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</table>
LAND ACQUISITION

All permanent easements, land purchases, city/county/state right of ways, Department of Transportation, Corps of Engineers and railroad permits and any other land access agreements must be obtained and recorded (if applicable) with the appropriate agencies prior to ECD approval of plans and specifications.

Please check the following boxes and sign below:

[ ] [ ] [ ] Yes  No  N/A

[ ] [ ] [ ] All permanent easements necessary for the construction of this project have been acquired and recorded with the appropriate agency.

[ ] [ ] [ ] All land acquisition necessary for the construction of this project has been acquired and recorded with the appropriate agency.

[ ] [ ] [ ] All right-of-ways, permits, and land access agreements necessary for the construction of this project have been acquired and recorded with the appropriate agency(s).

OR

[ ] [ ] [ ] The construction of this project requires no acquisition of land, permanent easements, right-of-ways, permits or land access agreements.

Signature of grantee, engineer/architect, or project administrator: ____________________________ Date: 08-03-20

This form must be sent to ECD before we can approve plans and specifications.
ADVERTISEMENT FOR BIDS

City of Gleason
City Hall
P.O. Box 720
101 College Street
Gleason, TN 38229

Separate sealed bids for Sanitary Sewer System Rehabilitation, 2019 Community Development Block Grant for City of Gleason, Tennessee will be received by the Board of Mayor and Aldermen at the office of City Hall, PO Box 720, 101 College Street, Gleason, Tennessee 38229 until 2:00 o’clock P.M. (Local Time), September 3, 2020, and then at said office publicly opened and read aloud.

The information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, and Forms of Bid Bond, Performance and Payment Bond, and other contract documents may be examined at the following:

City of Gleason, 101 College Street, Gleason, Tennessee 38229

King Engineering Consultants, Inc., 3355 Poplar Ave., Suite 200, Memphis, Tennessee 38111

Copies may be obtained at the office of King Engineering Consultants, Inc. located at 3355 Poplar Avenue, Suite 200, Memphis, Tennessee upon payment of $200.00 for each set. Any unsuccessful bidder, upon returning each set promptly and in good condition, will be refunded his payment, and any non-bidder such as suppliers and subcontractors upon so returning such a set will be refunded $100.00.

The Owner reserves the right to waive any informalities or to reject any or all bids.

Each bidder must deposit with his bid, security in the amount, form and subject to the conditions provided in the Information for Bidders.

All bidders must be licensed General Contractors as required by the Contractor’s Licensing Act of 1994 of the General Assembly of the State of Tennessee, and qualified for the type of construction being bid upon.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract, Section 3, Segregated Facility, Section 109 and E.O. 11246.

No bidder may withdraw his bid within 60 days after the actual date of the opening thereof.

Published August 18, 2020
Mayor Diane Poole
INFORMATION FOR BIDDERS

1. Receipt and Opening of Bids

The City of Gleason (herein called the “Owner”), invites bids on the form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at the office of City Hall, PO Box 720, 101 College Street, Gleason, Tennessee 38229 until 2:00 o’clock P.M., local time, September 3, 2020, and then at said office publicly opened and read aloud. The envelopes containing the bids must be sealed, addressed to City of Gleason at City Hall, P.O. Box 720, Gleason, Tennessee 38229 and designated as bid for Sanitary Sewer System Rehabilitation.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 60 days after the actual date of the opening thereof.

2. Preparation of Bid:

Each bid must be submitted on the prescribed form and accompanied by Certification of Bidder Regarding Equal Employment Opportunity, Certification of Bidder Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion, Certification of Bidder Regarding Section 3 and Segregated Facilities, and Drug-Free Workplace Affidavit. All blank spaces for bid prices must be filled in, in ink or typewritten, in both words and figures, and the foregoing Certifications must be fully completed and executed when submitted.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, his/her address, the name of the project for which the bid is submitted, license number, expiration date thereof, and license classification of the contractors applying to bid for the prime contract, and for the electrical, plumbing, heating, ventilation, and air conditioning contracts, and all other information required by State law.

All bidders must be licensed General Contractors as required by the Contractor’s Licensing Act of 1994 of the General Assembly of the State of Tennessee, and qualified for the type of construction being bid upon. Each bidder shall write on the outside of the envelope containing its bid: 1) its Contractor’s license number; 2) that part of the classification applying to the bid. If this is not done, the bid will not be opened.
3. **Subcontracts:**

The bidder is specifically advised that any person, for, or other party to whom it is proposed to award a subcontract under this contract:

a. Must be acceptable to the owner; and

b. Must submit Certification by Proposed Subcontractor Regarding Equal Employment Opportunity, and Certification of Proposed Subcontractor Regarding Section 3 and Segregated Facilities. Approval of the proposed subcontract award cannot be given by the owner unless and until the proposed subcontractor has submitted the Certifications and/or other evidence showing that it has fully complied with any reporting requirements to which it is or was subject.

Although the bidder is not required to attach such Certifications by proposed subcontractors to his/her bid, the bidder is here advised of this requirement so that appropriate action can be taken to prevent subsequent delay in subcontract awards.

4. **Telegraphic Modification:**

Any bidder may modify his/her bid by telegraphic communication at any time prior to the scheduled closing time for receipt of bids provided such telegraphic communication is received by the Owner prior to the closing time, and, provided further, the Owner is satisfied that a written confirmation of the telegraphic modification over the signature of the bidder was mailed prior to the closing time. The telegraphic communication should not reveal the bid price but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed bid is opened. If written confirmation is not received within two days from the closing time, no consideration will be given to the telegraphic modification.

5. **Method of Bidding:**

The Owner invites the following bid(s):

| Unit Price |

6. **Qualification of Bidder:**

The Owner may make such investigations as s/he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.
7. **Bid Security:**

Each bid must be accompanied by cash, certified check of the bidder, or a bid bond prepared on the form of bid bond attached thereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner, in the amount of 5% of the bid. Such cash, checks or bid bonds will be returned to all except the three lowest bidders within three days after the opening of bids, and the remaining cash, checks or bid bonds will be returned promptly after the Owner and the accepted bidder have executed the contract, or, if no award has been made within 60 days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as he/she has not been notified of the acceptance of his/her bid.

8. **Liquidated Damages for Failure to Enter into Contract:**

The successful bidder, upon his/her failure to refusal to execute and deliver the contract and bonds required within 10 days after she/he has received notice of the acceptance of his/her bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his/her bid.

