

The taped coverage shall include all existing features located within the sewer segment supported by appropriate audio description. Audio description shall be made simultaneously with video coverage. Particular and detailed attention shall be given to any defects in existing pipe, such as but not limited to: cracks, protruding taps, tree roots, offset pipe joints or any other damage to pipes, or as may be required by the DESIGN PROFESSIONAL. It is the intent of this coverage to accurately and clearly document pre-existing conditions, especially any items that could result in construction claims.

All taping shall be done during times of good visibility. The Contractor shall not televise when full of water. If the pipe is more than $\frac{1}{4}$ of the way full, the Contractor shall be responsible for pulling down flow to allow visualization of the pipe.

All videos shall be submitted in digital format on a flash drive.

Any taped coverage not acceptable to the OWNER shall be re-taped at no additional charge. The CONTRACTOR shall reschedule unacceptable coverage five days after being notified.

The CONTRACTOR and the DESIGN PROFESSIONAL shall review the tape prior to construction.

One original and three copies are to be provided; original and one copy to OWNER, one copy to DESIGN PROFESSIONAL, and one copy to CONTRACTOR.

.

END OF SECTION 01300

SECTION 2150 - SEWER CLEANING AND TELEVISION INSPECTION

1.1 SCOPE

The work required shall consist of furnishing all labor, materials, equipment, and supervision, disposal of debris, and performing all work necessary to clean and internally televise the designated sewer lines in accordance with these Technical Specifications. The work shall consist of performing the following work tasks where specified:

- A) Manhole Cleaning
- B) Sewer Line Cleaning
- C) Television Inspection

1.2 GENERAL

- A) Sewer line cleaning shall be performed with hydraulically propelled high velocity jet, or mechanical powered equipment. Selection of equipment shall be based on field conditions such as access to manholes, type and quantity of debris to be removed, size of sewer, and depth of flow. Selected equipment shall be capable of cleaning spans up to 1,000 feet. Selected equipment shall be evaluated and approved by Owner.
- B) Water necessary for the performance of work is expected to be taken from the fire hydrant nearest to the work site within the city. Site safety considerations and/or directives from the supplying water authority may preempt this expectation. It is the responsibility of the Contractor to properly apply for, secure and provide for all water needed to perform the functions of the work described. Contractor shall use utility approved water meters and backflow preventers.
- C) When it is necessary to expose manholes, the owner shall expose the manholes in order to have access for line or manhole cleaning.

- D) If Contractor's equipment becomes stuck in the sewer line, it is the Contractor's responsibility to remove the equipment at no additional cost to the Owner.
- E) Television inspection shall be required to reveal and document sewer line conditions and/or cleaning results. CCTV shall be completed in accordance with Section 1300.

1.3 SEWER AND MANHOLE CLEANING

- A) Intent: The intent of sewer cleaning is to remove foreign materials from the line segments and manhole walls, benches and inverts. It is recognized that there are some conditions such as broken pipe and major blockages that prevent adequate cleaning from being accomplished or where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered, the Contractor will not be required to clean those specific sections as directed by the Owner.
- B) Foreign matter including but not limited to grease, debris, mud, rock and sand shall be removed from the pipelines and manholes. High-velocity hydraulic cleaning equipment may be used to remove the foreign material from the manhole walls.
- C) Cleaning Equipment: All equipment used by the Contractor for cleaning of sewer lines must be inspected by the Owner. The Contractor must submit with Proposal, a composite list of all equipment available.
 - 1. High-Velocity Jet (hydro cleaning) Equipment: All high-velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The Contractor shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 10 to 45 degrees in all size lines designated to be cleaned. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel. For normal cleaning of

sewers from 6 inches to 15 inches in diameter, pumps shall be capable of maintaining a minimum operating pressure of 1,500 psi. For sewers 18 inches in diameter or greater a minimum operating pressure of 2,000 psi is required. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floor. The gun shall be capable of producing flow from a fine spray to a solid stream.

2. **Hydraulically Propelled Equipment:** The equipment used shall be of a movable dam type and be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. The movable dam shall be equal in diameter to the pipe being cleaned and shall provide a flexible scraper around the outer periphery to ensure removal of grease. If sewer cleaning balls or other equipment that cannot be collapsed are used, special precautions to prevent flooding of the sewers and public or private property shall be taken by the Contractor. Damages or claims resulting from backups and flooding shall be the responsibility of the Contractor.
 3. **Mechanically Powered Equipment:** Bucket machines shall be in pairs with sufficient power to perform the work in an efficient manner. Machines will be belt operated or have an overload device. Machines with direct drive that could cause damage to the pipe will not be allowed. A power rodding machine shall be either sectional or continuous rod type capable of holding a minimum of 750 feet of rod. The rod shall be specifically heat-treated steel. To ensure safe operation the machine shall be fully enclosed and have an automatic safety clutch or relief valve. Mechanically powered equipment shall only be used when authorized by the Owner and shall be done only when other cleaning methods are shown to be ineffective.
- D) **Light Sewer Cleaning:** For light cleaning the designated sewer line segment shall be cleaned using hydraulically propelled, high-velocity jet equipment. Cleaning shall be accomplished by making one (1) to three (3) passes through the line. Manholes at each end of the line segments being cleaned shall also be cleaned and all debris shall be removed. Selection of the equipment used shall be based on the conditions of lines at the time the work commences. The equipment and methods selected shall be satisfactory to the Owner. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials. If light cleaning is not satisfactory, the Owner

may direct the Contractor to perform heavy cleaning. If successful cleaning cannot be performed without risk of damage to the pipe or the equipment fails to traverse the entire line segment, cleaning efforts shall be temporarily suspended and the Owner shall be notified. Before cleaning can resume the segment shall be televised and evaluated in order to determine if segment can be adequately cleaned. The Contractor shall clean the upstream manhole prior to cleaning the line segment.

- E) Heavy Cleaning: Segments that contain heavier than normal amounts of debris, or that cannot be adequately cleaned using the light cleaning method may be selected for heavy cleaning. Segments selected for heavy cleaning shall be approved by the Owner. The Owner may also select segments for heavy cleaning.
 - 1. Heavy cleaning shall be a supplemental means of removing debris and cleaning, and shall be used in addition to light cleaning. The method of heavy cleaning for each segment shall be based on site conditions and shall be approved by the Owner. The equipment and methods selected shall be satisfactory to the Owner. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the sewer lines and manholes.
- F) Root Removal: Roots shall be removed in designated sections where root intrusion is a problem and shall be considered part of heavy cleaning procedures. Special attention should be given during the cleaning operations to ensure complete removal of roots from the joints. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root cutters, and equipment such as high-velocity jet cleaners. TV inspection during root removal at Contractor's request is subsidiary to heavy cleaning, and no additional payment will be allowed.

- G) Grease Removal: Grease shall be removed in designated sections where grease is a known problem and shall be considered part of heavy cleaning procedures. Special attention should be given during the cleaning operations to ensure complete removal of grease from the top of the pipe. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root cutters and porcupines, and equipment such as high-velocity jet cleaners, hot water, and EPA approved chemical degreasers. TV inspection during grease removal at Contractor's request is subsidiary to heavy cleaning, and no additional payment will be allowed.
- H) Material Removal: All sludge, dirt, sand, rocks, grease, and other solid or semi-solid material resulting from the cleaning operation shall be removed at either the upstream or downstream manhole of the section being cleaned. Passing material from line segment to line segment shall not be permitted.
- I) Protruding Tap Removal: Break-in connection and /or lateral pipe protruding into the mains shall be ground back to no more than a 1/8-inch protrusion into the mainline.
- J) Disposal of Materials: All solids or semi-solids resulting from the cleaning operations shall be removed by the Contractor from the sewer and will be the Contractor's responsibility to dispose of properly. All materials shall be removed from the site no less often than at the end of each workday. Under NO circumstances will the Contractor be allowed to accumulate disposal material on the site of work, except in totally enclosed containers and as approved by the Owner. No additional payment will be made for disposal of materials.
- K) Final Acceptance: Acceptance of sewer line cleaning shall be made upon the successful completion of cleaning and shall be to the satisfaction of the owner. If CCTV inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to reclean and CCTV inspect the line segment until the

cleaning is shown to be satisfactory, at no cost to the Owner. Heavy cleaning may be authorized by the Owner where normal cleaning methods specified herein have been proved inadequate. Final acceptance of manholes cleaned by the Contractor shall be made by the Owner based on visual inspection of the manholes.

- L) Television Inspection (CCTV): After cleaning, all line segments shall be visually inspected by means of a closed circuit color television camera. CCTV shall be completed in accordance with Section 01300.

END OF SECTION 2150

SECTION 2532 - MANHOLE AND STRUCTURE INTERIOR COATINGS

PART 1 GENERAL

1.01. WORK INCLUDED IN THIS SECTION

This section governs the furnishing of all labor, equipment, tools, and materials, and the performance of all work incidental to the rehabilitation/lining of manholes and special sewer structures including cleaning the entire interior surface of the structure and preparation (plugging/patching) of the concrete structure's interior surface for lining.

1.02. SPECIFICATION MODIFICATIONS

It is understood that throughout this section these Specifications may be modified by appropriate items in the Modifications to Detailed Specifications or notes on the Contract Drawings.

1.03. REVISIONS OF STANDARDS

When reference is made to a Standard Specification i.e. ASTM, ANSI, AWWA, MCIB, the Specification referred to shall be understood to mean the latest revision of said specification as amended at the time of the Notice to Bidders, except as noted on the Drawings or in the Modifications to Detailed Specifications.

1.04. SUBMITTALS

The Contractor shall provide certifications or shop drawings on all materials provided under these specifications in accordance with the General Requirements.

1.05. QUALIFICATIONS

- A. The Contractor shall be certified by the manufacturer of the particular coating/lining that said company is a fully trained user of the application equipment. Personnel directly involved shall receive training in the proper methods for handling and installing the lining/coating. Training shall be performed by qualified representative. Copies of the certificates provided by the manufacturer to the Contractor and installation personnel shall be provided to the owner.
- B. The contractor and the contractor's staff shall have experience installing cementitious liner and epoxy liner, with a minimum installation of 15,000 vertical feet of cementitious liner and 15,000 vertical feet of epoxy liner.

PART 2 PRODUCTS

2.01. INTERIOR LINER

The internal surface of a manhole shall be coated, as noted on the Drawings, with one of the following.

- A. Cementitious Liner: Manhole liners under this part shall apply to eliminating infiltration, providing corrosion protection, repair of voids, and restoration of the structural integrity of the substrate. The materials, mixing ratios, and procedures utilized for the lining process shall be in accordance with the manufacturer's recommendations. The applicator shall be approved and trained by the manufacturer of the lining system materials. The product shall be manufactured by Strong-Seal Systems, Corp., Pine Bluff, Arkansas; Quadex Inc., North Little Rock, Arkansas; or approved equal.

1. Patching Material

- a. A quick setting corrosion resistant cementitious material shall be used as a patching material, and is to be mixed and applied according to manufacturer's recommendations, and shall have the following minimum requirements:
 - i. Compressive Strength: ASTM C579B, 1,400 psi, 6 hrs.
 - ii. Bond: ASTM C321, 1,000 psi, 24 hrs.
 - iii. Applied Density: 120 lbs $\pm$ 5 lbs pcf
 - iv. Shrinkage: ASTM C157, 0% at 90% R.H.

2. Infiltration Control Material

- a. A rapid setting cementitious product, specifically formulated for leak control, shall be used to stop minor water infiltration, shall be mixed, and applied according to manufacturer's recommendations and shall have the following minimum requirements:
 - i. Compressive Strength: ASTM C579B, 600 psi, 1 hr., 1,000 psi, 24 hrs.
 - ii. Bond: ASTM C321, 30 psi, 1hr., 80 psi, 24 hrs.

3. Grouting Material

- a. A cementitious grout shall be used for stopping very active infiltration and filling voids, and shall be mixed and applied according to manufacturer's recommendations.
- b. A cementitious grout designed for special soil conditions, and shall be used per manufacturer's recommendations.
- c. Chemical grouts may be used for stopping very active infiltration and shall be mixed and applied per manufacturer's recommendations.

4. Liner Material

- a. A cementitious product shall be used to form a structural/structurally enhanced monolithic liner covering all interior substrate surfaces. The liner material shall be applied with machinery specially designed for the application, and shall have the following minimum requirements at twenty-eight (28) days:
 - i. Compressive Strength: ASTM C495, >3,000 psi
 - ii. Tensile Strength: ASTM C496, >300 psi
 - iii. Flexural Strength: ASTM C293, >600 psi
 - iv. Shrinkage @ 90% R.H.: ASTM C596, 0%
 - v. Bond: ASTM C321, >130 psi
 - vi. Density, when applied: 105 pcf
- b. Liner material shall be one of the following products:
 - i. Strong-Seal ® MS-2A shall be made with Type I or Type III Portland Cement and shall be used according to manufacturer's recommendations in applications where there is no, or very mild, sulfide conditions (pH 3.0 or higher).
 - ii. Strong-Seal ® MS-2C or Quadex Aluminaliner shall be made with Calcium Aluminate Cement and shall be used according to manufacturer's recommendations in applications where there is evidence of severe sulfide conditions (pH 2.0 or higher).
 - iii. Strong-Seal ® Sewpercoat ® PG or Quadex Approved Equal shall be used in applications where harsh hydrogen sulfide conditions regardless of surface pH, as long as environment is in a municipal sanitary system.

- B. Epoxy Liner: The epoxy manhole liner shall be chemical resistant (below a pH of 2.0), VOC compliant, moisture tolerant, 100% solids, two (2) component epoxy system with the following properties:

Flexural Strength [ASTM D790]:	> 10,000 psi
Compressive Strength [ASTM D695]:	> 10,000 psi
Tensile Strength [ASTM D638]:	> 7,000 psi
Adhesion:	Concrete Substrate Failure
Abrasion Resistance [Tabor Coefficient, ASTM D4060]:	< 95 mg loss

- C. Flexible Epoxy Grade Adjustment and Frame Seal Liner: The flexible epoxy grade adjustment and frame seal liner shall be 100% solids, solvent free, chemical resistant, VOC compliant, moisture tolerant, two (2) component flexible epoxy coating system with the following properties:

Tensile Strength [ASTM D638]:	> 1,500 psi
Tensile Ultimate Elongation [ASTM D638]:	200%
Hardness, Shore D [ASTM D2240]:	65
Adhesion [ASTM 4541, 10-12 mils DFT] Steel (SSPC-10): Concrete:	> 930 psi Concrete Substrate
Temperature Resistance [Steel unprimed and concrete]:	200°F
Initial Tear Resistance [ASTM D1004]:	330lbs/in
Tear Strength [ASTM D624]:	225lbs/in
Abrasion Resistance [Tabor Coefficient, ASTM D4060]:	< 50 mg loss

PART 3 EXECUTION

3.01. CEMENTITIOUS LINER

Repair of existing manholes by installing a cementitious lining shall consist of: 1) cleaning the entire manhole interior surface; 2) removal of any existing steps; 3) preparation (plugging/patching) of the manhole interior surface for lining including repair of frame seal, grade adjustment, cone/wall joint, pipe seals and bench and invert as required to prepare manhole for lining; and 4) lining the entire manhole interior surface with a structural/structurally enhanced monolithic liner.

- A. Cleaning: Prior to cleaning, covers shall be placed over the flow channels to prevent extraneous material from entering the sewer lines. Cleaning shall consist of completely removing loose bricks and mortar, unsound concrete, bricks, grease, roots, mud, and debris from the interior surface of the manhole to a depth necessary to expose a sound sub-base. All roots shall be cut flush with the manhole wall. The entire interior surface of the manhole shall be cleaned using a high pressure (minimum of 2,000 psi) water (potable) spray.
- B. Preparation for Manhole Lining
1. After cleaning, the manhole interior surface shall be prepared for lining. Loose or missing brick shall be removed and replaced, actively leaking areas plugged, and voids patched. Any patching and/or plugging materials shall be deemed compatible with the lining material used for lining the manhole as determined by the manufacturers.
 2. The manufacturer of the cementitious liner shall provide the Contractor recommendations for methods and materials to plug actively leaking areas. Holes (including

holes left after removing steps), voids, and cracks shall be patched with cement patch conforming to the manufacturer's instructions. Contractor shall follow all manufacturer instructions during the course of the Work.

3. Prior to lining brick manholes, the stair stepped brick surface on the underside of the cones shall be filled in with cementitious liner to create a uniform sloped surface on which to apply the cementitious liner.
4. Any bench, invert, pipe seal with roots, visible damage and/or extraneous water leakage shall be repaired prior to installation of cementitious liner.

C. Manhole Sealing - Cement Manhole Liner

1. Application (spraying) of the lining material shall be done in accordance with the manufacturer's recommendations. The entire manhole interior surface shall be clean and free of foreign material, and damp without noticeable free water droplets or running water, but totally saturated. The manhole bench and invert shall be covered with plywood, and the material spray applied from the bottom of the wall to the top of the manhole to form a coating of uniform thickness sufficient to ensure that all cracks, crevices, and voids are filled, and a relatively smooth hand troweled surface remains.
2. The thickness of the lining material shall not be less than one (1") inch thick at any point from the wall/bench joint to the bottom of the frame.
3. After application of the manhole lining material, the plywood covers shall be removed from the flow channels and the bench sprayed in such a manner to produce a bench having a gradual slope from the wall/bench intersection to the edge of the rim of the trough (flow channel). Material at the wall/bench intersection shall be built up and rounded to produce a uniform radius at the circumference of the intersection.
4. The thickness of lining material shall be no less than 1-inch on the bench at the rim of the trough and shall increase in the direction of the wall to provide the required slope as shown on the Standard Details.

D. Equipment: Equipment used to mix and apply the lining material shall meet the requirements and specifications of the manufacturer.

E. Mixing: Mixing of the lining material shall be done in accordance with requirements and specifications of the manufacturer.

F. Curing: Curing of the applied lining material shall be done in accordance with the manufacturer's recommendations. Sufficient cure time shall be provided prior to subjecting the applied liner to active flow. Traffic shall not be allowed over substrates until sufficient cure time has elapsed.

- G. Weather: No application shall be made to frozen surfaces, or if freezing is expected to occur inside the substrate within 24 hours after the application. Specific recommendations and field methods approved by the manufacturer shall be followed for applying lining material when ambient temperatures are less than 45° F or in excess of 95° F.
- H. Product Testing: Four (4) 2-inch cubes shall be cast each day, or from every 50 bags of product used and shall be properly labeled and sent to the manufacturer for testing in accordance with the manufacturer's directions, for compressive strength testing as described in ASTM C109.

3.02. EPOXY MANHOLE LINER

Installation of epoxy liner shall consist of: cleaning the entire interior surface of the structure; preparation (plugging/patching) of the concrete structure's interior surface for lining; installation of the cementitious liner, where required to create a smooth surface for installation of epoxy liner; and lining the concrete structure's interior surface with a single coat of a two component, 100% solids epoxy coating system which provides a durable, high strength, monolithic lining, at an average thickness of 175 mils with a minimum thickness of 165 mils.

- A. Cleaning: Prior to cleaning, covers shall be placed over the flow channels to prevent extraneous material from entering the flow stream. Cleaning shall consist of completely removing loose materials, unsound concrete, grease, mud, and debris from the interior surface of the structure to a depth necessary to expose a sound subbase. Remove dust, laitance, grease, paint, form release agents or any other surface contaminants using a power washer as defined herein. Patching/plugging manhole defects as necessary to provide a smooth surface for application of the epoxy liner. The entire interior surface of the structure shall be cleaned using a high pressure (minimum of 3000 psi) water (potable) spray.
- B. Preparation of Concrete for Lining: After cleaning, the interior surface shall be prepared for lining. Loose or missing material shall be removed and replaced, actively leaking areas plugged, and voids patched. Any patching and/or plugging materials shall be deemed compatible with the lining material used for lining the manhole as determined by the manufacturers.
 - 1. Brick Manholes: Prior to epoxy lining brick manholes, the stair stepped brick surface on the underside of the cones shall be filled in with cementitious liner to create a uniform sloped surface on which to apply the epoxy liner.
- C. Equipment: Provide mixing and application equipment designed for mixing and spraying epoxy coating as recommended by the manufacturer.
- D. Mixing: The two (2) part epoxy liner shall be mixed in accordance with the manufacturer's recommendations.
- E. Application: The epoxy liner shall be applied in accordance with the manufacturer's recommendations. The surface prior to application may be damp

but shall not have noticeable free running water. Materials shall be spray applied in one coating to an average thickness of 175 mils with a minimum thickness of 165 mils. The final application shall have a minimum of four (4) hours cure time before being subjected to active flow. The epoxy liner shall be applied over the entire interior surface of the structure with the exception of the trough (flow channel).

- F. Curing: Curing of the applied lining material shall be done in accordance with the manufacturer's recommendations. Sufficient cure time shall be provided prior to subjecting the applied liner to active flow.
- G. Weather: No application shall be made to frozen surfaces, or if freezing is expected to occur inside the substrate within 24 hours after the application. Specific recommendations and field methods approved by the manufacturer shall be followed for applying lining material when ambient temperatures are less than 45°F or in excess of 95°F.
- H. Quality Control and Inspection: During the application, a wet film gauge shall be used regularly to ensure that minimum thickness is being maintained. After the epoxy liner has set (hard to touch) all visible pinholes shall be repaired. Repairs shall be made by lightly abrading the surface and brushing the lining material over the area. All blisters and evidence of uneven coverage shall be repaired according to the manufacturer's recommendations. After the product has set to touch, the surface shall be inspected for pinholes and thin spots using a Holiday Detector capable of 16,000 volts. The minimum voltage utilized during this "Holiday Testing" shall be 50 volts per mil of coating thickness or a minimum of 12,500 volts. Pinholes and areas less than one square foot that test to be thin may be retouched by hand, but any areas larger than one square foot must be re-sprayed. Retouching and re-spraying shall be performed according to the manufacturer's requirements.
- I. After testing the area from six inches (6") below the top of the cone to the top of the frame shall be coated with the flexible epoxy grade adjustment and frame seal liner material identified in Paragraph 3.03 of this Section.

I.
3.03. FLEXIBLE EPOXY GRADE ADJUSTMENT AND FRAME SEAL LINER

Installation of the flexible epoxy grade adjustment and frame seal liner shall consist of cleaning the interior surface of the manhole frame and cover; lining the interior of the manhole with the two component, 100% solids epoxy coating system which provides a durable, high strength, monolithic lining, at an average thickness of 250 mils with a minimum thickness of 245 mils from six (6") inches below the top of the cone section to the top of the frame.

A. Cleaning

1. Cleaning shall consist of completely removing dirt, debris, grease or other surface contaminants from the surface of the epoxy manhole liner from the top of the cone to the top of the frame. Remove any dust, laitance, grease, paint, rust, scale, or any other surface contaminants from the interior surfaces of the adjustment ring(s) and the frame and cover as defined herein. The entire interior surface of the frame and cover shall be prepared according to SSPC-SP6 "Commercial Blast Cleaning." An alternative method of cleaning maybe the use of a high pressure (greater than 5000 psi) water (potable) spray or water with sand injections. The anchor profile for surface preparation shall be a minimum of 2 mils. All excess butyl joint sealant shall be removed prior to the installation of the flexible epoxy coating material.
2. To facilitate bonding between the two epoxy materials, the previously installed epoxy liner material identified in Paragraph 3.02 of this Section shall be abraded with an 80-grit wheel from six inches (6") below the top of the cone to the top of the cone before the application of the flexible epoxy grade adjustment and frame seal liner material. If the flexible epoxy coating is installed within 24 hours of the installation of the epoxy manhole liner material identified in Paragraph 3.02 of this Section, it is not necessary to abrade the surface of the previously applied epoxy.

- B. Equipment: Provide mixing and application equipment designed for mixing and applying the flexible epoxy material as recommended by the manufacturer.
- C. Mixing: The two (2) part epoxy liner shall be mixed in accordance with the manufacturer's recommendations.
- D. Application: After the adjustment ring(s), frame seal, and frame have been cleaned and prepared, the flexible epoxy coating shall be installed from six inches (6") below the top of the cone section to the lip of the bearing surface of the frame. The surface prior to application shall be moisture and contaminant free. Materials shall be hand or sprayed applied per manufacturer's recommendations to an average thickness of 250 mils with a minimum thickness of 245 mils. The final application shall have a minimum of twenty-four (24) hours cure time before being subjected to personnel access or surface loading.
- E. Curing: Curing of the applied lining material shall be done in accordance with the manufacturer's recommendations. Sufficient cure time shall be provided prior to subjecting the applied liner to active flow. Traffic shall not be allowed over substrates until sufficient cure time has elapsed.

- F. Weather: No application shall be made to frozen surfaces, or if freezing is expected to occur inside the substrate within 24 hours after the application. Specific recommendations and field methods approved by the manufacturer shall be followed for applying lining material when ambient temperatures are less than 45° F or in excess of 95° F.
- G. Quality Control and Inspection
 - 1. During the application, a wet film gauge shall be used regularly to ensure that minimum thickness is being maintained. After the epoxy liner has set (hard to the touch), all visible pinholes shall be repaired. Repairs shall be made by lightly abrading the surface and brushing the lining material over the area. All blisters and evidence of uneven coverage shall be repaired according to the manufacturer's recommendations. After the product has set to touch, the surface shall be inspected for pinholes and thin spots using a Holiday Detector capable of 16,000 volts. The minimum voltage utilized during this "Holiday Testing" shall be 50 volts per mil of coating thickness or a minimum of 12,500 volts. Pinholes and areas less than one square foot that test to be thin may be retouched by hand, but any areas larger than one square foot must be re-sprayed. Retouching and re-spraying shall be performed according to the manufacturer's requirements.
 - 2. Conduct Manhole Lining Inspection according to Section 03360.

END OF SECTION 2532

SECTION 02537 - CURED-IN-PLACE PIPE (CIPP) LINER

PART 1 – GENERAL

1.1 WORK INCLUDED IN THIS SECTION

- A) This section covers the rehabilitation of pipelines and conduits by the installation of resin-impregnated flexible tube, which is tightly formed to the original conduit. The resin is cured using hot water under hydrostatic pressure steam pressure within the tube. The Cured-In-Place Pipe (CIPP) shall be continuous and tight fitting.

1.2 SPECIFICATION MODIFICATIONS

- A) It is understood that throughout this section these Specifications may be modified by appropriate items in the notes on the Contract Drawings.

1.3 REVISIONS OF STANDARDS

- A) When reference is made to a Standard Specification i.e. ASTM, ANSI, AWWA, MCIB, the specification referred to shall be understood to mean the latest revision of said specification as amended at the time of the Notice to Bidders, except as noted on the Drawings.

1.4 SUBMITTALS

- A) The Contractor shall provide certifications or shop drawings on all materials provided under these specifications in accordance with the Submittals section of the project specifications. The Contractor shall submit the following to the Owner and/or Engineer prior to actual work:
 - 1. Calculations, technical data, and complete physical properties of the liner and dimensions pertinent to the job.
 - 2. The Contractor shall submit a work plan to the Owner and/or Engineer for approval. The work plans shall detail the preparation steps required for pre-installation (including methodology for point repairs), by-pass of existing flow, and the procedures and steps to be followed for the installation.
 - 3. The Contractor shall submit to the Owner and/or Engineer for approval, the standard curing temperature/pressure/cool-down schedules prior to construction.

4. The Contractor shall submit to the Owner and/or Engineer one electronic copy of all pre-and post-CCTV inspection video images and inspection logs for review and permanent record and for acceptance of work prior to final payment.
5. The Contractor shall submit to the Owner and/or Engineer the pipe diameter, length and CIPP wall thickness for the sewer to be lined. A certificate sealed by an insured registered Professional Engineer in the State of Kansas shall be submitted stating the design meets the performance and requirements of this specification.

1.5 SAFETY REQUIREMENTS

- A) The Contractor shall complete all work in strict accordance with all applicable current OSHA, federal and state standards and requirements. Particular attention is drawn to those safety requirements involving work on an elevated platform and entry into a confined space. It shall be the responsibility of the Contractor to comply with OSHA standards and regulations pertaining to all aspects of the work.

1.6 REFERENCED DOCUMENTS

- A) This specification referenced standards from the American Society for Testing and Materials which are made a part hereof by such reference and shall be the latest edition and revision thereof. In case of conflicting requirements between this specification and these referenced documents, this specification will govern.
- B) The following standard specifications are referenced:
 1. ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
 2. ASTM D5813 - Standard Specification for Cured-in-Place Thermosetting Resin Sewer Pipe
 3. ASTM D790 - Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 4. ASTM D2990 – Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics

1.7 QUALIFICATIONS

A) Products and Installers must meet all of the following criteria:

1. Installer must have been in the CIPP business for at least two (2) years. In addition, the Installer must have successfully installed at least 500,000 feet of the product in wastewater collection systems. The Installer's onsite superintendents designated for this project must have had at least two (2) years of continuous active experience in the installation of CIPP, and have been employed by the installer for no less than the past twelve (12) months. Acceptable documentation of these minimum installation must be submitted to the Owner and/or Engineer.
2. Sewer rehabilitation products submitted for approval must provide third party test results supporting the structural performance (short-term and long-term) of the product and such data shall be satisfactory to Owner and/or Engineer. Test samples shall be prepared so as to simulate installation methods and trauma of the product. No product will be approved without verification.
3. There must be documented quality control and assurance program in place for the engineering applications, manufacturing, and installation. Upon request, the Contractor shall provide the documentation and verifying this requirement to Owner and/or Engineer. The tube and resin manufacturing and process shall operate under a quality management system which is third party certified to ISO 9001.
4. Contractor must verify that a 24-hour response time can be met in correcting emergency repairs.

PART 2 - PRODUCTS

2.1 GENERAL

- A) This section governs materials that may be required to complete pipe installation by trenchless pipe replacement methods as shown on the Drawings and/or as provided for in the Specifications.

2.2 MATERIALS

- A) Tube: The Tube shall consist of one or more layers of absorbent non-woven or needled felt fabric and meet the requirements of ASTM F1216, Section 5.1. The tube shall be constructed to withstand installation pressures and

temperatures, be compatible with the resin system used, have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections.

- B) The wet out Tube shall have a relatively uniform thickness that when compressed at installation pressures will equal or exceed the calculated minimum design thickness.
- C) The Tube shall be manufactured 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. Overlapped layers of felt in longitudinal seams that cause lumps in the final product shall not be utilized.
- D) The outside layer of the Tube shall be coated with an impermeable, flexible membrane that will contain the resin and will facilitate monitoring the resin impregnation (wet out) process and post-installation inspection.
- E) 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.
- F) The wall color of the interior pipe surface of CIPP after installation shall be a relatively light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.
- G) Seams in the Tube shall be as strong as or stronger than the non-seamed felt material.
- H) The Tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 ft. Such markings shall include the Manufacturer's name or identifying symbol.
- I) Resin: The resin system shall be a corrosion resistant polyester, epoxy vinyl ester, or epoxy system including all required catalysts, initiators or hardeners that when cured within the tube create a composite that satisfies the requirements of ASTM F1216 and ASTM D5813, the physical properties herein, and those which are to be utilized in the design of the CIPP for this project. The resin shall produce a CIPP that will comply with the structural and chemical resistance requirements of this specification.

2.3 STRUCTURAL REQUIREMENTS

- A) The CIPP shall be designed as per ASTM F1216, Appendix X1. The CIPP design shall assume no bonding to the original pipe wall. Owner and/or

Engineer will determine the design condition of the pipes for this project. These calculations will define the required pipe wall thickness and are contained within the ASTM F1216 Appendix X1. Under no circumstances shall the CIPP liner be less than 6 mm.

- B) The Contractor must have performed long-term testing for flexural creep of the CIPP pipe material installed by his Company. Such testing results shall be used to determine the long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (Tube and Resin) and general workmanship of the installation and curing. A percentage of the instantaneous flexural modulus value (as measured by ASTM D790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. Retention values exceeding 50% of the short-term test results shall not be used. The materials utilized for the contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in the CIPP design.
- C) The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If the layers separate during field sample testing, new samples will be required to be obtained from the installed pipe. Any reoccurrence may cause rejection of the work.
- D) The cured pipe material (CIPP) shall conform to the structural properties, as listed below.

MINIMUM CIPP PHYSICAL PROPERTIES		
Property	Test Method	Minimum Value
Flexural Modulus of Elasticity	ASTM D790	400,000 psi
Flexural Strength	ASTM D790	4,500 psi

- E) The required structural CIPP wall thickness shall be based as a minimum, on the physical properties in paragraph 2.2.D above and in accordance with the most conservative results from the design equations in ASTM F1216 Appendix X1, and never less than 6 mm. The calculated design wall thickness shall be expressed as an even multiple of 1.5 mm. Design Considerations of ASTM F1216 for fully deteriorated conditions, and the following design parameters:

PARAMETER	VALUE
Design Safety Factor	2.0
Retention Factor for Long-Term Flexural Modulus	As determined by long-term tests described in paragraph 2.1.B. above, not to exceed 50%, and approved by Owner and/or Engineer
Ovality	Calculated from S1.1 of ASTM F1216, and being not less than 2%
Groundwater Depth (above invert of existing pipe)	Five (5) feet below the top of ground
Soil Depth (above crown of existing pipe)	10'-0" or per actual site conditions, whichever is greater
Soil Modulus	700 psi
Soil Density	120 lb per cubic feet
Live Load	AASHTO H20, except for railroad crossings

- F) 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.

2.4 TESTING REQUIREMENTS

- A) Chemical Resistance: The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical-testing requirements.
- B) Hydraulic Capacity: Overall, the hydraulic cross-section shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.
- C) CIPP Field Samples: When requested by Owner, the Contractor shall submit test results from field installations of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the CIPP physical properties specified in ASTM F1216, Section 8 and have been achieved in previous field applications. Samples for this project shall be made and tested as described in paragraph 3.14 below of this specification section.

PART 3 – EXECUTION

3.1 GENERAL

- A) The Contractor shall locate all manhole access points required for executing the work. Owner will provide rights-of-access to these locations. If a street must be closed to traffic because of the orientation of the sewer, the Contractor shall institute the actions necessary to provide access and traffic control. Contractor shall notify the Owner with traffic control plan prior to closing or directing traffic. The Contractor shall supply water and electricity as necessary for cleaning, lining, and other work items. Contractor shall use City water meters and backflow preventers before accessing a public water supply.

3.2 CLEANING OF SEWER LINES

- A) The Contractor shall remove all internal debris and deposits out of the sewer line that will interfere with the installation of CIPP using accepted sewer cleaning techniques. The Contractor shall dispose of all debris removed from the sewers during the cleaning operation. Any hazardous waste material encountered during this project will be considered as a changed condition and Owner and/or Engineer must be notified before any actions are taken to remove or dispose of hazardous waste.

3.3 BYPASSING SEWAGE

- A) The Contractor, when required, shall provide for the flow of sewage around the section or sections of pipe designated for repair. Plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system shall make the bypass.