9. **Time of Completion and Liquidated Damages:**

Bidder must agree to commence work on or before a date to be specified in a written “Notice to Proceed” of the Owner and to fully complete the project within 120 consecutive calendar days thereafter. Bidder must agree also to pay as liquidated damages, the sum of $275.00 for each consecutive calendar day thereafter as hereinafter provided in the Supplemental General Conditions.

10. **Condition of Work:**

Each bidder must inform him/herself fully of the conditions relating to the construction of the project and the employment of labor thereof. Failure to do so will not relieve a successful bidder of his/her obligation to furnish all material and labor necessary to carry out the provisions of his/her contract. Insofar as possible, the contractor, in carrying out the work, must employ such methods as will not cause any interruption of or interference with the work of any other contractor.

11. **Addenda and Interpretations:**

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

Every request for such interpretation should be in writing addressed to King Engineering Consultants, Inc. at 3355 Poplar Avenue, Suite 200, Memphis, TN 38111 and to be given consideration must be received at least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed by certified
mail with return receipt requested or emailed to all prospective bidders (at the respective addresses furnished for such purposes), not later than two days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his/her bid as submitted. All addenda so issued shall become part of the contract documents.

12. **Security for Faithful Performance:**

Simultaneously with his/her delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner.

13. **Power of Attorney:**

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

14. **Notice of Special Conditions:**

Attention is particularly called to those parts of the contract documents and specifications which deal with the following:

a. Inspection and testing of materials.

b. Insurance requirements.

c. Wage rates.

d. Stated allowances.

15. **Laws and Regulations:**

The bidder’s attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

16. **Method of Award - Lowest Qualified Bidder:**

After receiving bids and determining the amount of funds estimated by the Owner as available to finance the contract, the Owner will award the contract to the lowest responsible bidder. The lowest responsible bidder will be determined upon the basis of the lowest base bid or lowest base bid combined with alternates (additive or deductive). If the contract is to be awarded based on the lowest base bid with alternates, alternates will be accepted in the numerical order in which they are listed in the Form of Bid.
17. **Obligation of Bidder:**

At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect of his/her bid.

18. **Safety Standards and Accident Prevention:** With respect to all work performed under this contract, the Contractor shall:

   a. Comply with the safety standards provisions of applicable laws, building and construction codes and the “Manual of Accident Prevention in Construction” published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1518 as published in the “Federal Register”, Volume 36, No. 75, Saturday, April 17, 1971.

   b. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.

   c. Maintain at his/her office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor’s care of persons (including employees), who may be injured on the job site. In no case shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor’s care.

19. **Procedure for Substitute Material/Equipment**

Throughout the specifications, a brand name is used. (See Section 6.7 of General Conditions). If the bidder wishes to substitute material/equipment as an equal, he shall submit supporting documentation to the engineer for review and approval a minimum of 8 days before the date of receipt of bids. The Engineer shall then review the documentation and render a decision 4 days prior to receipt of bids. In all cases, the Engineer’s decision is final.
BID FOR UNIT PRICE CONTRACTS

Place  Gleason, Tennessee

Date  ___________________________ 20__

Proposal of ______________________________ (hereinafter called "Bidder")\(^1\) a
corporation, organized and existing under the laws of the State of ____________________,
partnership, or an individual doing business as ________________________________.

To the City of Gleason (hereinafter called "Owner")

Gentlemen:

The Bidder, in compliance with your invitation for bids for the construction of Sanitary Sewer
System Rehabilitation, having examined the plans and specifications with related documents and
the site of the proposed work, and being familiar with all of the conditions surrounding the
construction of the proposed project including the availability of materials and labor, hereby
proposes to furnish all labor, materials, and supplies; and to construct the project in accordance
with the contract documents, within the time set forth therein, and at the prices stated below.
These prices are to cover all expenses incurred in performing the work required under the
contract documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in
written “Notice to Proceed” of the Owner and to fully complete the project within 100
consecutive calendar days thereafter as stipulated in the specifications. Bidder further agrees to
pay as liquidated damages the sum of $ 275.00 for each consecutive calendar day thereafter as
hereinafter provided in Paragraph 3.c. of the Supplemental General Conditions.

Bidder acknowledges receipt of the following addendum:

\[^1\] Insert corporation, partnership or individual as applicable.
NOTE: Bids shall include sales tax and all other applicable taxes and fees.

SANITARY SEWER SYSTEM REHABILITATION
2019 COMMUNITY DEVELOPMENT BLOCK GRANT
GLEASON, TENNESSEE

Bidder agrees to perform all the work as described in the Specifications and as shown on the plans for the following unit prices:

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>QTY</th>
<th>PRICE</th>
<th>AMOUNT</th>
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<tr>
<td><strong>BASE BID</strong></td>
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<td><strong>SECTION A - MANHOLES</strong></td>
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<td>1.</td>
<td>Manhole Wall Restoration:</td>
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<td></td>
<td>a) Mobilization</td>
<td>LS</td>
<td>1</td>
<td></td>
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<td></td>
<td>b) Depth (11-Foot Manholes)</td>
<td>VF</td>
<td>84.8</td>
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<td></td>
<td>c) Ring Sealer (if needed)</td>
<td>EA</td>
<td>8</td>
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<td>2.</td>
<td>New Rim and Cover - Manhole 3-3</td>
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<td>3.</td>
<td>New Manhole, Rim and Cover</td>
<td>EA</td>
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<td>Manhole 4-21, 6-Feet Deep</td>
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<td>1.</td>
<td>Mobilization</td>
<td>LS</td>
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<td>2.</td>
<td>Segment 4-20 to 4-21 (Detail A)</td>
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<td>East Grove Road:</td>
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<tr>
<td></td>
<td>a) Excavation and Backfilling of Main (0' - 6' Deep)</td>
<td>LS</td>
<td>1</td>
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<td></td>
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<tr>
<td></td>
<td>b) Point Repair (3-Foot Maximum)</td>
<td>EA</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
<td>c) Sanitary Sewer Replaced</td>
<td>LF</td>
<td>5</td>
<td></td>
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<td></td>
<td>d) Flexible Connectors</td>
<td>EA</td>
<td>2</td>
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<td>3.</td>
<td>Segment 4-19 to 4-20 (Detail B)</td>
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<td>East Grove Road:</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>a) Excavation and Backfilling of Main (0' - 6' Deep)</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Point Repair (3-Foot Maximum)</td>
<td>EA</td>
<td>1</td>
<td></td>
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</tbody>
</table>