3.4 INSPECTION OF PIPELINES

- A) Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles and service connections using close circuit television (CCTV) PACP certified inspection techniques. All Pre Liner & Post Liner CCTV shall be PACP rated. The pipeline interior shall be carefully inspected to determine the location of any conditions that may prevent proper installation of CIPP. These shall be noted and corrected. The video images shall be recorded electronically on a CD and provided to Owner and/or Engineer.

3.5 LINE OBSTRUCTIONS

- A) It shall be the responsibility of the Contractor to clear the line of

obstructions such as solids and roots that will prevent the insertion of CIPP. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the installation process, that was not evident on the pre-bid video and it cannot be removed by conventional sewer cleaning equipment, then the Contractor shall make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the Owner's representative prior to the commencement of the work and shall be considered as a separate pay item.

3.6 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 eight (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. The Contractor shall also provide the following:

1. A. Written notice to be delivered to each home or business three days 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 must be conducted with any home or business which cannot be reconnected within the time stated in the written notice.

3.7 SERVICE CONNECTIONS

A) The Contractor shall be responsible for confirming the locations of all active branch service connections prior to installing the CIPP. The Contractor or lining installer shall apply experienced judgment and coordinate with the Owner to determine whether a service line is active. If approved by the Owner, the Contractor will dye test the approved service lines in advance of lining the segment. The Contractor shall provide a clear record of all service connections that are re-installed after lining the pipe.

3.8 HANDLING

A) The Manufacturer and Contractor shall use equipment and methods adequate to protect the pipe, joint elements and prevent shock contact of adjacent units during moving or storage. Damaged sections that cause reasonable doubt as to their structural strength or water-tightness will be

rejected.

3.9 YARD PROTECTIVE MEASURES

- A) The Contractor shall provide protective measures (felt, blocks of wood, plywood, cardboard, concrete blocks, street plates, etc.) to create a barrier between the boiler/steam hoses and grass for each installation.

3.10 INSTALLATION

- A) The Contractor shall allow Owner to inspect the materials and "wet out" procedure. The lining shall be impervious and free of any leakage from the pipe to the surrounding ground or from the ground to the inside of the lined pipe. CIPP installation shall be in accordance with ASTM F1216, Section 7.
 - 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 during installation through cracks and irregularities in the original pipe wall.
 - 2. If a vacuum impregnation process is used, the point of vacuum shall be no further than 25-feet from the point of initial resin introduction. After 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 to the longitudinal axis of the tube 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 equivalent results. Any alternate resin impregnation method must be documented to Owner's satisfaction that the saturation of the CIPP is sufficient.
 - 3. Tube Insertion: The wet out tube shall be positioned in the pipeline using water or steam inversion only. The tube should be inverted through an existing manhole or approved access point and fully extended to the next designated manhole or termination point. Pull-in type methods of tube insertion are not allowed.
 - 4. Temperature gauges shall be placed between the tube and the host pipe's invert position to monitor the temperatures during the cure cycle.
 - 5. Curing shall be accomplished by utilizing hot water under hydrostatic pressure or steam pressure in accordance with the manufacturer's

recommended cure schedule.

6. The Contractor shall cool the hardened pipe to a temperature below 100 degrees Fahrenheit (or as recommended by the manufacturer), before relieving the water column. Cool water may be added to the column while draining hot water from a small hole at the opposite end of the CIPP, so that a constant water column height is maintained until cool-down is completed. Care shall be taken in the release of the water column so that a vacuum will not be developed that could damage the newly installed liner.
7. The finished CIPP shall be continuous over the entire length from manhole to manhole and be free from visual defects such as foreign inclusions, dry spots, keel, boat hull, pinholes, wrinkles and other deformities. Any defects, which will affect the integrity or strength of the pipeliner, discovered in the post-installation inspection and during the warranty period shall be repaired at the Contractor's expense.
8. The CIPP shall make a tight-fitting seal with the existing pipe(s) in the manhole. One-half inch (1/2") diameter activated oakum band soaked in Scotch Seal 5600 or equal shall be applied circumferentially near the annular space touching the end of the existing pipe and properly encased with a cement-based mortar. The top half of the pipeliner shall be neatly cut off at least two inches (2") away from the walls. Breaking or shearing of the pipeliner will not be allowed. The channel in the manhole shall be a smooth continuation of the pipe(s) and shall be merged with other lines or channels, if any. The sides of the channels shall be built up with mortar/concrete to provide benches at a maximum of 1 in 12 pitch towards the channel.

3.11 END SEALS

- A) All CIPP mains shall have compression seal gaskets installed at the manhole penetrations.

3.12 LINER TRIMMING

- A) After the liner has been cured, the liner should be trimmed entering and exiting the manhole, so that it is nearly flush with the manhole wall. For each inversion of two (2) or more line segments using a single liner, the liner should be cut flush with the trough at the intermediate manhole(s). If additional line segments enter these intermediate manhole(s), the liner should not obstruct the flow from these lines.

3.13 REINSTATEMENT OF BRANCH CONNECTIONS

- A) 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 Owner or his authorized representative, all laterals will be reinstated to not less than 90 percent capacity. No additional payment will be made for excavations for the purpose of reopening connections. The Contractor will be responsible for all costs and liability associated with such excavation and restoration work. Laterals shall be re-instated within one eight (8) hour period and by 5:00 pm, unless prior authorization from Owner is obtained and written notification to the property owner is provided and acknowledgment from the property owner is received. Any damage or delays associated with a service lateral will warrant notification to the Owner and the property owner.

3.14 INSPECTION

- A) CIPP samples shall be prepared and physical properties tested in accordance with ASTM F1216. The flexural properties must meet or exceed the values listed in paragraph 2.02.D above.
- B) Wall thickness of samples shall be determined as described in Section 8 of ASTM F1216. The minimum wall thickness at any point shall not be less than the minimum design wall thickness as calculated in ASTM F1216. Under no conditions shall the thickness of the CIPP liner be less than 6 mm.
- C) Visual inspection of the CIPP shall be in accordance with ASTM F1216, Section 8.7.

3.15 TELEVISION INSPECTION OF GRAVITY SEWER 8-INCH IN DIA. AND LARGER

- A) A high-quality project video recording of internal conditions of gravity sewer 8-inch in diameter and larger shall be created after construction is complete for approval.

3.16 CLEAN-UP

- A) Upon acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work.

3.17 WARRANTY

- A) All liner installations shall be warranted to be free from defects in material and workmanship for a period of three (3) years from the date of project acceptance. Should a defect occur during this three (3) year period that is attributable to the liner installation or materials, then this defect shall be repaired within four (4) weeks from the date of defect notification to the Contractor at no additional cost to the Owner. However, if a liner is causing loss of flow or causing a backup the contractor will repair within 24 hours. The Contractor shall be responsible for all required repair costs associated with a liner failure during the warranty period including all costs associated with lateral backups into buildings and all other property damage.

END OF SECTION 02537

SECTION 02538 - THERMOFORMED PIPE METHOD (FOLD AND FORM)

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

The work specified under this section provides for the rehabilitation of an existing sewer pipeline or conduit using PVC Fold and Form trenchless technology. The process consists of installing a thermoformed PVC pipe liner inside an existing sewer (Host Pipe) from manhole to manhole as described in the following sections. When installed the liner will be a seamless, joint-less, solid wall PVC pipe liner that tightly conformed to the interior contours of the original host pipe. The liner shall be continuous from manhole to manhole with no seams or joints. In most cases required service connections will be reconnected using closed circuit television and remotely controlled cutters.

1.2 SPECIFICATION MODIFICATIONS

- A) It is understood that throughout this section these Specifications may be modified by appropriate items in the notes on the Contract Drawings.

1.3 REVISIONS OF STANDARDS

When reference is made to a Standard Specification i.e. ASTM, ANSI, AWWA, MCIB, the specification referred to shall be understood to mean the latest revision of said specification as amended at the time of the Notice to Bidders, except as noted on the Drawings.

1.4 SUBMITTALS

The Contractor shall provide certifications or shop drawings on all materials provided under these specifications in accordance with the Submittals section of the project specifications. The Contractor shall submit the following to the Owner and/or Engineer prior to actual work:

Calculations, technical data, and complete physical properties of the liner and dimensions pertinent to the job.

The Contractor shall submit a work plan to the Owner and/or Engineer for approval. The work plans shall detail the preparation steps required for pre-installation (including methodology for point repairs), by-pass of

existing flow, and the procedures and steps to be followed for the installation.

The Contractor shall submit to the Owner and/or Engineer for approval, the standard curing temperature/pressure/cool-down schedules prior to construction.

The Contractor shall submit to the Owner and/or Engineer one electronic copy of all pre-and post-CCTV inspection video images and inspection logs for review and permanent record and for acceptance of work prior to final payment.

The Contractor shall submit to the Owner and/or Engineer the pipe diameter, length and PVC wall thickness for the sewer to be lined. A certificate sealed by an insured registered Professional Engineer in the State of Kansas shall be submitted stating the design meets the performance and requirements of this specification.

1.5 SAFETY REQUIREMENTS

The Contractor shall complete all work in strict accordance with all applicable current OSHA, federal and state standards and requirements. Particular attention is drawn to those safety requirements involving work on an elevated platform and entry into a confined space. It shall be the responsibility of the Contractor to comply with OSHA standards and regulations pertaining to all aspects of the work.

1.6 REFERENCED DOCUMENTS

A) This specification referenced standards from the American Society for Testing and Materials which are made a part hereof by such reference and shall be the latest edition and revision thereof. In case of conflicting requirements between this specification and these referenced documents, this specification will govern. This Specification references ASTM standards and other related standards, which are made a part hereof by reference and shall be the latest edition thereof.

B) The following standard specifications are referenced:

1. ASTM D638 - Standard Test Method for Tensile Properties of Plastics

2. ASTM D790 Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
3. ASTM D1784 Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
4. ASTM F1947 Standard Practice for Installation of Folded/Formed Poly (Vinyl Chloride) (PVC) Pipe Type A for Existing Sewer and Conduit Rehabilitation
5. ASTM F1504 Standard Specification for Folded/Formed Poly (Vinyl Chloride) Pipe Type A for Existing Sewer and Conduit Rehabilitation
6. ASTM F2122 Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
7. NASSCO SG-11.010/03 Specification for Sewer Line Cleaning

1.7 QUALIFICATIONS

A) Products and Installers must meet all of the following criteria:

1. Installer must have been in the Thermoformed (fold and formed) pipe rehabilitation business for at least two (2) years. In addition, the Installer must have successfully installed at least 500,000 feet the product in wastewater collection systems. The Installer's onsite superintendents designated for this project must have had at least two (2) years of continuous active experience in the installation of pipe liners and have been employed by the installer for no less than the past twelve (12) months. Acceptable documentation of these minimum installation must be submitted to the Owner and/or Engineer.
2. Sewer rehabilitation products submitted for approval must provide third party test results supporting the structural performance (short-term and long-term) of the product and such data shall be satisfactory to Owner and/or Engineer. Test samples shall be prepared so as to simulate installation methods and trauma of the product. No product will be approved without verification.

3. There must be documented quality control and assurance program in place for the engineering applications, manufacturing, and installation. Upon request, the Contractor shall provide the documentation and verifying this requirement to Owner and/or Engineer. The tube and resin manufacturing and process hall operate under a quality management system which is third party certified to ISO 9001.
4. Contractor must verify that a 24-hour response time can be met in correcting emergency repairs.

PART 2 PRODUCTS

2.1 GENERAL

- 1.2 This section governs materials that may be required to complete pipe installation by trenchless pipe replacement methods as shown on the Drawings and/or as provided for in the Specifications.

2.2 MATERIALS

The pipe shall be made from PVC compound meeting all the requirements for cell classification 12334 as defined in specification D1784 and with minimum physical properties:

Tensile Strength - Test Method D638 - 6,000psi (41.4MPa)

Tensile Modulus - Test Method D638 - 320,000psi (2206MPa)

Flexural Strength - Test Method D790 - 6,000psi (41.4MPa)

Flexural Modulus - Test Method D790 - 320,000psi (2206MPa)

Heat Deflection Temperature -Test Method D648 - 115°F (46°C)
Tested @ 264psi (2MPa)

OTHER REQUIREMENTS

2.2.1 Pipe Flattening

There shall be no evidence of splitting, cracking or breaking when the rounded pipe is tested according to section 11.3 of ASTM F1504.

2.2.2 Pipe Impact Strength

The impact strength of rounded pipe shall not be less than the values in Table 1 when tested in accordance with test method D2444 as referenced in ASTM F1504.

Table 1: Minimum Impact Strength at 73°F (23°C)

Pipe size, in. (mm)	Impact strength, ft-lb f (J)
6 (150)	210 (284)
8 (200)	210 (284)
10 (250)	220 (299)
12 (300)	220 (299)
15 (375)	220 (299)
18 (450)	220 (299)
24 (600)	220 (299)
30 (750)	220 (299)

2.2.3 Pipe Stiffness

Values for pipe stiffness for the rounded pipe shall comply with Table 2 when tested in accordance with test method D2412 as referenced in ASTM F1504.

Table 2: Minimum Pipe Stiffness at 5% Deflection

Pipe Size, in. (mm)	Pipe Stiffness, psi (kPa)	Dimension Ratio, (DR)
6 (150)	36 (250)	35
8 (200)	36 (250)	35
10 (250)	36 (250)	35
12 (300)	22 (153)	41
15 (375)	12 (83)	50
18 (450)	6 (41)	66
24 (600)	6 (41)	66
30 (750)	6 (41)	66

2.2.4 Extrusion Quality

The extrusion quality of the pipe shall be evaluated by both of the following test methods:

- 2.2.4.1 Acetone Immersion: The pipe shall not flake or disintegrate when tested in accordance with test method D2152 as referenced in ASTM F1504.

- 2.2.4.2 Heat Reversion: The extrusion quality of the pipe shall be estimated by heat reversion method in accordance with practice F1057 as referenced in ASTM F1504.
- 2.2.4.3 Flexural Properties: The flexural strength and modulus of the pipe shall be tested in accordance with test method D790 as referenced in ASTM F1504.

2.2.5 Dimensions

- 2.2.5.1 Formed Pipe Diameter: The average outside diameter of the formed pipe shall meet requirements in Table 3, +/- 1.0% when tested in accordance with test method D2122 as referenced in ASTM F1504.
- 2.2.5.2 Formed Pipe Wall Thickness: The wall thickness of the formed pipe shall not be less than the values specified in Table 3 when tested in accordance with test method D2122 as referenced in ASTM F1504.

Table 3: Formed Pipe Dimensions

Nominal Outside Dia., in. (mm)	Min. Wall Thickness, in. (mm)	DR
6 (150)	0.17 (4.34)	35
8 (200)	0.23 (5.78)	35
10 (250)	0.28 (7.23)	35
12 (300)	0.292 (7.4)	41
15 (375)	0.30 (7.6)	50
18 (450)	0.27 (6.8)	66
24 (600)	0.34 (8.7)	66
30 (750)	0.43 (10.8)	66

2.2.6 Workmanship, finish, and appearance

The formed pipe shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other defects. The pipe shall be as uniform as commercially possible in colour, opacity, density and other physical properties.

2.2.7 Product Marking

Pipe shall be clearly marked as follows at intervals of 5ft. (1.5m) or less:

- Manufacturer's name or trademark and code

- Nominal outside diameter
- The PVC cell classification, for example "12334"
- The legend "DR XX FOLDED PVC PIPE"
- The designation "Specification ASTM F1504"
- Length marker and liner distance label, for example "100ft" ("30.5m")

2.2.8 Packaging

The full length of the PVC pipe is coiled onto a reel in a continuous length for storage and shipment. The minimum diameter of the reel drum or core shall be 48in (1,219mm).

PART 3 EXECUTION

3.1 PRE-INSTALLATION

3.1.3 Host Pipe Preparation

- 3.1.3.1 The host pipe shall be cleaned in accordance with SPECIFICATION FOR SEWER LINE CLEANING as provided by the National Association of Sewer Service Companies (NASSCO). For bidding purposes the Contractor shall assume that the pipes require normal cleaning which is defined as two to three passes with a jet cleaner unless unique conditions are noted as special provisions, on the TV log sheets or videos made available to the Contractor before the bid opening. Special additional cleaning not identified will be paid for on a time and material basis.
- 3.1.3.2 Debris that would interfere with the installation of the pipe liner shall be removed. The Contractor shall dispose of debris in a location provided by the Owner and in accordance with all Federal, State and Local regulations
- 3.1.3.3 The pipeline shall be cleared of obstructions such as solids, dropped joints, protruding service connections or collapsed pipe that may prevent pipe liner installation. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment then a point repair excavation shall be made to uncover and remove or repair

the obstruction. Such point repair shall be approved in writing by the Owner's representative prior to commencement of the work and shall be considered as a separate pay item.

- 3.1.3.4 High levels of groundwater infiltration into the host pipe, that will affect the successful installation of the liner shall be remediated by either chemical grouting or point repair prior to lining as approved by the Engineer. Such repairs shall be approved in writing by the Owner's representative prior to commencement of the work and shall be considered as a separate pay item.
- 3.1.3.5 Pre-Lining television Inspection: Prior to lining the Contractor shall inspect the pipeline by means of closed circuit television to identify any unknown defects or obstructions and to accurately locate active services. Color video recordings in VHS, MPEG, or .avi format shall be made of the television inspections and two copies each shall be supplied to the Owner along with a computer generated or hand written inspection report. The Contractor shall make accurate television inspection logs that clearly show the location, in relation to adjacent manholes, of each source of infiltration discovered. Other data of significance including the locations of service connections, joints, defective materials, unusual conditions, roots, storm sewer connections, collapsed sections, presence of scale and corrosion and other discernible features shall be recorded and two copies of such records shall be supplied to the Owner in printed format along with the video recordings. The contractor shall submit a report to the Owner detailing any defects in the pipeline that will prevent the successful installation of the liner. This report shall also contain a plan for proposed corrective action for repairs to the pipeline. Such repairs shall be approved in writing by the Owner's representative prior to commencement of the work and shall be considered as a separate pay item.