BID-2
ITEM NO. | DESCRIPTION | UNIT | QTY | UNIT PRICE | AMOUNT
---|---|---|---|---|---
c) Sanitary Sewer Replaced | LF | 5 | | | 
d) Flexible Connectors | EA | 2 | | | 
4. Segment 1-17 to 4-27 (Detail C)
Cedar Street:
  a) Excavation and Backfilling of Main (6' - 8' Deep) | LS | 1 | | | 
b) Point Repair (3-Foot Maximum) | EA | 1 | | | 
c) Sanitary Sewer Replaced | LF | 5 | | | 
d) Flexible Connectors | EA | 2 | | | 
5. Segment 1-33 to 1-32 (Detail D)
West Main Street:
  a) Excavation and Backfilling of Main (6' - 8' Deep) | LS | 1 | | | 
b) Point Repair (3-Foot Maximum) | EA | 1 | | | 
c) Sanitary Sewer Replaced | LF | 5 | | | 
d) Flexible Connectors | EA | 2 | | | 
SUBTOTAL SECTION B | | | | | |
SECTION C - SEWER PIPE REPLACEMENT
1. Segment 1-41 to 2-21 (Detail E)
  a) Remove Old 8-Inch Sewer Main and Replace with 8-Inch SDR 21. No Bedding Required. (6-Foot Deep Maximum) | FT | 20 | | | 
b) Flexible Connectors | EA | 2 | | | 
SUBTOTAL SECTION C | | | | | |
SECTION D - POINT REPAIR - 4-INCH SERVICE LINE ON PUBLIC PROPERTY
1. Segment 4-19 to 4-20 (Detail B)
East Grove Road:
  a) Excavation and Backfilling including Street Repair (0' - 6' Deep) | LS | 1 | | | 

BID-3
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>QTY</th>
<th>PRICE</th>
<th>AMOUNT</th>
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<tbody>
<tr>
<td>b)</td>
<td>Point Repair (3-Foot Maximum)</td>
<td>EA</td>
<td>1</td>
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<tr>
<td>c)</td>
<td>4-Inch Service Line Replaced</td>
<td>LF</td>
<td>4</td>
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<td>d)</td>
<td>Flexible Connectors</td>
<td>EA</td>
<td>2</td>
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**SUBTOTAL SECTION D**

**SECTION E - CURED-IN-PLACE PIPE NOT ASSOCIATED WITH CULVERT OR INLET**

1. Mobilization
   - LS 1

2. Pre-Cleaning and CCTV:
   a) 8-Inch Segment 4-28 to 4-3
   - LF 1,060
   b) 10-Inch Segment 3-10 to 3-9
   - LF 260
   c) 8-Inch Segment 4-6 to 4-12
   - LF 350

3. CIPP and Post CCTV:
   a) 8-Inch Segment 4-28 to 4-3
   - LF 1,060
   b) 10-Inch Segment 3-10 to 3-9
   - LF 260
   c) 8-Inch Segment 4-6 to 4-12
   - LF 350

**SUBTOTAL SECTION E**

**SECTION F - CURED-IN-PLACE 8-INCH PIPE ASSOCIATED WITH CULVERT OR INLET**

1. Pre-Cleaning and CCTV:
   a) Segment 1-73 to 1-86
   - LF 300
   b) Segment 1-52 to 1-51
   - LF 300
   c) Segment 1-32 to 1-31
   - LF 160
   d) Segment 1-29 to 1-28
   - LF 340
   e) Segment 1-28 to 1-27
   - LF 255
   f) Segment 1-22 to 4-28
   - LF 180
   g) Segment 4-28 to 4-29
   - LF 170

BID-4
h) Segment 1-47 to 4-30

2. CIPP and Post CCTV for 8-Inch Pipe:
   a) Segment 1-73 to 1-86
   b) Segment 1-52 to 1-51
   c) Segment 1-32 to 1-31
   d) Segment 1-29 to 1-28
   e) Segment 1-28 to 1-27
   f) Segment 1-22 to 4-28
   g) Segment 4-28 to 4-29
   h) Segment 1-47 to 4-30

SUBTOTAL SECTION F

TOTAL BASE BID - SECTIONS A, B, C, D, E, & F

IMPORTANT NOTE REGARDING DEDUCTIVE ALTERNATES
All unit prices in deductive alternatives shall be the same as those in the base bid except for lump sum items. If bidder uses different unit prices in the deductive alternatives, unit prices will be changed to those shown on the base bid in order to determine actual bid.

DEDUCTIVE ALTERNATE NO. ONE

SECTION E - CURED-IN-PLACE PIPE
NOT ASSOCIATED WITH CULVERT OR INLET

1. Pre-Cleaning and CCTV:
   8-Inch Segment 4-28 to 4-3
   LF 1,060

2. CIPP and Post CCTV:
   8-Inch Segment 4-28 to 4-3
   LF 1,060

TOTAL DEDUCTIVE ALTERNATE NO. ONE

BASE BID LESS DEDUCTIVE ALTERNATE NO. ONE
(Amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc. to cover the finished work of the several kinds called for.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of 60 days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, bidder will execute the formal contract attached within 10 days and deliver a Surety Bond or Bonds as required by Article 5 of the General Conditions. The bid security attached in the sum of_____________________________ ($________________) is to become the property of the Owner in the event the contract and bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

Respectfully submitted:

By: ____________________________

(Signature)

______________________________

(Title)

______________________________

(Business Address and Zip Code)

(SEAL - if bid is by a corporation)
DETERMINATION OF METHODS OF PAYMENT
SANITARY SEWER SYSTEM REHABILITATION
2019 COMMUNITY DEVELOPMENT BLOCK GRANT
GLEASON, TENNESSEE

SECTION A - MANHOLES

1. Manhole Wall Restoration:
   a) Mobilization - Paid for on a lump sum basis.
   b) Depth - Paid for per vertical foot of manhole rehabilitated.
   c) Ring Sealer (if needed) - Paid for per each installed.

2. New Rim and Cover - Paid for per each installed.

3. New Manhole, Rim and Cover - Standard manhole is considered to be 0-feet to 6-feet deep. Manholes shall be paid for each unit installed.