3.1.4 Flow Control

When required for acceptable completion of the pipe liner installation, the Contractor shall implement the pre-approved by-pass pumping plan in section 1.4.

3.1.5 Public Notification:

A public notification program shall be implemented, and shall as a minimum, require the Contractor to be responsible for:

- 3.1.5.1 Written notice to be delivered to each home or business describing the work, how it affects them and a local telephone number of the Contractor they can call to discuss the project or any problems, which could arise.
- 3.1.5.2 The written notice shall be delivered the day, or week prior to the beginning of work being conducted on the section relative to the residents affected.
- 3.1.5.3 Personal contact with any home or business, which cannot be reconnected within the time stated in the written notice.

3.2 LINER INSTALLATION

3.2.1 Pre Heating

Prior to insertion of the liner into the host pipe the Contractor shall pre-heat the liner in the manner proscribed by the manufacturer's installation instructions. The heated liner must be pliable enough to be pulled into the host pipe with as little resistance as possible.

3.2.2 Pipe Liner Insertion

The liner pipe shall be inserted into the sewer through existing manholes, without modification of the manholes. Insertion of the liner into the host pipe will be accomplished by pulling the liner into the host pipe by means of a steel cable strung through the host pipe from a winch located at the downstream manhole. The end of the liner shall be prepared for attachment to the cable in accordance with the manufacturer's instructions. The connection between the pulling cable and the prepared end of the liner shall be a swivel device to prevent twisting of the liner as it is pulled through the host pipe. The heated liner coil shall be placed in such a manner as to prevent damage to the liner as it is pulled through the manhole and into the host pipe.

A member of the installation crew at the upstream end shall monitor the speed of the pull; he must coordinate the speed of the pull with the winch operator at the downstream manhole via two-way radio. The crewmember coordinating the insertion of the liner shall ensure that the liner has the proper amount of slack, to prevent it from being either stretched or kinked.

3.2.3 Yard Protective Measures

The Contractor shall provide protective measures (felt, blocks of wood, plywood, cardboard, concrete blocks, street plates, etc.) to create a barrier between the boiler/steam hoses and grass for each installation.

3.2.4 Stress Relief

After the liner has been inserted into the host pipe, the Contractor shall relieve any stress imparted to the liner during the insertion in a manner proscribed in the manufacturer's installation instructions.

3.2.5 Processing

The Contractor shall supply suitable heat source equipment. The equipment shall be capable of delivering steam through the lining section to uniformly raise the temperature of the PVC material to effect forming of the liner pipe.

Suitable monitors shall be installed to gauge steam temperatures and pressures at the input and exhaust ends of the liner. Steam monitoring methods and forming period shall be recommended by the liner manufacturer.

After forming the liner shall be cooled using compressed air or a mixture of compressed air and water. Cooling shall be deemed complete when the temperature of the exhaust air or air water mixture has remained constantly below 90°F for a minimum of 10 minutes.

3.2.6 Pipe Liner Trimming

After installation the ends of the PVC liner shall be cut off in the maintenance hole. The cuts shall be smooth and parallel with the maintenance hole wall. The finished liner shall not protrude into the maintenance hole over 4 inches.

If the maintenance hole has been lined through, the top half of the liner pipe may be cut off even with the top of the shelf, leaving the channel lined.

3.2.7 Sealing Manhole Connections

If a watertight seal is required at the manhole it may be accomplished by troweling a high viscosity epoxy cement or resin around the exposed ends of the liner and the surface of the manhole. The surface of the epoxy cement shall be shaped to smoothly transition the exposed liner to the manhole wall. If specified by the Owner a hydrophilic gasket may be placed between the pipe liner and the host pipe prior to expansion of the

liner. In either case the exposed liner in the manhole shall be smoothly transitioned into the wall of the manhole using the epoxy cement.

3.2.8 Service Connections

The exact number and location of service connections shall be determined from the CCTV inspection done in section 3.1.3.5 of this specification. It shall be the Contractor's responsibility to accurately locate all existing service connections whether in service or not. The Contractor shall reconnect all potentially active service connections to the pipe liner, including those from unoccupied, abandoned or vacant lots. Capped service connections shall not be reconnected unless otherwise directed by the Owner. The Contractor shall be responsible for restoring/correcting, without delay, all missed service lateral connections. All service connections that are reinstated after lining shall be shown on the "As Built Drawings" with the exact distance from the upstream manhole.

All existing service connections shall be reinstated either by remotely controlled robotic device or by excavation.

Only experienced operators shall make robotic service connection reinstatements. Should a dimple not form or cannot be clearly ascertained at a given service connection its position must be carefully re-verified using the inspection video from 3.1.3.5.

Service reconnections shall be smooth and circular in nature as observed by a pan and tilt TV camera. The hole shall be a maximum of 105% and a minimum of 90% of the service pipe diameter. The opening shall be smooth and conform to the inside shape and size of the original connection. Trial cuts should be repaired per the pipe liner manufacturer's recommendations not be at no cost to the Owner.

3.3 POST INSTALLATION INSPECTION

Upon completion, and before acceptance of the work, the Contractor will inspect the rehabilitated pipeline using a CCTV camera with a pan and tilt head. The inspection shall be recorded on electronic format or DVD. The Operator will stop the camera at each lateral reinstatement and using the pan and tilt feature record and catalog each of the service connection cuts. The Contractor shall submit the post-installation video in electronic or DVD format to the Owner for acceptance of the work.

3.4 INSPECTION AND TESTING

3.3.1 Visual Inspection

The pipe liner shall be continuous and joint-less. The pipe liner shall be free of all visual and material defects except those resulting from pre-lined host pipe conditions identified in the pre-lining video.

3.3.2 Testing

The Contractor shall provide liner field samples to the Owner prior to installation for testing. The Owner will pay all expenses for the testing of liner samples to verify that the field samples meet the minimum specified values listed in Section 2. The samples shall be tested per the recommendations of the pipe liner manufacturer. The Contractor shall pay for the cost of re-tests made necessary by the failure of a sample to meet the minimum specified values listed in Section 2. Field samples shall be collected in accordance with Section 7.3 of ASTM F1947.

Normally separate leakage testing of the liner is not required, since the liner is under constant pressure during the cool down period. However, if separate leakage testing of the liner is required by the Owner in the specifications it shall be conducted at the time of installation after cool down and before the laterals are cut, in accordance with Section 7 of F1947.

3.4 DEFECT REPAIR OR REPLACEMENT

Any defects, which in the judgment of the Owner and the pipe liner manufacturer that will affect the integrity or strength of the liner, shall be repaired or the pipe liner replaced at the Contractor's expense per the pipe liner manufacturers recommendations. All repairs or replacement of defective work shall be completed to the full satisfaction of the Owner.

3.5 WARRANTY

The Manufacturer shall warrant the product for a period of 10 years from the date of manufacture, against failure as a result of defects in materials or manufacturing, and that when properly installed the product will perform in accordance with the Manufacturer's specifications, literature and data sheets.

3.5.2 Certifications:

- 3.5.2.1 The Contractor shall be licensed directly by the manufacturer of the product and provide written certification that he is an experienced and qualified installer of the product.
- 3.5.2.2 Manufacturer's certification that the product meets the requirements of the standards referenced

- 3.5.2.3 Submit documentation from the manufacturer that there is an established and ongoing quality control and quality assurance program for the product at the manufacturer's production facility. This should include proof that the manufacturer has the necessary equipment and trained personnel to properly implement the program.

SECTION 02770 - CURED-IN-PLACE PIPE (CIPP) SERVICE LATERAL CONNECTION

PART 1 – GENERAL

1.1 WORK INCLUDED IN THIS SECTION

- A) This section covers the materials, labor and equipment required for the rehabilitation of sanitary sewer service connections by installation of a resin-impregnated flexible tube. The tube shall be inverted and inflated to conform to the circumference/profile of the host pipe. The resin is cured by manufacturer's recommendation. When cured, the tube shall be hard, strong, and chemically inert, continuous and jointless to the main line connection.
- B) The Contractor shall take measurements in the field to properly size the liner and shall verify the length of the pipe prior to ordering the liner.
- C) The Contractor shall verify all active laterals to be rehabilitated.

1.2 SPECIFICATION MODIFICATIONS

- A) It is understood that throughout this section these Specifications may be modified by appropriate items in the notes on the Contract Drawings.

1.3 REVISIONS OF STANDARDS

- A) When reference is made to a Standard Specification i.e. ASTM, ANSI, AWWA, MCIB, the specification referred to shall be understood to mean the latest revision of said specification as amended at the time of the Notice to Bidders, except as noted on the Drawings.

1.4 SUBMITTALS

- A) The Contractor shall provide certifications or shop drawings on all materials provided under these specifications in accordance with the Submittals section of the project specifications. The Contractor shall submit the following to the Owner and/or Engineer prior to actual work:
 - 1. Calculations, technical data, and complete physical properties of the liner and dimensions pertinent to the job.
 - 2. The Contractor shall submit a work plan to the Owner and/or Engineer for approval. The work plans shall detail the preparation steps

required for pre-installation (including methodology for point repairs), by-pass of existing flow, and the procedures and steps to be followed for the installation.

3. The Contractor shall submit to the Owner and/or Engineer for approval, the standard curing temperature/pressure/cool-down schedules prior to construction.
4. The Contractor shall submit to the Owner and/or Engineer one electronic copy of all pre-and post-CCTV inspection video images and inspection logs for review and permanent record and for acceptance of work prior to final payment.
5. The Contractor shall submit to the Owner and/or Engineer the pipe diameter, length and CIPP wall thickness for the sewer to be lined. A certificate sealed by an insured registered Professional Engineer in the State of Kansas shall be submitted stating the design meets the performance and requirements of this specification.

1.5 PACKAGING, HANDLING, SHIPPING AND STORAGE

- A) Packaging, handling, shipping and storage shall be performed in accordance with the manufacturer's instructions.
- B) On site storage locations shall be approved by the Owner.

1.6 REFERENCED DOCUMENTS

- A) This specification referenced standards from the American Society for Testing and Materials which are made a part hereof by such reference and shall be the latest edition and revision thereof. In case of conflicting requirements between this specification and these referenced documents, this specification will govern.
- B) The following standard specifications are referenced:
 1. ASTM D903 – Test Method for Peel or Stripping Strength of Adhesive Bonds.
 2. ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.

3. ASTM D5813 - Standard Specification for Cured-in-Place Thermosetting Resin Sewer Pipe
4. ASTM D790 - Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
5. ASTM D2990 – Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
6. ASTM F2561-11 – Standard Practice for Rehabilitation of Sewer Service Lateral Using a One Piece Main and Lateral Cured in Place Liner.

1.7 QUALIFICATIONS

A) Products and Installers must meet all of the following criteria:

1. Installer must have been in the CIPP business for at least two (2) years. The Installer's onsite superintendents designated for this project must have had at least five (5) years of continuous active experience in the installation of CIPP and CIPP service lateral connections, and have been employed by the installer for no less than the past twelve (12) months. Acceptable documentation of these minimum installation must be submitted to the Owner and/or Engineer.
2. Sewer rehabilitation products submitted for approval must provide third party test results supporting the structural performance (short-term and long-term) of the product and such data shall be satisfactory to Owner and/or Engineer. Test samples shall be prepared to simulate installation methods and trauma of the product. No product will be approved without verification.
3. There must be documented quality control and assurance program in place for the engineering applications, manufacturing, and installation. Upon request, the Contractor shall provide the documentation and verifying this requirement to Owner and/or Engineer. The tube and resin manufacturing and process shall operate under a quality management system which is third party certified to ISO 9001.
4. Contractor must verify that a 24-hour response time can be met in correcting emergency repairs.

1.8 CURED IN PLACE PIPE (CIPP) SERVICE LATERAL TO MAIN CONNECTION

A) Lateral connection with one-piece full wrap (FW) CIPP Liner:

1. The finished liner shall have a one-piece 360 degrees full wrap main line CIPP liner with an integral lateral connection CIPP liner that extends into the lateral a minimum of five (5) feet.
2. Full wrap rehabilitation may only be utilized when the main pipe is between 8 and 18 inches in diameter.
3. Full wrap rehabilitation shall not be used on 6-inch main pipe, or pipes 18 inches and larger.

PART 2 - PRODUCTS

2.1 GENERAL

- A) This section governs materials that may be required to complete pipe installation by trenchless pipe replacement methods as shown on the Drawings and/or as provided for in the Specifications.
- B) The CIP lateral and lateral to main connection liner repair system shall be "T-Liner" as manufactured by LMK Enterprise, Inc., or Engineer approved equal. These systems should conform to the following structural properties

PROPERTY	TEST METHOD	CURED COMPOSITE PER ASTM F1216	RESIN PROPERTIES
Flexural Modulus of Elasticity (Short-Term)	ASTM D790	250,000 psi	400,000 psi
Flexural Strength (Short-Term)	ASTM D790	4,500 psi	4,500 psi

- C) The service lateral connection repair shall include a minimum 16-inch length CIPP repair covering 360 degrees of the mainline sewer (5 inches on either side of a 6-inch lateral) with integral CIP lateral liner.
- D) The one-piece full wrap lateral connection CIP shall extend into the lateral a minimum of five (5) feet.

- E) The rehabilitation shall be accomplished using a non-woven textile tube of adequate length and thermo-setting resin with physical and chemical properties appropriate for the application.

2.2 MATERIALS

- A) The liner shall be continuous in length and consist of one or more layers of absorb textile material and meet the requirements of ASTM F1216 and ASTM D5813 Sections 6 and 8.

- B) The interior of the textile sheet shall be coated with an impermeable, translucent, flexible membrane.

- C) The mainsheet and lateral tube shall be a one-piece assembly formed in the shape of a "T" or Wye. No intermediate or encapsulated elastomeric layers shall be in the textile that may cause delamination.

- D) Gasket Seals:

1. The mainline tube shall include a compression gasket seal attached to the main liner tube at the connection or four molded hydrophilic O-rings at the mainline termination ends.
2. The compression gasket seals shall be a minimum of 2.5 mm thick and shall conform to ASTM F3240.
3. The lateral tube shall include two compression molded O-ring gaskets attached six inches from the terminating end of the lateral tube.
4. A liquid sealant, adhesives or other fluid like materials have paste like consistency will not be accepted.

- E) Grouting Material:

1. A cementitious grout shall be used for stopping very active infiltration and filling voids, and shall be mixed and applied according to the manufacturer's recommendations. The cementitious grout shall be volume stable, and have a minimum 28 day compressive strength of 250 psi and 1 day compressive strength of 50 psi.
2. A cementitious grout designed for special soil conditions, and shall be used per manufacturer's recommendations. The cementitious grout shall be volume stable, and have a minimum 28 day compressive

strength of 1,000 psi.

3. Chemical grouts may be used for stopping very active infiltration and shall be mixed and applied per manufacturer's recommendations.

F) Resin System:

1. The resin/liner system shall conform to ASTM D5813 Section 8.2.2-10,000 HR test.
2. The resin shall be corrosion resistant polyester, vinyl ester, epoxy or silicate resin and catalyst system that when properly cured within the composite liner assembly, meets the requirements of ASTM 1216.

PART 3 – EXECUTION

3.1 CLEANING OF SEWER SERVICE LATERALS AND MAIN PIPE AT CONNECTIONS

- A) The Contractor shall remove all internal debris and deposits out of the service lateral and main sewer that will interfere with the installation of liner.
- B) Cleaning shall be in accordance with NASSCO standards and the liner manufacturer's requirements.
- C) The Contractor shall dispose of all debris removed from the service laterals during the cleaning operation. Any hazardous waste material encountered during this project will be considered as a changed condition and Owner and/or Engineer must be notified before any actions are taken to remove or dispose of hazardous waste.

3.2 BYPASSING SEWAGE

- A) The Contractor shall perform bypass pumping of service laterals.

3.3 INSPECTION OF PIPELINES

- A) Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles and service connections using close circuit television (CCTV) PACP certified inspection techniques. All Pre Liner & Post Liner CCTV shall be PACP rated. The pipeline interior shall be carefully inspected to determine the location of any conditions that may prevent proper installation of CIPP. These shall be noted and corrected. The video images shall be recorded electronically on a CD and provided to Owner and/or Engineer.

3.4 LINE OBSTRUCTIONS

- A) It shall be the responsibility of the Contractor to clear the line of obstructions such as solids and roots that will prevent the insertion of CIPP. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the installation process, that was not evident on the pre-bid video and it cannot be removed by conventional sewer cleaning equipment, then the Contractor shall make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the Owner's representative prior to the commencement of the work and shall be considered as a separate pay item.

3.5 PUBLIC NOTIFICATION

- A) The existing service lateral must be taken out of service during the time of installation. The Contractor shall provide a minimum of 48-hours' notice to the property owner prior to the work and coordinate the timing for discontinuation of service.
 - 1. After hours work may be required for commercial properties.
 - 2. No service outage shall be greater than 8 hours.
- B) The public information and notification shall require Contractor to be responsible for contacting 48 hours in advance, each home or business connected to the sanitary sewer and informing them of the work to be done and when the sewer will be offline by the following:
 - 1. A. Written notice to be delivered to each home or business describing work, scheduled, how it affects them and a local telephone number of Contractor they can call to discuss the project or problems.
 - 2. Personal contact on the day of pre-installation inspection of the sewer. Each lateral shall be verified by having the homeowner run water down their drain. If the homeowner is unavailable, other arrangements shall be made to flow water through the lateral.
 - 3. Personal contact and written notice the day prior to beginning work on the section of sewer to which they are connected.

4. Personal contact with any home or business which cannot be reconnected within the time stated in the written notice.

3.6 SERVICE CONNECTIONS

- A) Restoration of sewer service shall provide a full diameter hole, free from burrs or projections and finished with a smooth, brushed, and buffed crack free edge. The hole shall match the original sewer service pipe diameter and location.
- B) Contractor shall be responsible for confirming the locations of all active branch service connections prior to installing the CIPP. The Contractor or lining installer shall apply experienced judgment and coordinate with the Owner to determine whether a service line is active. If approved by the Owner, the Contractor will dye test the approved service lines in advance of lining the segment. The Contractor shall provide a clear record of all service connections that are re-installed after lining the pipe.
- C) Contractor and subcontractor responsible for lateral re-instatement shall maintain lateral reinstatement tools locally during the duration of the main line CIPP work.

3.7 YARD PROTECTIVE MEASURES

- A) The Contractor shall provide protective measures (felt, blocks of wood, plywood, cardboard, concrete blocks, street plates, etc.) to create a barrier between the boiler/steam hoses and grass for each installation.
- B) The surface shall be restored to original or better condition.

3.8 INSTALLATION

- A) Lateral connection with one-piece full wrap CIPP liner:
 1. Unless agreed to otherwise by Owner and/or Engineer, all 6-inch service lateral connections identified to be repaired shall be fitted with a lateral CIPP full wrap when the off-set between the service lateral and sewer main is not greater than two times the wall thickness of the service lateral:
 - a. Owner and/or Engineer and Contractor shall jointly review the Contractor's CCTV to identify specific lateral service connections that cannot be repaired using a CIPP full wrap.

- b. If it is determined an open cut repair is required, such excavation shall be approved by Owner and/or Engineer prior to commencement of the work.
- 2. The lateral tube shall be sized according to the pipe diameter and condition. Changed in size shall be accommodated.
- 3. The lateral tube and mainline sheet shall be installed in accordance with the manufacturer's procedure:
 - a. The system shall be encapsulated within the translucent bladder and vacuum impregnated with resin under controlled conditions or a spatula may be used to distribute the resin.
 - b. The volume of resin used shall be sufficient to fill all voids in the textile lining material at nominal thickness and diameter.
 - c. No dry or unsaturated area in the mainline sheet or lateral tube shall be acceptable upon visual inspection.
- 4. The main bladder shall be inflated and expand the lateral tube to be inserted into the lateral pipe:
 - a. Pressure is maintained throughout the curing period.
 - b. The liner shall be cured by an approved heat source to reduce the time required for curing.
 - c. The equipment shall be capable of delivering a mixture of steam and air throughout the liner bladder assembly to uniformly raise the temperature above the temperature required to cure the resin.
 - d. The heat source temperatures shall be monitored and logged during the curing and cool down cycle.
- 5. The finished CIPP shall be continuous over the service connection and 16 inches of the main pipe:
 - a. The CIPP shall be smooth and shall be free of dry spots, lifts, and delaminated portions.
 - b. The CIPP shall taper at each end providing a smooth transition.
 - c. The finished product shall be airtight and watertight connection between the main sewer and lateral.

3.9 ACCEPTANCE

- A) Perform post-construction CCTV inspection after installation of the connection liners. Provide inspection data to Owner and/or Engineer.
- B) Liner failure is defined as blistering, cracking, embrittlement, softening and connection sealing failure.
- C) After the work is completed, the Contractor shall provide the Owner and/or Engineer with a DVD video recording showing both the before-lined and after-lined conditions, including the restored connections.

3.10 CLEAN-UP

- A) Upon acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work.

3.17 WARRANTY

- A) All liner installations shall be warranted to be free from defects in material and workmanship for a period of three (3) years from the date of project acceptance. Should a defect occur during this three (3) year period that is attributable to the liner installation or materials, then this defect shall be repaired within four (4) weeks from the date of defect notification to the Contractor at no additional cost to the Owner. However, if a liner is causing loss of flow or causing a backup the contractor will repair within 24 hours. The Contractor shall be responsible for all required repair costs associated with a liner failure during the warranty period including all costs associated with lateral backups into buildings and all other property damage.

END OF SECTION 02770

SECTION 02960 - TEMPORARY BYPASS PUMPING SYSTEMS

PART 1 GENERAL

1.1 DESCRIPTION

- A) Section includes requirements for implementing a temporary pumping system for the purpose of diverting existing sewage flow around work area for duration of the project. This work is not required and is considered an option of the Contractor.

1.2 QUALITY ASSURANCE

- A) Follow national standards and as specified herein.
- B) Maintain and inspect temporary pumping system every two hours. Responsible operator: on site when pumps are operating.
- C) Keep and maintain spare parts for pumps and piping on site, as required.
- D) Maintain adequate hoisting equipment and accessories on site for each pump.

1.3 SUBMITTALS

- A) Submit following requirements of Section 01300.
 - 1. Detailed plan and description of proposed pumping system. Indicate number, size, material, location and method of installation of suction and discharge piping, size of pipeline or conveyance system to be bypassed, staging area for pumps, site access point, and expected flow.
 - a. Size and location of manhole or access points for suction and discharge hose or piping.
 - b. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill, if buried.
 - c. Temporary pipe supports and anchoring required.
 - d. Thrust and restraint block sizes and locations.
 - e. Sewer plugging method and type of plugs.

- f. Bypass pump sizes, capacity, number of each size to be on site and power requirements.
- g. Backup pump, power and piping equipment.
- h. Calculations of static lift, friction losses, and flow velocity. Pump curves showing pump operating range.
- i. Design plans and computation for access to bypass pumping locations indicated on drawings.
- j. Calculations for selection of bypass pumping pipe size.
- k. Method of noise control for each pump and/or generator.
- l. Method of protecting discharge manholes or structures from erosion and damage.
- m. Schedule for installation and maintenance of bypass pumping lines.
- n. Procedures to monitor upstream mains for backup impacts.
- o. Procedures for setup and breakdown of pumping operations.
- p. Emergency plan detailing procedures to be followed in event of pump failures, sewer overflows, service backups, and sewage spillage.
 - (i) Maintain copy of emergency plan on site for duration of project.

B) Submit following as required in Section 01300.

- 1. Certify bypass system will meet requirements of codes, and regulatory agencies having jurisdiction by licensed engineer in the State of Kansas.

1.4 CONTRACTORS RESPONSIBILITY FOR OVERFLOWS AND SPILLS

A) Schedule and perform work in manner that does not cause or contribute to incidence of overflows, releases or spills of sewage from sanitary sewer system or bypass operation.

1.5 DELIVERY AND STORAGE

A) Transport, deliver, handle, and store pipe, fittings, pumps, ancillary equipment and materials to prevent damage and following manufacturer's recommendations.

- 1. Inspect all material and equipment for proper operation before initiating work.

B) Material found to be defective or damaged due to manufacturer or shipment.

- 1. When Engineer deems repairable: Repair as recommended by manufacturer.

2. When Engineer deems not repairable: Replace as directed by Engineer before initiating work.
3. Repair or replacement of defective or damaged material and equipment will be at no cost to Commission.

PART 2 PRODUCTS

2.1 MATERIALS

A) Discharge and Suction Pipes: Approved by Engineer.

1. Discharge piping: Determined according to flow calculations and system operating calculations.
2. Suction piping: Determined according to pump size, flow calculations, and manhole depth following manufacturer's specifications and recommendations.

B) Polyethylene Plastic Pipe:

1. High density solid wall and following ASTM F714 Polyethylene (PE) Plastic Pipe (SDR-DR) based on Outside Diameter, ASTM D1248 and ASTM D3550
2. Homogenous throughout, free of visible cracks, discoloration, pitting, varying wall thickness, holes, foreign material, blisters, or other deleterious faults.

C) High-Density Polyethylene (HDPE).

1. Homogenous throughout, free of visible cracks, discoloration, pitting, varying wall thickness, holes, foreign material, blisters, or other deleterious faults.
 - a. Defective areas of pipe: Cut out and joint fused as stated herein.
2. Assembled and joined at site using couplings, flanges or butt-fusion method to provide leak proof joint. Follow manufacturer's instructions and ASTM D 2657.
 - a. Threaded or solvent joints and connections are not permitted.
3. Fusing: By personnel certified as fusion technicians by manufacturer of HDPE pipe and/or fusing equipment.
4. Butt-fused joint: True alignment and uniform roll-back beads resulting from use of proper temperature and pressure.
 - a. Allow adequate cooling time before removal of pressure.

- b. Watertight and have tensile strength equal to that of pipe.
- c. Acceptance by Engineer before insertion.
- 5. Use in streams, storm water culverts and environmentally sensitive areas.

D) Flexible Hoses and Associated Couplings and Connectors.

- 1. Abrasion resistant.
- 2. Suitable for intended service.
- 3. Rated for external and internal loads anticipated, including test pressure.
 - a. External loading design: Incorporate anticipated traffic loadings, including traffic impact loading.
- 4. When subject to traffic loading, compose system, such as traffic ramps or covers.
 - a. Install system and maintain H-20 loading requirements while in use or as directed by the Engineer.

E) Valves and Fittings: Determined according to flow calculations, pump sizes previously determined, and system operating pressures.

F) Plugs: Selected and installed according to size of line to be plugged, pipe and manhole configurations, and based on specific site.

- 1. Additional plugs: Available in the event a plug fails. Plugs will be inspected before use for defects which may lead to failure.

G) Aluminum "irrigation type" piping or glued PVC piping will not be permitted.

H) Discharge hose will only be allowed in short sections when approved by Engineer.

2.2 EQUIPMENT

A) Pumps.

- 1. Fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in priming system.
- 2. Electric or diesel powered.
- 3. Constructed to allow dry running for long periods of time to accommodate cyclical nature of effluent flows.

B) Provide.

1. Necessary stop/start controls for each pump.
2. One standby pump of each size maintained on site.
 - a. On-line, isolated from primary system by a valve.
3. Quiet flow pumps at request of Engineer.

2.3 DESIGN REQUIREMENTS

A) Bypass pumping systems:

1. Sufficient capacity to pump peak flow.
 - a. Peak flows greater than 40 gpm as approved by Engineer.
2. Operate 24 hours per day.

B) Provide pipeline plugs and pumps of adequate size to handle peak flow, and temporary discharge piping to ensure total flow of main can be safely diverted around section to be repaired.

PART 3 EXECUTION

3.1 PREPARATION

A) Determining location of bypass pipelines.

1. Minimal disturbance to existing utilities.
 - a. Field locate existing utilities in proposed bypass area.
2. Obtain approvals for placement within public or private property.
3. Obtain Engineer's approval of location.
4. Costs associated with relocation of utilities and obtaining approvals at no cost to the Owner.

3.2 INSTALLATION AND REMOVAL

A) Provisions and requirements must be reviewed by Engineer before starting construction.

B) Remove manhole sections or make connections to existing sewer and construct temporary bypass pumping structures at access location indicated on Drawings and as required to provide adequate suction conduit.

- C) Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance of work, remove in a manner that permits the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.
- D) When working inside manhole or force main, exercise caution. Follow OSHA, Local, State and Federal requirements. Take required measures to protect workforce against sewer gases and/or combustible or oxygen-deficient atmosphere.
- E) Installation of Bypass Pipelines:
 - 1. Pipeline may be placed along shoulder of roads.
 - a. Do not place in streets or sidewalks.
 - 2. When bypass pipeline crosses local streets and private driveways, place in roadway ramps.
 - a. When roadway ramps cannot be used, place bypass in trenches and cover with temporary pavement as approved by Engineer.
- F) During bypass pumping operation, protect sewer lines from damage inflicted by equipment.
- G) Upon completion of bypass pumping operations, and after the receipt of written permission from Engineer, remove piping, restore property to pre-construction condition and restore pavement.

PART 4 MEASUREMENT AND PAYMENT

- 4.1 Except as otherwise specified herein, providing for and complying with requirements in this Section will not be measured for payment, but cost will be considered incidental to Contract.

END OF SECTION 02960

SECTION 03360 – SEWER MANHOLE REHABILITATION

PART 1 GENERAL

1.1 DESCRIPTION

- A) Section includes requirements for repair and rehabilitation of sanitary sewer manholes.

1.2 QUALITY ASSURANCE

- A) Follow national standards and as specified herein.
- B) Personnel Involved in Installation of Manhole Rehabilitation Materials: Certified by manufacturer successfully completed training in handling, applying and finishing materials used.
- C) Commercially Proven Product:
 - 1. Successfully completed over period of at least 2 years, minimum of 1,000 vertical feet of manhole rehabilitation or 100 manholes.
 - a. Document to satisfaction of the City.

1.3 REFERENCE STANDARDS

- A) American Society for Testing and Materials (ASTM)
 - 1. C78, Standard Test Method for Flexural Strength of Concrete
 - 2. C109, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
 - 3. C157, Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete
 - 4. C307, Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing
 - 5. C580, Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes
 - 6. C596, Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement
 - 7. C882, Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete By Slant Shear

8. D638, Standard Test Method for Tensile Properties of Plastics
9. D792, Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
10. D4787, Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates
11. D4833, Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products
12. F2414, Standard Practice for Sealing Sewer Manholes Using Chemical Grouting

B) Federal Specification HH-P-117 for Dry Oakum

1.4 SUBMITTALS

A) Submit following Section 01300.

1. Working drawings showing design calculations, materials selected, and manufacturer's installation requirements.
2. Catalog data showing manufacturer's clarifications and updates, ASTM references, material composition, specifications, physical and chemical properties.
3. Manufacturer's recommended procedures for handling, storing, repairing, and installing materials selected.
4. Method of construction (as appropriate):
 - a. Access manholes and site locations.
 - b. Work dimensions.
 - c. Existing utilities.
 - d. Size of working area.
 - e. Impacted portions of existing sewer.
 - f. Site access points.
 - g. Bypass pumping plan: Follow Section 02960
5. Emergency plan detailing procedures followed in event of health and safety emergency, pump failures, overspray, chemical spills, sewer overflows, service backups, and sewage spillage. Maintain copy on site for duration of project
 - a. Address dangers associated with sewer rehabilitation work (i.e. working with large boiler trucks).
 - b. Identify health and safety officer (i.e. crew chief).
 - (i) Designated health and safety officer:

1. Responsible for providing health and safety oversight of personnel participating on project team.
2. Perform and document routine work area inspections, conduct safety meetings, and provide safety orientations for team members.
3. Have the following contact information in easily accessible place;
 - a. Non-emergency number.
 - b. Contractor's health and safety representative name and number.
 - c. Occupational health clinic number(s).
- c. Submit the following;
 - (i) List of critical rehabilitation equipment, including boiler truck equipment, to be inspected on daily basis
 - (ii) Recently completed (previous month) monthly maintenance log.
 - (iii) Annual third-party certified inspection for boiler truck(s) to be used on project.
 - (iv) Certification of training for boiler truck operator.
 - (v) Noise attenuation.
6. Epoxy and cured-in-place (CIP) manhole liner products.
 - a. Infrared spectrograph chemical fingerprint and Certificate of Analysis for each lot of material:
 - (i) Lot number
 - (ii) Product name.
 - (iii) Manufacturer.
 - (iv) Brookfield Viscosity.
 - (v) Thix Index.
 - (vi) Gel time at cure temperature.
 - (vii) Peak temperature for failure.
 - (viii) Percent of non-volatile solids.
 - (ix) Specific Gravity.
 - (x) Catalyzed Stability time at optimum temperature.
 - (xi) Catalyst to resin ratio.
 - (xii) Analysis signature.
 - (xiii) Date tested.
 - (xiv) Batch ticket for each resin-catalyst-colorant batch made up and impregnated into felt liner material.
 - b. Shipping manifest:
 - (i) Date shipped.
 - (ii) Origination and delivery locations.

- (iii) Shipping method and carrier.
 - (iv) Shipping order number.
 - (v) Purchase order number.
 - (vi) Shipped item.
 - (vii) Stock number.
 - (viii) Lot number.
 - (ix) Manufacturer.
 - (x) Shipping, storage, or safety requirements.
 - (xi) Received by, and date.
 - (xii) Signature of receiver.
7. Stock sheets, order forms, delivery forms, invoices, and Hazardous Material forms for material used.
- B) Submit following Section 01300 and specified herein.
1. Certified statement from manufacturer approved installer of their system.
 - a. Include certificates of training from manufacturer for each crewmember involved in installation process.
 2. Documentation of Products and Installers: Engineer's approval required before installation of rehabilitation materials.
 - a. Descriptions of projects completed in past 2 years where proposed rehabilitation material was used.
 - (i) Include vertical feet of manhole rehabilitated. Manhole identification number, work order number, Contract number, Contractor's name, operator's contact information, and date of readings.
 3. Safety plan for steam curing of cured-in-place bag liners.
 4. For manhole process involving materials that cure in field as component of their installation.
 - a. Provide ASTM certified lab test results for field installations completed in United States over the past two years.
 - (i) In place properties for actual field installations for proposed materials.
 - (ii) Test results must verify physical properties specified herein have been achieved in previous field applications.
 5. Detailed description of field-testing processes and procedures.
 - a. Keep accurate record of work for each manhole rehabilitated under this contract.