SECTION B - POINT REPAIR – 8-INCH MAIN

1. Mobilization - Paid on a lump sum basis.

2.-5. Segments:
   a) Excavation and Backfilling of 8-Inch Main including Street Repair - Paid for on a lump sum basis for each excavation (including backfill for point repair but not repair of sewer main). Extra length of excavation shall be included in the price bid per foot of pipe below.
   b) Point Repair (3-Foot Maximum) - Excavation and backfill shall be paid for under Excavation and Backfilling of 8-Inch Main including Street Repair. Point repair including 3-feet of pipe shall be paid for at the unit price bid for each. Extra length over 3-feet including additional excavation, pipe, and backfill shall be paid for under Sanitary Sewer Replaced. Flexible connectors shall be paid for under Flexible Connectors.
   c) Sanitary Sewer Replaced - Initial excavation, backfill and 3-foot replaced shall be included in other items bid above. Extra length over 3-feet including additional excavation, pipe and backfill shall be paid for at the unit price bid per linear foot. Any street repair shall be paid by change order.
   d) Flexible Connectors - Paid for at the unit price bid for furnishing and installing.
SECTION C - SEWER PIPE REPLACED

1. **Removal and Replacement** - Paid for per linear foot. Old pipe to be properly disposed of. Compact backfill.

2. **Flexible Connectors** - Paid for at the unit price bid for furnishing and installing.

SECTION D - POINT REPAIR - 4-INCH SERVICE LINE ON PUBLIC PROPERTY

1. **Excavation and Backfilling including Street Repair** - Paid for on a lump sum basis for each excavation (including backfill for point repair but not repair of service line). Extra length of excavation shall be included in the price bid per foot of pipe below.

2. **Point Repair (3-Foot Maximum)** - Excavation and backfill shall be paid for under Excavation and Backfilling including Street Repair. Point repair including 3-feet of pipe shall be paid for at the unit price bid for each. Extra length over 3-feet including additional excavation, pipe, and backfill shall be paid for under 4-Inch Service Line Replaced. Flexible connectors shall be paid for under Flexible Connectors.

3. **4-Inch Service Line Replaced** - Paid for at the unit price bid per linear foot for furnishing and installing. Any street repair shall be paid by change order.

4. **Flexible Connectors** - Paid for at the unit price bid for furnishing and installing.

SECTION E AND F - CURED-IN-PLACE PIPE

1. **Mobilization** - Paid on a lump sum basis.

2. **Pre-Cleaning and CCTV** - Paid for on a linear foot basis on length of pipe viewed.

3. **CIPP and Post CCTV** - Paid for on a linear foot basis of center of manhole to center of manhole.
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, __________________________
__________________________________________________________
as Principal, and __________________________
as Surety, are hereby held and firmly bound unto __________________________
as owner in the penal sum of __________________________ for the
payment of which, well and truly to be made, we hereby jointly and severally bind
ourselves, our heirs, executors, administrators, successors and assigns.

Signed, this ______ day of __________________________, 20____.

The condition of the above obligation is such that whereas the Principal has submitted to
__________________________________________________________ a certain Bid, attached hereto
and hereby made a part hereof to enter into a contract in writing for the

__________________________________________________________

NOW, THEREFORE,

(a) If said Bid shall be rejected, or in the alternate.

(b) If said Bid shall be accepted and the Principal shall execute and
deliver a contract in the Form of Contract attached hereto (properly
completed in accordance with said Bid) and shall furnish a bond for
his faithful performance of said contract, and for the payment of all
persons performing labor or furnishing materials in connection
therewith, and shall in all other respects perform the agreement
created by the acceptance of said Bid, then this obligation shall be
void, otherwise the same shall remain in force and effect, it being
expressly understood and agreed that the liability of the Surety for any
and all claims hereunder shall, in no event, exceed the penal amount
of this obligation as herein stated.

The surety for value received, hereby stipulates and agrees that the obligations of said
Surety and its bond shall be in no way impaired or affected by an extension of the time
within which the Owner may accept such Bid; and said Surety does hereby waive notice
of any such extension.
IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_________________________ (L.S.)
Principal

_________________________
Surety
By: _______________________

SEAL
CERTIFICATION OF BIDDER REGARDING
DEBARMENT, SUSPENSION, INELIGIBILITY AND
VOLUNTARY EXCLUSION

INSTRUCTIONS

This certification is required pursuant to 24.CFR Section 24.510(b). It shall be completed, signed and submitted as part of the bid proposal.

1. By signing and submitting this proposal, the prospective lower-tier participant certifies that neither it, its principals nor affiliates, is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. Further, the Participant provides the certification set out below:

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that an erroneous certification was rendered, in addition to other remedies available to the Federal Government, the Department or agency with which this transaction originated may pursue available remedies.

3. Further, the Participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the Participant learns that this certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

4. By submitting this proposal, it is agreed that should the proposed covered transaction be entered into, the Participant will not knowingly enter into any lower-tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction unless authorized by the agency with which this transaction originated.

5. It is further agreed that by submitting this proposal, the Participant will include this Certification, without modification, in all lower-tier covered transactions and in all solicitations for lower-tier covered transactions.

Contractor Name and Title ___________________________ Date ___________________

Signature ___________________________________ Address __________________________

City __________________________ State __________ Zip __________

NON-CERTIFICATION:

As the prospective lower-tier participant, I am unable to certify to statements in this Certification as explained in the attachment to this proposal.

Contractor Name and Title ___________________________ Date ___________________

Signature ___________________________________ Address __________________________

City __________________________ State __________ Zip __________

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

This form must be submitted to the State with the bid tabulations.

CERTIFICATION OF BIDDER REGARDING EQUAL EMPLOYMENT OPPORTUNITY

INSTRUCTIONS

This certification is required pursuant to Executive Order 11246 (30 F. R. 12319-25). The implementing rules and regulations provide that any bidder or prospective contractor, or any of their proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and, if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the bidder has not filed a compliance report due under applicable instructions, such bidder shall be required to submit a compliance report within seven calendar days after bid opening. No contract shall be awarded unless such report is submitted.

CERTIFICATION BY BIDDER

Name and Address of Bidder (include Zip Code):

<p>| | | |</p>
<table>
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<tr>
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</tbody>
</table>

1. Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause.
   - Yes
   - No

2. Compliance reports were required to be filed in connection with such contract or subcontract.
   - Yes
   - No

3. Bidder has filed all compliance reports due under applicable instructions, including SF-100.
   - Yes
   - No
   - None Required

4. Have you ever been or are you being considered for sanction due to violation of Executive Order 11246, as amended?
   - Yes
   - No

NAME AND TITLE OF SIGNER (Please type)

SIGNATURE    DATE
# CERTIFICATION OF BIDDER REGARDING USE OF FEMALE/MINORITY SUBCONTRACTORS

## INSTRUCTIONS

This certification is required for the contractor to demonstrate that when subcontractors are to be used on this project, an attempt will be made to utilize female/minority owned firms.