- (i) Show manhole identification number and location, quantities of rehabilitation material used, estimate of infiltration eliminated, and results of post-rehabilitation inspection.
- b. DVD-ROM with Color video inspection reports and all digital records (original inspection videos, photographic stills, etc) made following manhole rehabilitation.
 - (i) Provide to Engineer within 10 days, following Section 02956.
- c. Curing logs: Show material curing readings per unit of time collected during material installation.
 - (i) Store electronically on data logger. Submit printed copy with Post video inspection DVD-ROM.
- d. For CIP liners, provide tabulation of time versus temperature by liner manufacturer with lengths of time exposed portions of liner will endure without self-initiated cure or other deterioration.
 - (i) Tabulate at 5 degrees F. increments, ranging from 70 degrees F. to 100 degrees F.
 - (ii) Include analysis of progressive effects of such self-initiated cure on insertion and cured properties of liner.
- e. Third party material testing report complete with samples, tests done, results and Analyst signature.
 - (i) Third party is defined as ASTM or equivalent accredited materials testing firm with no financial or directorial link to manufacturer or Contractor.

1.5 DELIVERY, STORAGE, AND HANDLING

- A) Protect, store, and handle materials during transportation and delivery, while stored on-site, and during installation following approved submittals.
 - 1. Maintain temperature less than 120 degrees F. while in storage.
 - 2. Engineer may inspect and test materials at factory, before delivery to site or while in storage.
- B) Material found to be defective or damaged due to manufacture or shipment:
 - 1. When Engineer deems repairable: Repair following manufacturer's recommendations.
 - 2. When Engineer deems not repairable: Rejected, removed from Contract site, and replaced under Engineer's direction.
 - 3. Repair or replacement of defective or damaged material will be at no additional cost to City.

PART 2 PRODUCTS

2.1 MATERIALS

- A) Acrylic or Acrylate Base Grout for non-structural infiltration control: Follow ASTM F2414 and as specified herein.
1. Two-part chemical grout mixed at point of injection.
 2. Minimum 25 percent acrylic or acrylate base material by volume.
 - a. To increase strength or offset dilution during injection period, use higher concentration of base material as directed by Engineer.
 3. Controllable reaction time: 30 seconds to 1 hour.
 4. Viscosity: 1.5 centipoises water.
 - a. May be increased maximum of 2.5 centipoises water as directed by Engineer.
 - b. Remain constant throughout injection period.
 5. Tolerates dilution and reacts in moving water.
 6. Final reaction:
 - a. Produces chemically, continuous irreversible, non-biodegradable, flexible gel, impermeable to water at pressures up to 15 psi in pure form.
 - b. Produces stabilized soil in ground that will not become brittle or rigid.
 7. Gel does not bleed water under stress.
 8. Dehydrated gel returns to 90 percent of its original volume and form after prolonged period of low ground water.
 9. Do not use catalyst containing dimethyl amino propionitrile (DMAPM).
 10. Use root inhibitor (50% active dichlobenil) when roots are present in manholes, connecting pipes or laterals.
 - a. Change dye color to confirm root inhibited grout is being injected.
 11. Use latex additive for increased tensile strength.
 12. Tinted to allow detection of grout in drill holes or at leakage locations.
 13. Approved Manufacturers.
 - a. Grout.
 - (i) Avanti International, Acrylic Gel.
 1. Additives
 - a. AV-101 Catalyst T+
 - b. AV-103 Catalyst SP
 - c. AC50W – Root Inhibitor
 - d. AC-257 Icoset
 - (ii) De Neef, Inc.,

1. AC400 Acrylate Grout
 - a. Additives
 - i. TE 300 Triethanolamine
 - ii. P200 Sodium Persulfate
 - (iii) Or Equal.

B) Urethane Base Grout for non-structural infiltration control: Follow ASTM F2414 and as specified herein.

1. Ratio: One part urethane prepolymer to 10 parts water by volume (10 to 50 percent prepolymer).
2. Liquid prepolymer:
 - a. Solids content: 77 to 83 percent.
 - b. Specific Gravity: 1.04
 - c. Flash Point: 20 degrees F.
 - d. Viscosity: 200 to 1,200 centipoises water at 70 degrees F.
3. Water for reacting prepolymer: pH of 5 to 9.
4. Use manufacturer recommended gel control agent to control cure time as required.
5. Final Reaction:
 - a. Produces chemically continuous irreversible, non-biodegradable, flexible gel, impermeable to water at pressures up to 15 psi in pure form.
 - b. Produces stabilized soil in ground that will not become brittle or rigid.
6. Dehydrated gel returns to 90 percent of its original volume and form after prolonged period of low ground water.
7. Use root inhibitor (50% active dichlobenil) when roots are present in manholes, connecting pipes, or laterals.
8. Use latex additive for increased tensile strength.
9. Tinted to allow detection of grout in drill holes or at leakage locations.
10. Approved Manufacturers.
 - a. Warren Environmental, Inc.
 - (i) SG-201 Grout.
 - b. Avanti.
 - (i) Norosac AC 50W Root Inhibitor.
 - (ii) AV-254 Gelseal.
 1. Additives
 - a. AV-257 Icoset.
 - b. AV-255G Grout Side Accelerator.
 - c. De Neef, Inc.

- (i) Hydro Active Multigel NF.
 - 1. Additives.
 - a. Flexgel Cat Water Side Accelerant.
 - b. Reinforcing Agent.
 - d. Sauereisen.
 - (i) F370, Hydroactive Polyurethane Grout.
 - e. Or Equal.
- c) Hydraulic Water Plugs for non-structural infiltration control.
 - 1. Rapid setting to plug active leaks prior to other rehabilitation work.
 - 2. Initial Set Time at 70 degrees F: 60 to 90 seconds.
 - 3. Final Set Time at 70 degrees F: One hour.
 - 4. Compressive Strength (ASTM C109) at 28 days:
 - a. Per manufacturer's recommendation.
 - b. Minimum acceptable "or equal" products: 2,000 psi.
 - 5. Length Change (ASTM C157): 0 percent.
 - 6. Approved Manufacturers.
 - a. Sauereisen.
 - (i) Instaplug F-180.
 - b. IPA Systems, Inc.
 - (i) Octoplug Plus.
 - (ii) IPANEX Rapid.
 - c. The Strong Company, Inc.
 - (i) Strong-Seal QSR (acid resistant)
 - (ii) Strong-Plug.
 - d. AP/M Permaform,
 - (i) Permacast-Plug.
 - e. Or Equal.
- D) Oil-free Oakum Water Plugs for non-structural infiltration control.
 - 1. Rapid setting oil-free oakum and hydrophilic grout to plug active water leaks prior to other rehabilitation work.
 - 2. Oil-free oakum meeting Federal Specification HH-P-117.
 - 3. Two-part urethane resin.
 - 4. Initial set time: 5 to 10 seconds.
 - a. Use accelerator to decrease initial set time.
 - 5. Approved Manufacturers.
 - a. Avanti International
 - (i) Oil-free Oakum (AV-219)

- (ii) Multigrout (AV-202)
 - b. DeNeef, Inc.
 - (i) Oil-free Oakum
 - (ii) Hydro Active Sealfoam
 - (iii) Hydro Active Flex LV grout
- 6. Or Equal.

E) Manhole Chimney Seals.

- 1. Cured in Place Chimney Liner.
 - a. Seamless tube liner formed in place within existing manhole, beginning just below cover seat extending downward maximum of 24 vertical inches.
 - (i) Structurally independent of existing manhole structure.
 - b. Resin impregnation method: On site.
 - c. Resin-Catalyst-Colorant Additive Mixture:
 - (i) Tested to certify design standards are met before impregnating felt material.
 - (ii) Quantity of resin used for tube impregnation: Sufficient to fill volume of air voids in felt tube with additional allowances for polymerization shrinkage and loss of resin through cracks and irregularities in manhole walls.
 - d. Seams in felt tube.
 - (i) Stronger than non-seamed felt.
 - (ii) Overlapped layers of felt in vertical seams that cause lumps in final product shall not be utilized
 - e. Cured Liner.
 - (i) 50-year life span.
 - (ii) Chemically resistant to internal exposure to sewage containing small quantities of hydrogen sulfide, carbon dioxide, methane, mercaptans, kerosene, moisture and diluted sulfuric acid.
 - (iii) Chemically and physically resistant to external exposure of soil bacteria, moisture, roots and chemical attack, this may be due to material in surrounding ground.
- 2. Approved Manufacturers.
 - a. Cured In Place Liner
 - (i) LMK
 - (ii) CIPMH Chimney.
 - (iii) Or equal.
- 3. See Section 2532 for Cementitious Liner.

- F) Precast Concrete Manholes: See Section 02500.
- G) Manhole Frames and Covers: See Section 02500.

PART 3 EXECUTION

3.1 MAINTENANCE OF SERVICE

- A) Maintain service usage throughout duration of project.
 - 1. Maximum time without service: 8 hours for property served by sewer.
 - a. Without service longer than 8 hours will require bypass to sanitary sewer following Section 02960 at no cost to the City.

3.2 PUBLIC NOTIFICATION PROGRAM

- A) All Contractors and sub-contractors will be required to notify property owners through door hangers and door-to-door notifications prior to performing work.
- B) Manhole Preparation: Following approved submittals for rehabilitation products used.
 - 1. Divert flow from channel.
 - 2. Prevent extraneous material from entering sewer lines during cleaning and rehab work.
 - a. Filter solids-laden water through an approved de-silting device. No material shall be allowed to go downstream.
 - 3. Clean interior surface of manhole of debris, dirt, oil, grease, remains of old coating materials, and any other extraneous materials.
 - 4. Pressure wash interior of manholes to remove loose mortar, concrete and debris.
 - 5. Repair irregularities and missing material in manhole forming smooth surface.
 - 6. Stop leakage into manhole.
- C) Chemical Grouting for Leakage Control.
 - 1. Provide 48-hour notice to Engineer prior to start of work for equipment inspection and testing.
 - a. Allow measurements to be taken.
 - b. Demonstrate acceptable grout volumetric measuring technique.
 - 2. Adjust chemical mixing ratios required for specific application.

- a. Minimum gel time 30 seconds or as directed by Engineer.
- 3. Do not block pipes entering/exiting manhole with grout.
 - a. Use mirror or camera to confirm pipes are not blocked.
- 4. Do not damage manhole structure during operations.
 - a. Repair damage as directed by Engineer.
- 5. Protect area of manhole below repair work.
 - a. Do not allow solid material to enter sewage flow.
 - b. Remove protective devices as soon as practical.
- 6. Manhole Sealing: Follow ASTM F2414 and as specified herein.
 - a. Brick manholes.
 - (i) Drill only the amount of holes necessary to stop leakage following industry standards and chemical grout manufacturer's recommendations.
 - 1. Do not use curtain of grout sealing method.
 - (ii) Proceed with manhole reconstruction using reconstruction processes specified herein.
 - b. Precast manholes.
 - (i) Seal pipe connections as specified by drilling between pipe and manhole opening and injecting grout.
 - (ii) When specified, seal precast manhole base by drilling holes at leakage points along bench to wall, and in channel.
 - (iii) At precast joints inject grout through holes drilled at leaking joint.
- 7. Hydraulic Water Plugs: Following approved submittals.
 - a. Provide mechanical key by undercutting or square cutting opening and removing loose materials.
 - b. Mix, handle, place and cure material.
 - c. Finish surface as required for other rehabilitation work.
- 8. Oil-Free Oakum Water Plugs: Following approved submittals.
 - a. Saturate oakum with resin.
 - (i) Use additives as required.
 - b. Place, pack and cure material.

3.3 MANHOLE REHABILITATION

- A) Locate Existing Manhole.
 - 1. Using available records, drawings, land surveying, GPS, metal detectors or other technology and techniques, locate, excavate and expose existing manhole.

B) Replace Cover / Frame

1. Excavation and Pavement Replacement in Paved Areas

- a. The removal of the manhole frame and cover shall be accomplished by making a square, hexagonal or circular cut in the pavement.
- b. Material in the exposed area shall be excavated toward the casting to a depth to expose the entire frame. Excavated material shall be disposed of by Contractor.
- c. Specified sub-base materials shall be tamped in place to the minimum specified density to form the sub-base for the pavement.
- d. Pavement replacement not performed to the satisfaction of the Engineer or City shall be replaced by Contractor at no additional cost to City.
- e. Contractor shall, at no additional cost to the City, replace any portion of the existing manhole which is damaged during replacement of covers and frames.
- f. The surfacing used to cover the exposed area shall conform to the existing pavement as specified in the City's Technical Specifications.
- g. At the City's option, all castings removed from the work and not reused shall remain the property of the City. Contractor shall stockpile castings at a location designated by the City. If the City elects not to retain ownership of the unused castings, the Contractor shall be responsible for their proper disposal. Disposal of other removed materials is also the Contractor's responsibility.
- h. If it is decided by the Engineer that the frame does not have to be replaced, the proper fit between replacement covers and existing frames shall be achieved by obtaining the proper size replacement covers for the respective existing frames.

2. Excavation for Replacement in Unpaved Areas

- a. No unnecessary excavation of materials from around the manhole shall be done.
- b. Backfill shall be replaced and compacted to prevent subsequent settlement during the one year maintenance period and to restore the site to a condition equal to or better than that found. Backfill shall not cover the manhole.
- c. If surface obstructions are present which prevent access to the manhole, the obstructions shall be removed and reinstalled after completion of the work. Cost for this additional work shall be the responsibility of the Contractor and included in the unit price bid.

- d. Contractor shall, at no additional cost to the City, replace any portion of the existing manhole which is damaged during replacement of covers and frames.
- 3. Removal, Replacement and Sealing of Manhole Frames
 - a. Replacement of adjustment rings, and/or brick and mortar broken during excavation shall be at Contractors expense.
 - b. The manhole frame shall be removed from the manhole and the condition of the grade adjustment rings shall be observed. Any damages shall be brought to the Engineer's attention.
 - c. All surfaces between the frame, chimney and corbel shall be free of dirt and debris. Joint sealing material shall be troweled concentrically at the inside and outside edge of the grade to frame joint. If deterioration of the grade adjustments or chimney is observed, Contractor shall notify Engineer prior to replacement of the manhole frame, and partial manhole replacement may be required.
- 4. Frame Sealing System
 - a. Only external type sealing systems will be allowed.
 - (i) The joint between the frame ring and chimney and between the frame ring and the adjustment ring shall be sealed with Wrapid Seals as supplied by Canusa, external manhole seals, as supplied by Cretex Specialty Products or approved equal. The material shall be able to withstand hydrogen sulfide and other corrosive gases found in sewers.
 - (ii) Elastomeric polyurethane resin-saturated oakum can be substituted for the bitumastic elastic material. The material shall be able to withstand hydrogen sulfide and other corrosive gases. The material shall be installed in a double row circumferentially at each joint. For the resin-saturated oakum system, the outer ring shall be saturated with a urethane base foam chemical sealing material. The inner ring shall be saturated with water and shall be placed to prevent urethane foam from entering the manhole.
- 5. Grade adjustments exceeding 12 inches, but less than 24 inches, must be braced during backfilling operations. When the required grade adjustment exceeds 24 inches, Engineer shall be notified prior to placement of new adjustment rings to determine if additional work is necessary.
- 6. In paved areas frames shall be installed to the slope and finish elevation of the paved surface. The top of the frame shall be even with or 1/8-inch

below the finished elevation. Allowances for the compression of the joint sealer material shall be made to assure a proper final grade elevation.

7. Manhole frames in non-paved areas shall be installed at not more than two (2) inches nor less than one (1) inch above the surrounding surface. Site restoration shall provide a uniform slope away from the top of the manhole frame for a distance of not less than three (3) feet in any direction.
 8. Manholes in drainage courses shall be at the elevation which existed prior to rehabilitation or as directed by Engineer.
 9. An impervious material shall be used when backfilling in unpaved areas. A clay material or a mixture of earth and bentonite may be used. In paved areas, backfill shall be in accordance with the Kansas City Metropolitan Chapter of the APWA Construction and Materials Specifications. In unpaved areas the backfill shall be one (1) inch above the bottom of the frame with topsoil being placed on top of the impervious backfill. Concrete pavement shall be replaced in accordance with the Pavement Replacement Detail for Concrete Pavement.
 10. If additional manhole frames are observed that are cracked, broken, or contain gaps in the bearing surface preventing a watertight seal, then the existing frame and cover shall be replaced at the discretion of Engineer. Compensation for this additional work shall be determined by the unit price contained in the Bidder's Tabulation.
- c) Chimney Liner
1. This specification covers requirements and test methods for the rehabilitation of manhole chimney's without excavation. The manhole chimney is accessed through the existing manhole cover. The rehabilitation is accomplished by the installation of a one piece resin impregnated stretchable liner that is cured under pressure. The liner is pressed against the existing chimney by a pressurized bladder until the thermo-set resins have cured ambiently. The liner shall start at the manhole cover seat and overlap onto the existing cone/corbel section of the manhole. The cured-in-place manhole chimney liner shall be bonded to the contours of the existing structure after work specified in Section 3.4.D (Cementitious Wall Rehabilitation) is completed, significantly increase structural integrity, eliminate inflow and infiltration, and provide a surface resistant to sewer gases.
 2. General

- a. The rehabilitation is accomplished using a stretchable coated non-woven textile tube of particular length and a silicate based thermo-set resin with physical and chemical properties appropriate for the application. The liner is impregnated (saturated) on-site with the silicate based thermo-set resin. The saturated liner is then lowered into the manhole and is temporarily held in position. The installation device is then lowered and properly positioned inside of the liner. The bladder on the installation device is then pressurized so that the liner is pressed against the existing structure. Once the resin-saturated liner is cured, the installation device is removed. The liner is then trimmed flush with the manhole cover seat.
3. Material
 - a. The liner shall be continuous in length and consist of one or more layers of a stretchable absorbent textile material. The liner is designed to prevent I&I, withstand hydrostatic pressures, bridge missing mortar or brick segments, withstand freeze/thaw cycles, and conform to the contours of the existing structure. The saturated liner shall have uniform thickness and have excess resin distribution that when compressed at installation pressures will meet or exceed the design thickness after cure.
 - b. The exposed layer of the stretchable liner shall be coated with an impermeable, translucent, flexible membrane. The liner shall be marked correlating to the address or manhole identification number, and date of installation.
 - c. The liner shall be a one piece assembly sewn in the shape of a tube at a predetermined length to seal the casting and to overlap onto the cone/corbel. The sewn seams shall be sealed using a tape compatible with the liner coating. The liner wall thickness shall be uniform throughout. The liner will be capable of conforming to offset bricks and grade rings, missing mortar gaps, and disfigured and deteriorated chimneys.
4. Resin System
 - a. The resin system shall be a corrosion resistant silicate resin and catalyst system that when properly cured within the stretchable liner, forms a tenacious bond with well prepared surfaces, withstands freeze/thaw cycles without cracking, and meets the physical properties stated herein.

Property	Test	Minimum Value
Compressive Strength	ASTM D695	1500 psi
Bond	Peel Test	Concrete Failure
Hardness	ASTM D2240	74
Freeze/Thaw Resistance	Simulated Freeze/Thaw	No cracking or bond failure

5. Design

- a. The existing structure is carrying the soil and live loads.
- b. The liner will only be subjected to hydrostatic pressure; therefore the pressure exerted on the liner will be uniform around the structure, placing the liner in compression. Therefore, the minimum liner thickness (t_{min}) shall be based on the following formula;

$$t_{min} = \frac{(.036\text{lbs/in}^3 * H * D * FS)}{2(C)}$$

H = Height of liner in inches

D = Diameter of liner in inches

FS = Factor of safety (2 is suggested)

C = Compressive strength of liner in psi

0.036 lbs/in³ unit weight of water

6. Installation

a. Safety

- (i) All precautions for safety will meet or exceed OSHA regulations. Areas of concern are traffic, PPE, confined space (if necessary), and small tool safety. MSDS sheets for the resin and first aid kit shall be kept on site.

b. Preparation

- (i) All surfaces to be lined must be stringently pressure washed with a minimum of 5000 psi @ 5 gal/min pressure washer. Other alternatives to clean the structure may be used along with pressure washing such as abrasive blasting. The existing casting shall be cleaned using a grinder or by sand blasting. Large voids and missing bricks shall be filled with hydraulic cement to provide an area that liner can press up against. Smaller voids and missing mortar may

go un-patched, since these areas will be filled with excess resin. Steps that are located in the area to be lined shall be removed.

- c. Impregnation
 - (i) The liner shall be impregnated (saturated) on-site under controlled conditions. The resins shall be premeasured at the manufacturing plant prior to shipment. The volume of resin used shall be sufficient to fill all voids in the liner material at nominal thickness and diameter. No dry or unsaturated areas in the liner shall be acceptable upon visual inspection.
- d. Installation Device
 - (i) Once liner is placed in the manhole the installation device is inserted inside the liner. Spacing rings on top of the manhole allow the installation device to rest at the correct depth. Once inserted, the installation device bladder is pressurized. The installation device stays in place and pressurized until the liner is cured.
- e. Curing
 - (i) The liner is cured at ambient temperatures as it is pressed firmly against the structure. The curing time must take into consideration the resin system, ground conditions (temperature and moisture level), and weather conditions. Typically, one hour is needed to cure the liner. A curing log shall document the cure time, pressure, resin usage, and other pertinent information.
- f. Trimming
 - (i) Once cured, the installation device is removed and the liner is trimmed at the manhole cover seat.
- 7. Completed Liner
 - a. The finished cured-in-place manhole chimney liner shall be continuous from the manhole cover dwell to six (6) inches overlap onto the cone/corbel section. The liner shall provide a smooth surface that conforms to the existing structure. The liner shall be free of dry spots and delamination. . The finished product must provide an air and watertight corrosion resistant liner protecting the manhole chimney with a minimum, uniform thickness of 6MM or 0.200 inches.

D) Cementitious Wall Rehabilitation

- 1. General
 - a. The specification shall govern all work, materials, and equipment required for the purpose of eliminating infiltration, and corrosion protection of the interior of the manhole.

- b. The area of the manhole shall be sealed with Strong-Seal® Sealant or approved equal to form an interior flexible seal between the manhole frame and the chimney.
 - c. Manhole lining under this specification shall govern all work, materials, and equipment required for the following:
 - (i) Substrate rehabilitation for the purpose of eliminating infiltration, providing corrosion protection, repair of voids, and restoration of the structural integrity of the substrate as a result of the applying a monolithic fiber-reinforced structural/structurally enhanced cementitious liner to the wall and the bench surfaces of brick, concrete, or any other masonry construction material.
 - d. Manhole lining shall be applied by an applicator who is approved and trained by the manufacturer of the lining system materials. All aspects of the installation shall be in accordance with the manufacturers recommended and per the following specification.
 - e. Manhole lining as referred to on the Drawings and specified herein shall include:
 - (i) the removal of any loose unsound materials.
 - (ii) cleaning of the area to be sprayed with high pressure water.
 - (iii) the repair and filling of voids.
 - (iv) the repair and sealing of the pipe seals, pipe invert, and benches.
 - (v) the elimination of active infiltration prior to making the application.
 - (vi) the spray application of a cementitious mix to form a structural/structurally enhanced monolithic liner.
2. Materials
- a. Patching Material
 - (i) Strong-Seal® QSR or approved equal shall be used as a patching material to provide a smooth surface on concrete, masonry, or brick structures for a uniform application of the sealant. The material is to be mixed and hand applied according to manufacturer's recommendations and shall have the following minimum requirements.

Minimum Requirements		
Compressive Strength	ASTM C579B	1400 psi, 6 hour
Bond	ASTM C321	>1000 psi, 24 hrs

Calcium Aluminate Cement		sulfate resistant
Applied Density		120 pcf $\pm$ 5 lbs
Shrinkage	ASTM C490	0% @90% R.H.

- b. Infiltration Control Material
 - (i) Infiltration control material shall be Strong-Plug® or approved equal shall be used to stop minor water infiltration and shall be mixed and applied according to manufacturer's recommendations. Infiltration control material shall have the minimum requirements specified in section 2.1d.
- c. Grouting Material
 - (i) A cementitious grout shall be used for stopping very active infiltration and filling voids, and shall be mixed and applied according to manufacturer's recommendations. The cementitious grout shall be volume stable, and have a minimum twenty-eight (28) day compressive strength of 250 psi and a one (1) day compressive strength of 50 psi. Strong-Seal "Grout 250" or Engineer approved equal
 - (ii) A cementitious grout shall be used for the same application as Grout 250, but is designed for special soil conditions, and shall be used per manufacturer's recommendations. The cementitious grout shall be volume stable, and have a minimum twenty-eight (28) day compressive strength of 1,000 psi. Strong-Seal "Grout 1000" or Engineer approved equal.
 - (iii) Chemical grouts may be used for stopping very active infiltration and shall be mixed and applied per manufacturer's recommendations.
- d. Liner Material
 - (i) Liner material shall have the minimum requirements specified in section 2.1c.
- e. Water
 - (i) Water used to mix product shall be clean and potable. A laboratory shall test questionable water in accordance per ASTM C-94 procedure. Potable water need not be tested.
- f. Other Materials

- (i) No other material shall be used with the mixes described above without prior approval or recommendation of the Engineer.
- 3. Applications
 - a. Surface Preparation
 - (i) Applicator shall inspect all surfaces specified to receive the sealant prior to application. Applicator shall notify the Engineer or City of any noticeable disparity in the surfaces, which may interfere with the proper application of the sealant.
 - (ii) Place cover over bench and invert. Plug all pipe openings and plug to prevent extraneous material from entering the sanitary sewer system.
 - (iii) Remove all form release agents, curing compounds, salts, efflorescence, laitance, and other foreign matter by pressure water spray (minimum 2,500 psi), sandblasting, shot blasting, mechanical scarification, (such as grinding) or suitable chemical means.
 - (iv) Active leaks shall be stopped using quick setting, specially formulated mix, Strong-Seal® Strong Plug® or approved equal, see section 2.1d, according to manufacturer's recommendations.
 - (v) Openings or gaps larger than 1/8 inch shall be patched using specially formulated mix Strong-Seal® QSR or approved equal according to manufacturer's recommendations.
 - (vi) Check pH of structural liner surfaces prior to application of sealant. Rinse thoroughly to achieve a final pH between 8.0 and 11.0. Allow to dry thoroughly prior to coating.
 - (vii) Surface must be clean, dry, sound and offer sufficient profile to achieve optimum adhesion.
 - (viii) All manhole steps shall be removed and the wall repaired prior to lining.
 - b. Invert, pipe seal, and bench repair
 - (i) After all preparations have been completed, remove all loose material and wash wall again.
 - (ii) Any bench, invert, pipe seal and/or service line repairs shall be made at this time using patching material and shall be used per manufacturer's recommendations.
 - (iii) Invert repair shall be performed on all inverts with visible damage or where infiltration is present, or when vacuum testing is specified. After blocking through the manhole, and thoroughly cleaning invert, the patching material shall be applied to the invert in an

expeditious manner. The material shall be troweled uniformly onto the damaged invert at a minimum thickness of 1/2 inch at the invert extending out onto the bench of the manhole sufficiently to tie into the structural/structurally enhanced monolithic liner to be applied. The finished invert surfaces shall be smooth and free of ridges. The flow may be reestablished in the manhole within thirty (30) minutes after placement of the material.

4. Existing Structures
 - a. Brick Constructed manholes
 - (i) Follow procedures in Part 2.1.C
 - (ii) Using quick set cement, profile the brick chimney down to a minimum of 8 inches below the manhole frame, to provide a smooth surface that is relatively flush with manhole ring.
 - (iii) The manhole frame shall be blasted using waterblasting, sandblasting, or mechanical scarification (grinding) to a near white finish.
5. Application
 - a. Application procedures shall conform to the manufacturers recommendations of Strong Seal® Systems including material handling, mixing, safety, spray equipment and environmental controls during application.
 - b. Applicator shall inspect all surfaces specified to receive the sealant prior to application. Applicator shall notify the Engineer or City of any noticeable disparity in the surfaces, which may interfere with the proper application of the sealant.
 - c. Spraying
 - (i) On all manholes, a double application of the liner mix shall be spray applied to a total thickness of 1/2 inch in two application.
 - (ii) The surface shall be clean and free of all foreign material and shall be damp without noticeable free water droplets or running water, but totally saturated, just prior to application. Materials shall be spray applied from the bottom of the wall to the top, to a minimum uniform thickness to insure that all cracks, crevices, and voids are filled and a relatively smooth surface remains after light troweling. The light troweling is performed to compact the material into voids and to set the bond.
6. Curing

- a. Care should be taken to minimize exposure of applied product to sunlight and air movement. At no time should the finished product be exposed to sunlight or air movement for longer than fifteen (15) minutes before covering or closing access. In extremely hot and arid climates, manhole should be shaded while application is in process. Contact manufacturer for curing compound recommendations.
 - (i) The application shall have a minimum of four (4) hours cure time before being subjected to active flow.
 - (ii) For traffic areas, calcium aluminate based products shall be used. Traffic shall be deferred for a maximum of six (6) hours.
 - 7. Weather
 - a. No application shall be made to frozen surfaces or if freezing is expected to occur within the substrate within twenty-four (24) hours after application. If ambient temperatures are in excess of 95 degrees F, precautions shall be taken to keep the mix temperature at time of application below 90 degrees F. Mix water temperature shall not exceed 85 degrees F. Chill with ice if necessary.
- E) Seal Precast Joints
- 1. General
 - a. Prior to pressure grouting of manholes, all unsealed step holes, missing pipe seals and unsealed lift holes shall be repaired. A quick-setting cement and bricks, when necessary, shall be used to fill these defects. After the setting of the hydraulic cement, the repair shall be covered with a moisture resistant two-part epoxy adhesive coating such as Aquatapoxy as manufactured by American Chemical Corp., or approved equal.
 - 2. Grout Material Utilization
 - a. Corbel and Frame
 - (i) Urethane grout shall be utilized for the upper five feet of the manhole.
 - b. Wall, Pipe Seal, Bench and Invert
 - (i) Acrylamide or urethane grout shall be utilized for the portion of the manhole below five feet as measured from the rim.
 - c. No grouting operations shall be performed at temperatures below manufacturer's recommendations or where the temperature of the groundwater is below manufacturer's recommendations.
 - 3. Corbel and Wall Grouting
 - a. Surface Preparation

- (i) Prior to pressure grouting of manhole corbel, entire surface area shall be coated with a layer of dry polymer mortar in accordance with the manufacturer's recommendations. Dry polymer mortar shall not be applied to the wall portion of the manhole unless grout migration back into the manhole is observed during the grouting operation. No drilling or pressure grouting shall be done until the dry polymer mortar has been allowed to dry for a period of 24 hours. The dry polymer mortar shall extend to a point 12 inches below the corbel to wall joint. The dry polymer mortar shall be Octocrete as manufactured by IPA Systems, Inc., or approved equal.
 - b. Corbel Drilling
 - (i) A minimum of four (4) injection holes shall be drilled at 90° angles from each other at the same plane of elevation. Additional rows shall be separated by a distance of 18 inches, and the holes shall be staggered with the holes in the rows above and below. After removal of the grouting probe, activated oakum rope shall be used to fill the injection holes. Injection holes shall be patched with a waterproof quick setting mortar.
 - c. Wall Drilling
 - (i) A minimum of four (4) injection holes shall be drilled at 90° angles from each other at the same plane of elevation. Additional rows shall be separated by a distance of 24 inches, and the holes shall be staggered with the holes in the rows above and below . After removal of the grouting probe, activated oakum rope shall be used to fill the injection holes. Injection holes shall be patched with a waterproof quick-setting mortar.
- 4. Joint Sealing
 - a. Pressure Grout
 - (i) A minimum of four (4) injection holes shall be drilled at 90° angles from each other at the same plane of elevation approximately 6" above the precast section joint. An additional row of holes shall be drilled 6" below the joint staggered by 45°. After removal of the grouting probe, activated oakum rope shall be used to fill the injection holes. Injection holes shall be patched with a waterproof, quick-setting hydraulic cement.

F) Bench and Invert Rehabilitation and Replacement

1. Rehabilitation

- a. Existing deteriorated bench and invert areas shall be removed to sound material. Care shall be taken to avoid damaging other parts of the manhole. Loose and broken brick and mortar shall be removed from the manhole to eliminate the possibility of pieces entering the sewer lines.
- b. After removal of the existing deteriorated bench and invert areas, new bench and invert shall be formed. Bonding agent shall be applied to existing surfaces in accordance with manufacturer's recommendations. Octocrete or approved equal shall be placed in such a manner that it is consolidated, fills existing voids and creates a smooth, dense, steel troweled surface. Wastewater flow shall be maintained by methods which prevent contact with new bench and invert for 6-8 hours after concrete placement. If 6-8 hours set time is not possible, a fast setting, high early strength concrete shall be used with provisions for flow control until concrete has initially set. The bench and invert shall be finished in such a manner as to have a smooth surface and form a continuous monolithic conduit with the sewer pipe entering and leaving the manhole. The bench and invert shall form a watertight seal with the manhole walls, base and pipe seal and shall be cleaned of all debris or foreign matter.
- c. Contractor shall, at no additional cost to City, replace any portion of the existing manhole which is damaged during bench and invert rehabilitation.

2. Replace

- a. Contractor shall inspect all manholes to receive a new bench and trough. If the existing trough is formed of sewer pipe laid continuously through the manhole, the procedure for the replacement shall be adjusted to ensure that the integrity of the pipe seals is maintained.
- b. The existing deteriorated bench and invert shall be completely removed. Care shall be taken to avoid damaging other parts of the manhole. Loose and broken brick and mortar shall be removed from the manhole to eliminate the possibility of pieces entering the sewer lines.
- c. After removal of the existing bench and invert, a new bench and invert shall be formed. When no specific details and dimensions are given, the changes in flow direction shall be smooth, uniform and made with the longest radius possible. Wastewater flow shall be maintained by

methods which prevent contact with new bench and invert for 6-8 hours after concrete placement. If 6-8 hours set time is not possible a fast setting, high early strength concrete shall be used with provisions for flow control until concrete has initially set. The cross-sectional shape of the invert shall be steel-troweled to produce a dense surface. The bench and invert shall be finished in such a manner as to have a smooth surface and form a continuous conduit with the sewer pipe entering and leaving the manhole. The bench and invert shall form a watertight seal with the manhole walls, base and pipe seal and shall be cleaned of all debris or foreign matter.

- d. Precast inverts shall be allowed if approved by the Engineer.
- e. The base and invert may be constructed separately. However, care shall be taken to obtain a proper bond between the two courses.
- f. Contractor shall, at no additional cost to the City, replace any portion of the existing manhole which is damaged during bench and invert replacement.

G) Pipe Seal Rehab

- 1. Injection holes shall be drilled. After removal of the grouting probe, activated oakum rope shall be used to fill the injection hole. Injection hole shall be patched with waterproof, quick setting mortar and covered with a moisture resistant two-part epoxy adhesive coating. Any pipe damaged by Contractor while drilling the injection hole shall be replaced at no expense to City.
- 2. All grouting procedures shall be as specified in Section 03360.
- 3. Contractor shall, at no additional cost to City, replace any portion of the existing manhole or pipe which is damaged during pipe sealing.
- 4. The deteriorated area of the pipe seal shall be removed to sound material. Care shall be taken to avoid damaging other parts of the manhole structure. Loose and broken brick, mortar, concrete or debris, and pipe shall be removed from the manhole.