Documentation must be on file to show who has been contacted.

## CERTIFICATION BY BIDDER

Name and Address of Bidder (include Zip Code):

I, ____________________________, certify that every attempt was made to utilize female/minority contractors on this project.

______________________________
Name and Title of Signer

Signature Date
CERTIFICATION OF BIDDER REGARDING SECTION 3 AND SEGREGATED FACILITIES

Sanitary Sewer System Rehabilitation
2019 Community Development Block Grant
Gleason, Tennessee

Name of Prime Contractor

The undersigned hereby certifies that

(a) Section 3 provisions are included in the Contract.

(b) If contract equals or exceeds $100,000, HUD form 60002 will be submitted with the final pay estimate.

(c) No segregated facilities will be maintained.

Name & Title of Signer (Print or Type)

Signature __________________________ Date __________________________
DRUG-FREE WORKPLACE AFFIDAVIT

STATE OF ____________________________
COUNTY OF ____________________________

The undersigned, principal officer of ____________________________
an employer of five (5) or more employees contracting with ____________________________
government to provide construction services, hereby states under oath as follows:

1. The undersigned is a principal officer of ____________________________
   (hereinafter referred to as the "Company"), and is duly authorized to execute
   this Affidavit on behalf of the Company.

2. The Company submits this Affidavit pursuant to T.C.A. § 50-9-113, which
   requires each employer with no less than five (5) employees receiving pay
   who contracts with the state or any local government to provide construction
   services to submit an affidavit stating that such employer has a drug-free
   workplace program that complies with Title 50, Chapter 9, of the Tennessee
   Code Annotated.


Further affiant saith not.

____________________________________
Principal Officer

STATE OF ____________________________
COUNTY OF ____________________________

Before me personally appeared ____________________________, with whom I am
personally acquainted (or proved to me on the basis of satisfactory evidence), and who
acknowledged that such person executed the foregoing affidavit for the purposes therein
contained.

Witness my hand and seal at office this _________ day of _________________, 20__.

____________________________________
Notary Public

My commission expires: ______________________
CERTIFICATION BY PROPOSED SUBCONTRACTOR REGARDING EQUAL EMPLOYMENT OPPORTUNITY

<table>
<thead>
<tr>
<th>NAME OF PRIME CONTRACTOR</th>
<th>PROJECT NUMBER</th>
</tr>
</thead>
</table>

INSTRUCTIONS

This certification is required pursuant to Executive Order 11246 (30 F. R. 12319-25). The implementing rules and regulations provide that any bidder or prospective contractor, or any of their proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and, if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the subcontractor has not filed a compliance report due under applicable instructions, such subcontractor shall be required to submit a compliance report before the owner approves the subcontract or permits work to begin under the subcontract.

SUBCONTRACTOR'S CERTIFICATION

<table>
<thead>
<tr>
<th>NAME AND ADDRESS OF SUBCONTRACTOR (include ZIP Code):</th>
</tr>
</thead>
</table>

1. Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause.
   - [ ] Yes
   - [ ] No

2. Compliance reports were required to be filed in connection with such contract or subcontract.
   - [ ] Yes
   - [ ] No

3. Bidder has filed all compliance reports due under applicable instructions, including SF-100.
   - [ ] Yes
   - [ ] No
   - [ ] None Required

4. Have you ever been or are you being considered for sanction due to violation of Executive Order 11246, as amended?
   - [ ] Yes
   - [ ] No

NAME AND TITLE OF SIGNER (Please type)

<table>
<thead>
<tr>
<th>SIGNATURE</th>
<th>DATE</th>
</tr>
</thead>
</table>

CERTIFICATION OF PROPOSED SUBCONTRACTOR REGARDING SECTION 3 AND SEGREGATED FACILITIES

Sanitary Sewer System Rehabilitation
2019 Community Development Block Grant
Gleason, Tennessee

Name of Subcontractor

Project Name & Number

The undersigned hereby certifies that

(a) Section 3 provisions are included in the Contract;

(b) If contract equals or exceeds $100,000, HUD form 60002 will be submitted with the final pay estimate.

(c) No segregated facilities will be maintained as required by Title VI of the Civil Rights Act of 1964.

Name & Title of Signer (Print or Type)

Signature _______________________________ Date _______________________________
STATEMENT OF COMPLIANCE CERTIFICATE

ILLEGAL IMMIGRANTS

EACH CONTRACTOR BIDDING SHALL FILL IN AND SIGN THE FOLLOWING

This is to certify that ____________________________ have fully complied with all the requirements of Chapter No. 878 (House Bill No. 111 and Senate Bill No. 411) which serves to amend Tennessee Code Annotated Title 12, Chapter 4, Part I, attached herein for reference.

• All Bidders for construction services on this project shall be required to submit an affidavit (by executing this compliance document) as part of their bid, that attests that such Bidder shall comply with requirements of Chapter no. 878.

Signed: _________________________________

State of __________________________

County of __________________________

Personally appeared before me, __________________________ the undersigned Notary Public, __________________________, the within named bargainer, with whom I am personally acquainted, and known to me to be the President / Owner / Partner (as applicable) of the __________________________, Corporation, Partnership, Sole Proprietorship (as applicable) and acknowledged to me that he executed the foregoing document for the purposes recited therein.

Witness my hand, at office, this _______ day of __________, 20__.

____________________________
Notary Public

My commission expires __________________________

1 Statement of Compliance – Illegal Immigrants
IRAN DIVESTMENT ACT

In compliance with the Iran Divestment Act (State of Tennessee 2016, Public Chapter No. 817), which became effective on July 1, 2016, certification is required of all bidders on contracts over $1,000.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party hereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to T.C.A. § 12-12-106.

I affirm, under the penalties of perjury, this statement to be true and correct.

____________________________________  ________________________________
Date                                                     Signature of Bidder

____________________________________
Company

A bid shall not be considered for award nor shall award be made where the foregoing certification has been complied with; provided, however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefor. The City of Gleason may award a bid to a bidder who cannot make the certification, on case-by-case basis, if:

1. The investment activities in Iran were made before July 1, 2016, the investment activities in Iran have not been expanded or reviewed on or after July 1, 2016, and the person has adopted, publicized, and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or

2. The City of Gleason a determination that the goods or services are necessary for the City of Gleason to perform its functions and that, absent such an exemption, the political subdivision will be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.
Wage Rates: Checked 7/30/2020 JZ

"General Decision Number: TN20200123 01/03/2020

Superseded General Decision Number: TN20190123

State: Tennessee

Construction Type: Heavy
Including Water and Sewer Line Construction

Counties: Decatur, Dyer, Gibson, Hardeman, Hardin, Haywood, Henderson, Henry, Lake, Lauderdale, McNairy, Obion and Weakley
Counties in Tennessee.

HEAVY CONSTRUCTION PROJECTS (including sewer/water construction).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.80 for calendar year 2020 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 $10.80 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 2020. 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 0
Publication Date 01/03/2020

ENGI0369-011 05/01/2013

Rates Fringes
---------------------
Operating Engineers:
Bulldozer and Crane.......$ 24.47 10.85

* SUTN2009-122 12/02/2009

Rates Fringes
---------------------
ELECTRICIAN...............$ 20.06 0.00
LABORER: Common or General....$ 9.05 1.57
LABORER: Flagger...............$ 10.50 0.00
LABORER: Pipelayer............$ 12.59 0.00
OPERATOR:
Backhoe/Excavator/Trackhoe....$ 16.76 0.00
TRUCK DRIVER: Dump Truck ........ $ 11.61 0.81

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

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.
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 (29CFR 5.5 (a) (1) (ii)).
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.
END OF GENERAL DECISION
AGREEMENT

THIS AGREEMENT, made this __________ day of ______________________, 20__, by
and between City of Gleason, herein called “Owner”, acting herein through its Board of Mayor
and Aldermen, and _______________________.

WITNESSETH: That for and in consideration of the payments and agreements hereinafter
mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with
the OWNER to commence and complete the construction described as follows:

Sanitary Sewer System Rehabilitation, 2019 Community Development Block Grant

hereinafter called “the project”, for the sum of ________________________ Dollars ($__________)

and all extra work in connection therewith, under the terms as stated in the General and Special
Conditions of the Contract; and at this (its or their) own property cost and expense to furnish all
the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other
accessories and services necessary to complete the said project in accordance with the conditions
and prices stated in the Proposal, the General Conditions, Supplemental General Conditions and
Special Conditions of the Contract, the plans, which include all maps, plats, blue prints, and
other drawings and printed or written explanatory matter thereof, the specifications and contract
documents therefore as prepared by King Engineering Consultants, Inc., herein entitled “the
Architect/Engineer”, and as enumerated in Paragraph 1 of the Supplemental General Conditions,
all of which are made a part hereof and collectively evidence and constitute the contract.

The Contractor hereby agrees to commence work under this contract on or before a date to be
specified in a written “Notice to Proceed” of the Owner and to fully complete the project within
100 consecutive calendar days thereafter. The Contractor further agrees to pay as liquidated
damages, the sum of $ 275.00 for each consecutive calendar day thereafter as hereinafter
provided in Paragraph 3 of the Supplemental General Conditions.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the
contract, subject to additions and deductions, as provided in the General Conditions of the
Contract, and to make payments on account thereof as provided in Paragraph 3, “Payments to
Contractor”, of the Supplemental General Conditions.
IN WITNESS WHEREOF, the parties to these presents have executed this contract in four (4) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

(Seal)
ATTEST:

__________________________
City of Gleason
(Owner)

__________________________
(Secretary)

__________________________
(Witness)

__________________________
(Secretary)

__________________________
(Witness)

__________________________
(Contractor)

__________________________
(Secretary)

__________________________
(Witness)

__________________________
(Mayor)
(Title)

__________________________
(Contractor)

__________________________
(Secretary)

__________________________
(Witness)

__________________________
(Title)

__________________________
(Address and Zip Code)

NOTE: Secretary of the Owner should attest. If Contractor is a corporation, Secretary should attest.
BONDING AND INSURANCE

1. This Attachment sets forth bonding and insurance requirements for grants. No other bonding and insurance requirements shall be imposed other than those normally required by the grantee.

2. Except as otherwise required by law, a grant that requires the contracting (or subcontracting) for construction or facility improvements shall provide for the grantee to follow its own requirements relating to bid guarantees, performance bonds, and payment bonds unless the construction contract or subcontract exceeds $150,000 (See 2 CFR 200.88). For those contracts or subcontracts exceeding $150,000, the Federal agency may accept the bonding policy and requirements of the grantee provided the Federal agency has made a determination that the Government's interest is adequately protected. If such a determination has not been made, the minimum requirements shall be as follows:

(a) A bid guarantee from each bidder equivalent to five percent of the bid price. The "bid guarantee" shall consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of his bid, execute such contractual documents as may be required within the time specified.

(b) A performance bond on the part of the contractor for 100 percent of the contract price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

(c) A payment bond on the part of the contractor for 100 percent of the contract price. A "payment bond" is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

3. Where the Federal Government guarantees or insures the repayment of money borrowed by the grantee, the Federal agency, at its discretion, may require adequate bonding and insurance if the bonding and insurance requirements of the grantee are not deemed adequate to protect the interest of the Federal Government.

4. Where bonds are required in the situations described above, the bonds shall be obtained from companies holding certificates of authority as acceptable sureties (31 CFR 223).

NOTE: AIA Document A311 is acceptable for use as Performance and Payment Bonds.
CERTIFICATE OF OWNER’S ATTORNEY

I, the undersigned, ________________________________, the duly authorized and acting legal representative of City of Gleason do hereby certify as follows:

I have examined the attached contract(s) and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

Date: ________________________________  ________________________________
NOTICE TO PROCEED

__________________________, 20___
Date

__________________________
__________________________
(Contractor’s address)

Re: City of Gleason
Sanitary Sewer System Rehabilitation
2019 Community Development Block Grant

You are hereby notified to commence WORK on ________________________, 20___, in accordance with the Agreement dated ________________________, 20___, and you are to complete the WORK within ____ consecutive calendar days thereafter. The date of completion of all WORK is therefore ________________________, 20__.