H) Remove Steps

- 1. Steps shall be removed by breaking, saving, chipping or otherwise extracting the steps. Voids shall be filled with Octocrete as manufactured by IPA, Strong Seal QRS as manufactured by Strong Systems, Inc., or approved equal.

2. Replacement steps, if required, shall be approved by the Engineer. Contractor shall drill walls and install steps in accordance with manufacturer's specifications.
- I) Raise to Grade
1. Existing manhole casting shall be raised or lowered to meet elevations of the finished pavement. Adjustment shall be limited to a maximum change in elevation of 3 inches. Manholes shall be adjusted by the installation of approved adapter rings with set screws. The Contractor shall measure the appropriate size and depth of ring.
- J) Pavement Replacement
1. Pavement replacement shall be performed in accordance with the Kansas City Metropolitan Chapter of the APWA Construction and Materials Specifications.
- K) Sidewalk and Driveway Replacement
1. Sidewalk and driveway replacement shall be performed in accordance with City Standards and the Kansas City Metropolitan Chapter of the APWA Construction and Materials Specifications of this document.
- L) Seeding
1. All areas disturbed during rehabilitation shall be restored to condition as good or better than existing. All lawn or grassed areas shall be seeded. Payment for seeding in accordance with Section 01100. Areas disturbed by the Contractor for activities and repairs not herein specified will not be paid for directly but is subsidiary to other items of work. Seeding shall be performed in accordance with the Kansas City Metropolitan Chapter of the APWA Construction and Materials Specifications.
- M) Manhole Frame and Covers
1. Reuse of Existing Covers
 - a. Existing manhole frames and covers shall be carefully removed from the existing structure, cleaned and reused as part of applicable rehabilitation methods and as part of manhole replacement provided a new frame and cover is not required for the manhole (subject to the findings of the initial inspection).
 2. Damage to Covers

- a. Frames and covers which are to be salvaged from the existing manhole and reused shall be removed carefully from the manhole and stored in a suitable place until replaced. Covers and frames which are damaged due to improper removal and handling shall be replaced by the Contractor at no additional cost to the City.
- 3. Installation
 - a. All salvaged frames and covers shall be installed on the rehabilitated manhole according to the requirements of parts of this specification as applicable.

3.4 FIELD TESTING

- A) Follow Section 02500 and specified herein.
 - 1. Monitor, record, and report to Engineer defects or damage to materials during installation.
 - 2. Collect, label, and store representative product samples.
 - a. Submit product samples specified herein.
 - b. Additional product samples maybe required, as directed by Engineer.
 - c. Store and maintain products samples until contract maintenance bond has expired.
 - 3. Verify required testing is performed by approved laboratory.
 - 4. Engineer may inspect pre-rehabilitation work, rehabilitation operations, and post-rehabilitation work.
- B) Video Inspections of post-rehabilitation condition of manhole.
 - 1. See Section 02150 for video inspection requirements.
 - 2. Submit to Engineer within 10 days following Section 02150.
- C) Visual Inspection: Determine integrity of rehabilitation materials and water-tightness.
 - 1. Verify no inflow or infiltration.
 - 2. Verify services are reinstated and unobstructed.
- D) Defects.
 - 1. When Engineer Deems Repairable: Repair defect, replace liner, install new manhole at no additional cost to the City.
 - 2. Document with CCTV recording following Section 02150
- E) Manhole Lining: Test for continuity following ASTM D4787 and approved submittals.
 - 1. Conduct holiday test and gauge depth test on spray-on liners.
 - 2. Perform CCTV inspection of liner following Section 02150.

3. Conduct pull test with embedded bolt or tab.
4. Repair holes and discontinuities following manufacturer's recommendations.
5. At direction of the engineer, the reconstructed structure shall be tested by any of one of the following methods:
 - a. Visually verify the absence of inflow and infiltration.
 - b. Perform an exfiltration test.
 - c. For manhole 0 to 6 feet deep, if water loss is 1 inch or less in five minutes, manhole reconstruction is acceptable.
 - d. For manhole over 6 feet deep, if water loss is 1 inch plus 1/8 inch for each additional foot of depth or less in five minutes, manhole reconstruction is acceptable.
 - e. Vacuum testing per Section 2500. Vacuum testing shall not be conducted earlier than 7 days after application.

F) Grout and Concrete: Test for compressive strength following ASTM C109.

3.5 WARRANTY INSPECTIONS

- A) Conduct visual inspection prior to expiration of warranty to determine integrity of rehabilitation materials and water-tightness.
1. Complete post inspection during first high groundwater period (spring or fall) following acceptance of work.
 2. Contractor will accompany Engineer on inspections.
 3. Inspect 25 percent of manholes rehabilitated at locations selected by Engineer.
 - a. Infiltration and Inflow: None
 - b. Structural Repair: Sound
 - c. If more than one manhole fails warranty inspection, inspect all manholes with similar characteristics.
 - d. Repair defects in accordance with Warranty.

PART 4 MEASUREMENT AND PAYMENT

4.1 See Section 01100

END OF SECTION 03360

Exhibit B:
Required
Contractor
Certifications

Contractor Certifications for a HUD Assisted Construction Project

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Federal Labor Standards Provisions

4010

U.S. Department of Housing
and Urban Development HUD-

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place, where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140).

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140).

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay

another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140).

2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona

fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017).

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR Part 5.5 (a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149).

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR Part 5.5 (a)(3) and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have

been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph A.3.(ii)(b) of this section.

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph A.3.(i) of this section available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR Part 5.12.

4. Apprentices and Trainees

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated

above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeymen hourly rate specified in the application wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan

approved by the Employment and Training administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in 29 CFR 5.5 (a)(1) through (10) and such other clauses as HUD or its designee may by appropriate instruction require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract termination; debarment. A breach of the contract clauses in 29 CFR Part 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1010, Title 18, U.S.C., "Federal Housing Administration transactions," provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration . . . makes, utters or publishes any statement knowing the same to be false . . . shall be fined not more than \$5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work in excess of eight hours in any calendar day or in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is greater.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the

contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 (formerly part 1518) and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54, 83 Stat 96).

(3) The Contractor shall include the provisions of the Article in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

2. CERTIFICATION OF ELIGIBILITY UNDER THE DAVIS-BACON ACT

(Applicable to construction contracts exceeding \$2,000)

A. The contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

B. No part of the contract resulting from this solicitation shall be subcontracted to any person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

C. The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.

3. ORGANIZATIONAL CONFLICTS OF INTEREST CERTIFICATION

The contractor certifies that to the best of its knowledge and belief and except as otherwise disclosed, he or she does not have any organizational conflict of interest which is defined as a situation in which the nature of work to be performed under this proposed contract and the contractor's organizational, financial, contractual, or other interests may, without some restriction on future activities:

A. Result in an unfair competitive advantage to the contractor; or,

B. Impair the contractor's objectivity in performing the contract work.

The contractor certifies that no officer, employee or agent of the subrecipient, or its designee, no officer, employee or agent of the county who exercises any functions or responsibilities with respect to the program during his or her tenure or for one year thereafter, shall have any interest, direct or indirect, in any contract or subcontract, or the proceeds thereof, for work to be performed in connection with the program assisted under this contract. The subrecipient shall cause to be incorporated, in all such contracts or subcontracts, a provision prohibiting such interest pursuant to the purposes of this section. In the absence of any actual or apparent conflict, I hereby certify that to the best of my knowledge and belief, no actual or apparent conflict of interest exists with regard to my possible performance of this procurement.

4. CERTIFICATION OF NONSEGREGATED FACILITIES

(Applicable to contracts exceeding \$10,000)

"Segregated facilities," as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise.

A. The contractor certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The contractor agrees that a breach of this certification is a violation of the Equal Employment Opportunity clause in the contract.

B. The contractor further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) prior to entering into subcontracts which exceed \$10,000 and are not exempt from the requirements of the Equal Employment Opportunity clause, it will:

(1) Obtain identical certifications from the proposed sub-contractors;

(2) Retain the certifications in its files; and

(3) Forward the following notice to the proposed sub-contractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

Notice to Prospective Subcontractors of Requirement for Certifications of Nonsegregated Facilities

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the Equal Employment Opportunity clause of the prime contract. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually). **Note:** The penalty for making false statements is prescribed in 18 U.S.C. 1001.

5. CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS

(Applicable to contracts exceeding \$100,000)

A. The definitions and prohibitions contained in Section 1352 of title 31, United States Code, are hereby incorporated by reference in paragraph (B) of this certification.

B. The contractor hereby certifies to the best of his or her knowledge and belief as of December 23, 1989 that:

- (1)** No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of a contract resulting from this solicitation;
- (2)** If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the contractor shall complete and submit, with its bid, OMB standard form LLL, "Disclosure of Lobbying Activities;" and
- (3)** He or she will include the language of this certification in all subcontracts at any tier and require that all recipients of subcontract awards in excess of \$100,000 shall certify and disclose accordingly.

C. Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amended by this provision, shall be subject to a civil penalty of not less than \$10,000, and not more than \$100,000, for each such failure.

6. CERTIFICATIONS OF CIVIL RIGHTS AND EQUAL OPPORTUNITY LAWS

The contractor certifies that it will comply with the following Civil rights and Equal Opportunity Laws and Executive Orders.

SECTION 109 of the HOUSING and COMMUNITY DEVELOPMENT ACT of 1974 as amended.

Section 109 requires that no person in the United States shall on the grounds of race, color, national origin or sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with fund made available under Title I of the Housing and Community Development Act of 1974.

AMERICANS WITH DISABILITIES ACT OF 1990 (ADA)

Title II of the ADA prohibits discrimination against persons with disabilities in all services, programs, and activities made available by State and local governments.

CIVIL RIGHTS ACT OF 1964

Title VI of the Civil Rights Act of 1964 provides that no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

AGE DISCRIMINATION ACT OF 1975

No person in the United States shall, on the basis of age be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. 24 CFR Part 146

SECTION 504 OF THE REHABILITATION ACT OF 1973, AS AMENDED

- A.** The contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based

upon their physical or mental handicap in all employment practices such as the following: employment upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

- B. The contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.
- C. The contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the contractor is bound by the terms of Section 504 of the Rehabilitation Act of 1973, and is committed to take affirmative action to employ and advance in employment physically and mentally handicapped individuals.
- D. The contractor will include the provision of this clause in every subcontract or purchase order of \$2,500 or more unless exempted by rules, regulations, or orders of the Secretary issued pursuant to Section 504 of the Act, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Director of the Office of Federal Contract Compliance Programs may direct to enforce such provisions, including action for noncompliance.

The KANSAS ACT AGAINST DISCRIMINATION

The contractor agrees:

- A. To comply with the Kansas Act Against Discrimination (K.S.A. 44-1001 et seq.) and the Kansas Age Discrimination in Employment Act (K.S.A. 44-1111 et seq.) and the applicable provisions of the Americans With Disabilities Act (42 U.S.C. 12101 et seq.) (ADA) and to not discriminate against any person because of race, religion, color, sex, disability, national origin or ancestry, or age in the admission or access to, or treatment or employment in, its program or activities;
- B. To include in all solicitations or advertisements for employees, the phrase "equal opportunity employer";
- C. To comply with the reporting requirements set out at K.S.A. 44-1031 and K.S. A. 44-1116;
- D. To include those provisions in every subcontract or purchase order so that they are binding upon such subcontractor or vendor;
- E. That a failure to comply with the reporting requirements of (C) above or if the contractor is found guilty of any violation of such acts by the Kansas Human Rights Commission, such violation shall constitute a breach of contract and the contract may be cancelled, terminated or suspended, in whole or in part, by the city.

Parties to this contract understand that these provisions (with the exception of those provisions relating to the ADA) are not applicable to a contractor who employ's fewer than four employees during the term of such contract or whose contracts with the contracting city cumulatively total \$5,000 or less during the fiscal year of the city.

CIVIL RIGHTS ACT OF 1968, as amended by the FAIR HOUSING ACT of 1974, as amended (Relating to Housing Rehabilitation Projects)

Title VIII of the Civil Rights Act of 1968 (Fair Housing Act) prohibits discrimination in the sale, rental and financing of dwellings based on race, color, religion, sex, nation origin, disability or familial status.

EXECUTIVE ORDER 11063 (Relating to Housing Rehabilitation Projects)

This order requires all federal departments and agencies to take all action necessary and appropriate to prevent discrimination because of race, color, creed, or national origin in the sale or rental of residential property and related facilities owned or operated by the federal government or provided with federal financial assistance. The order also prohibits discrimination in lending practices insofar as such practices relate to loans insured or guaranteed by the federal government.

7. Clean Air and Water Certification (Applicable to contracts exceeding \$100,000)

The contractor certifies that:

- A. Any facility to be used in the performance of this contract **is not** listed on the Environmental Protection Agency List of Violating Facilities:
- B. The contractor will immediately notify the city's Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the Environmental Protection Agency,

indicating that any facility that the contractor proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and,
C. The contractor will include a certification substantially the same as this certification, including this paragraph C., in every nonexempt subcontract.

**8. Section 3 of the Housing and Urban Development Act of 1968
Employment, Training, and Contracting Opportunities for Low-Income Persons.**

The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

- A.** The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3).
- B.** The parties to this contract agree to comply with HUDs regulations in 24 CFR part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.
- C.** The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers representative of the contractors commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.
- D.** The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.
- E.** The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractors obligations under 24 CFR part 135.
- F.** Noncompliance with HUDs regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

9. Subcontracting with Small and Minority Firms, Women's Business Enterprise, and Labor Surplus Area Firms

The Contractor shall take the following steps to ensure that, whenever possible, subcontracts are awarded to small business firms, minority firms, women's business enterprises, and labor surplus area firms:

- A.** Placing qualified small and minority businesses and women's business enterprises on solicitation lists.
- B.** Ensuring that small and minority businesses and women's business enterprises are solicited whenever they are potential sources.
- C.** Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises.

- D. Establishing delivery schedules, where the requirements of the contract permit, which encourage participation by small and minority businesses and women's business enterprises; and
- E. Using the services and assistance of the U.S. Small Business Administration, the Minority Business Development Agency of the U.S. Department of Commerce, and State and local governmental small business agencies.

10. SMALL, MINORITY, WOMEN-OWNED BUSINESS CONCERN REPRESENTATION

The contractor represents and certifies as part of its bid that it –

A. ☐ is, ☐ is not a small business concern.

"Small business concern," as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding, and qualified as a small business under the criteria and size standards in 13 CFR 121.

B. ☐ is, ☐ is not a women-owned business enterprise.

"Women-owned business enterprise," as used in this provision, means a business that is at least 51 percent owned by a woman or women who are U.S. citizens and who also control and operate the business.

C. ☐ is, ☐ is not a minority business enterprise.

"Minority business enterprise," as used in this provision, means a business which is at least 51 percent owned or controlled by one or more minority group members or, in the case of a publicly owned business, at least 51 percent of its voting stock is owned by one or more minority group members, and whose management and daily operations are controlled by one or more such individuals. For the purpose of this definition, minority group members are:

(Check the block applicable to you)

- | | |
|---|---|
| ☐ Black Americans | ☐ Asian Pacific Americans |
| ☐ Hispanic Americans | ☐ Asian Indian Americans |
| ☐ Native Americans | ☐ Hasidic Jewish Americans |

11. Contractor's Signature

The contractor hereby certifies that the information contained in these certifications and representations is accurate, complete, and current.

(Signature and Date)

(Typed or Printed Name)

(Title)

(Company Name) Fed. I. D. #: _____

(Company Address)

Exhibit C:
Prevailing
Wage
Information

"General Decision Number: KS20210026 08/06/2021

Superseded General Decision Number: KS20200026

State: Kansas

Construction Type: Heavy

County: Johnson County in Kansas.

HEAVY CONSTRUCTION PROJECTS (including sewer/water construction).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021
1	04/09/2021
2	04/23/2021
3	06/25/2021
4	07/09/2021
5	08/06/2021

ELEC0124-009 09/28/2020

	Rates	Fringes
ELECTRICIAN.....	\$ 41.79	23.67

ENGI0101-014 04/01/2020		

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
(1) Loader.....	\$ 37.02	19.89

IRON0010-016 04/01/2021

	Rates	Fringes
IRONWORKER (REINFORCING AND STRUCTURAL)	\$ 34.50	31.99

LAB01290-004 04/01/2021

	Rates	Fringes
LABORER		
Asphalt, Includes Raker, Shoveler, Spreader and Distributor.....	\$ 31.83	16.68
Form Work Only.....	\$ 33.04	16.68

PAIN2012-006 05/01/2012

	Rates	Fringes
PAINTER (Spray Only).....	\$ 22.93	11.51

PLAS0518-008 04/01/2021

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 33.67	18.30

PLUM0008-019 06/01/2021

	Rates	Fringes
PLUMBER.....	\$ 49.43	23.29

* TEAM0541-009 04/01/2021

	Rates	Fringes
TRUCK DRIVER		
(1) Lowboy Truck.....	\$ 33.14	16.75

SUKS2014-011 07/09/2014

	Rates	Fringes
CARPENTER.....	\$ 33.70	14.26

LABORER: Common or General.....	\$ 26.05	13.19
OPERATOR:		
Backhoe/Excavator/Trackhoe.....	\$ 32.06	14.10
OPERATOR: Crane.....	\$ 37.05	13.71
TRUCK DRIVER: Dump Truck.....	\$ 30.41	13.13

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed

in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor

200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"