City of Gleason _______________________
Owner

By: ________________

Title: Mayor ________________

__________________________
Contractor

By: ________________

Title: ______________________
NOTICE OF START OF CONSTRUCTION

To: ECD

From: City of Gleason
Sanitary Sewer System Rehabilitation
2019 Community Development Block Grant

Date: ____________________________, 20__

Sanitary Sewer System Rehabilitation, 2019 Community Development Block Grant located at Gleason, Tennessee awarded to ________________________________ on ____________________________, 20__, will begin construction on ____________________________ ____________________________, 20__. Construction will be completed by ____________________________, 20__. The number of the applicable wage decision is ____________________________. City of Gleason has designated Jennifer Zimmerman as responsible for compliance with labor standards and equal opportunity provisions.
Community Development Block Grant Program

GENERAL CONDITIONS

1. Contract and Contract Documents

The project to be constructed and pursuant to this contract will be financed with assistance from the Tennessee Community Development Block Grant Program and is subject to all applicable Federal laws and regulations.

The Plans, Specifications and Addenda, hereinafter enumerated in Paragraph 1 of the Supplemental General Conditions shall form part of this Contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit or cast light on the interpretation of the provisions to which they refer.

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GENERAL CONDITIONS

ARTICLE 1--DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

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

1.2. Agreement--The written contract between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

1.3. Application for Payment--The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

1.4. Asbestos--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

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

1.6. Bidding Documents--The advertisement or invitation to Bid, instructions to bidders, the Bid form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

1.7. Bidding Requirements--The advertisement or invitation to Bid, instructions to bidders, and the Bid form.

1.8. Bonds--Performance and Payment bonds and other instruments of security.

1.9. Change Order--A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

1.10. Contract Documents--The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders and ENGINEER's written interpretations and classifications issued pursuant to paragraphs 3.5, 3.6.1, and 3.6.3 on or after the Effective Date of the Agreement. Shop Drawing submittals approved pursuant to paragraphs 6.26 and 6.27 and the reports and drawings referred to in paragraphs 4.2.1.1 and 4.2.2.2 are not Contract Documents.

1.11. Contract Price--The money payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).

1.12. Contract Times--The numbers of days or the dates stated in the Agreement: (i) to achieve Substantial Completion, and (ii) to complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13.

1.13. CONTRACTOR--The person, firm or corporation with whom the OWNER has entered into the Agreement.

1.14. defective--An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, in that it does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).

1.15. Drawings--The drawings which show the scope, extent and character of the Work to be furnished and performed by CONTRACTOR and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents. Shop drawings are not Drawings as so defined.

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

1.17. ENGINEER--The person, firm or corporation named as such in the Agreement.

1.18. ENGINEER's Consultant--A person, firm or corporation having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

1.19. Field Order--A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Times.

1.20. General Requirements--Sections of Division 1 of the Specifications.

1.21. Hazardous Waste--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

1.22. Laws and Regulations: Laws or Regulations--Any and all applicable laws, rules, regulations, ordinances, codes and orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction.

1.23. Liens--Liens, charges, security interests or encumbrances upon real property or personal property.
2.1. When CONTRACTOR delivers the executed Agreements to
OWNER, CONTRACTOR shall also deliver to OWNER such Bonds

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to
OWNER, CONTRACTOR shall also deliver to OWNER such Bonds
as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Times; Notice to Proceed:

2.3. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

Starting the Work:

2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run, but no Work shall be done at the site prior to the date on which the Contract Times commence to run.

Before Starting Construction:

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

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2.6.2. a preliminary schedule for Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing and processing such submittal;

2.6.3. a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.7. Before any Work at the site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with paragraphs 5.4, 5.6 and 5.7.

Preconstruction Conference:

2.8. Within twenty days after the Contract Times start to run, but before any Work at the site is started, a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.6, procedures for handling Shop Drawings and other submittals, processing Applications for Payment and maintaining required records.

Initially Acceptable Schedules:

2.9. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.6. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until the schedules are submitted to and acceptable to ENGINEER as provided below. The progress schedule will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within any specified Milestones and the Contract Times, but such acceptance will neither impair on ENGINEER responsibility for the sequencing, scheduling or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefore. CONTRACTOR's schedule of Shop Drawing and Sample submissions will be acceptable to ENGINEER as providing a workable arrangement for reviewing and processing the required submittals. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance.

ARTICLE 2--CONTRACT DOCUMENT; INTENT, AMENDING, REUSE

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Intent:

3.1. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 9.4.
3.3. Reference to Standards and Specifications of Technical Societies; Reporting and Resolving Discrepancies:

3.3.1. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

3.3.2. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such Law or Regulation applicable to the performance of the Work or of any such standard, specification, manual or code or of any instruction of any Supplier referred to in paragraph 6.5, CONTRACTOR shall report it to ENGINEER in writing at once, and, if the Work affected thereby (except in an emergency as authorized by paragraph 6.23) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.5 or 3.6, provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

3.3.3. Except as otherwise specifically stated in the Contract Documents or as may be provided by amendment or supplement thereto issued by one of the methods indicated in paragraph 3.5 or 3.6, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and:

3.3.3.1. the provisions of any such standard, specification, manual, code or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

3.3.3.2. the provisions of any such Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

No provision of any such standard, specification, manual, code or instruction shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to OWNER, ENGINEER or any of ENGINEER’s Consultants, agents or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of paragraph 9.13 or any other provision of the Contract Documents.

3.4. Whenever in the Contract Documents the terms “as ordered,” "as directed," "as required," "as allowed," "as approved" or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraphs 9.13 or any other provision of the Contract Documents.

Amending and Supplementing Contract Documents:

3.5. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.5.1. a formal Written Amendment.

3.5.2. a Change Order (pursuant to paragraph 10.4), or

3.5.3. a Work Change Directive (pursuant to paragraph 10.1).

3.6. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

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

3.6.2. ENGINEER’s approval of a Shop Drawing or Sample (pursuant to paragraphs 6.26 and 6.27), or

3.6.3. ENGINEER’s written interpretation or clarification (pursuant to paragraph 9.4).

Revise of Documents:

3.7. CONTRACTOR, and any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER’s Consultant, and (ii) shall not reuse any of such Drawings, Specifications, other documents or copies on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adoption by ENGINEER.

ARTICLE 4.—AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a correct statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER’s interest therein as necessary for giving notice of or filing a mechanic’s lien against such lands in accordance with applicable Laws and Regulations. OWNER shall identify any encumbrances or restrictions not of general application but
specifically related to use of lands so furnished with which CONTRACTOR will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR and OWNER are unable to agree on an entitlement to or the amount or extent of any adjustments in the Contract Price or the Contract Times as a result of any delay in OWNER's furnishing these lands, rights-of-way or easements, CONTRACTOR may make a claim therefore as provided in Articles 11 and 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2. Subsurface and Physical Conditions:

4.2.1. Reports and Drawings: Reference is made to the Supplementary Conditions for identification of:

4.2.1.1. Subsurface Conditions: Those reports of explorations and tests of subsurface conditions at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents; and

4.2.1.2. Physical Conditions: Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) that have been utilized by ENGINEER in preparing the Contract Documents.

4.2.2. Limited Reliance by CONTRACTOR Authorized: Technical Data: CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:

4.2.2.1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or

4.2.2.2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

4.2.2.3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.

4.2.3. Notice of Differing Subsurface or Physical Conditions: If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the site that is uncovered or revealed either:

4.2.3.1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is materially inaccurate; or

4.2.3.2. is of such a nature as to require a change in the Contract Documents; or

4.2.3.3. differs materially from that shown or indicated in the Contract Documents; or

4.2.3.4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in the work of the character provided for in the Contract Documents; then

CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.23), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such conditions or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

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

4.2.5. Possible Contract Documents Change: If ENGINEER concludes that a change in the Contract Documents is required as a result of a condition that meets one or more of the categories in paragraph 4.2.3., a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of such change.

4.2.6. Possible Price and Times Adjustments: An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of such uncovered or revealed condition causes an increase or decrease in CONTRACTOR's cost of, or time required for performance of, the Work; subject, however, to the following:

4.2.6.1. such condition must meet any one or more of the categories described in paragraphs 4.2.3.1 through 4.2.3.4, inclusive;

4.2.6.2. a change in the Contract Documents pursuant to paragraph 4.2.5 will not be an automatic authorization of nor a condition precedent to entitlement to any such adjustment;

4.2.6.3. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.10 and 11.9; and

4.2.6.4. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Times if:

4.2.6.4.1. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a bid or becoming bound under a negotiated contract; or

4.2.6.4.2. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or
4.2.6.4.3. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.2.3.

If OWNER and CONTRACTOR are unable to agree on entitlement to or as to the amount or length of any such equitable adjustment in the Contract Price or Contract Times, a claim may be made therefore as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER’s Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.3. Physical Conditions—Underground Facilities:

4.3.1. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data and

4.3.1.2. The cost of all of the following will be included in the Contract Price and CONTRACTOR shall have full responsibility for: (i) reviewing and checking all such information and data, (ii) locating all Underground Facilities shown or indicated in the Contract Documents, (iii) coordination of the Work with the owners of such Underground Facilities during construction, and (iv) the safety and protection of all such Underground Facilities as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work.

4.3.2. Not Shown or Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.23), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the Underground Facility. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document such consequences. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or the amount or length of any such adjustment in Contract Price or Contract Times, CONTRACTOR may make a claim therefore as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER’s Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages incurred or sustained by CONTRACTOR on or in connection with any other project or anticipated project.

Reference Points:

4.4. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER’s judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

4.5. Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material:

4.5.1. OWNER shall be responsible for any Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work and which may present a substantial danger to persons or property exposed thereto in connection with the Work at the site. OWNER shall not be responsible for any such materials brought to the site by CONTRACTOR, Subcontractor, Suppliers or anyone else for whom CONTRACTOR is responsible.

4.5.2. CONTRACTOR shall immediately: (i) stop all Work in connection with such hazardous condition and in any area affected thereby (except in an emergency as required by paragraph 6.23), and (ii) notify OWNER and ENGINEER (and thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such hazardous condition or take corrective action, if any. CONTRACTOR shall not be required to resume Work in connection with such hazardous condition or in any such affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR special written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of any adjustment, if any, in Contract Price or Contract Times as a result of such Work stoppage or such special conditions under which Work is agreed by CONTRACTOR to be resumed, either party may make a claim therefore as provided in Articles 11 and 12.

4.5.3. If after receipt of such special written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order such portion of the Work that is in connection with such hazardous condition or in such affected area to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a claim therefore as provided in Articles 11 and 12. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

4.5.4. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents, other consultants and subcontractors of each and any of them from and against all

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claims, costs, losses and damages arising out of or resulting from such hazardous condition, provided that: (i) any such claim, cost, loss or damage is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) nothing in this subparagraph 4.5.1 shall obligate OWNER to indemnify any person or entity from and against the consequences of that person's or entity's own negligence.

4.5.5. The provisions of paragraphs 4.2 and 4.3 are not intended to apply to Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site.

ARTICLE 5--BONDS AND INSURANCE

Performance, Payment and Other Bonds:

5.1. CONTRACTOR shall furnish Performance and Payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Law or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within ten days thereafter substitute another Bond and surety, both of which must be acceptable to OWNER.

5.3. Licensed Sureties and Insurers; Certificates of Insurance:

5.3.1. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.3.2. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain in accordance with paragraph 5.4. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7 hereof.

CONTRACTOR's Liability Insurance:

5.4. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

5.4.1. claims under workers' compensation, disability benefits and other similar employee benefit acts;

5.4.2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

5.4.3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.4.4. claims for damages insured by customary personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;

5.4.5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting there from; and

5.4.6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The policies of insurance required by this paragraph 5.4 to be purchased and maintained shall:

5.4.7. with respect to insurance required by paragraphs 5.4.3. through 5.4.6 inclusive, include as additional insured (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER'S Consultants and any other persons or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insured, and include coverage for the respective officers and employees of all such additional insured;

5.4.8. include the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

5.4.9. include completed operations insurance;

5.4.10. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.12, 6.16 and 6.31 through 6.33;
5.4.11. contain a provision or endorsement that the coverage afforded will not be cancelled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued and (the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.3.2 will so provide);

5.4.12. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing defective Work in accordance with paragraph 13.12; and

5.4.13. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

OWNER's Liability Insurance:

5.5. In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.4, OWNER, at OWNER's option, may purchase and maintain at OWNER's expense OWNER's own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

Property Insurance:

5.6. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

5.6.1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

5.6.2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work and Work in transit and shall insure against at least the following perils: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils as may be specifically required by the Supplementary Conditions;

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

5.6.4. cover materials and equipment stored at the site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER; and

5.6.5. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR and ENGINEER with thirty days written notice to each other additional insured to whom a certificate of insurance has been issued.

5.7. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

5.8. All the policies of insurance (and the certificates or other endorsement thereof) required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.11.

5.9. OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR, Subcontractors or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount, will be borne by CONTRACTOR, Subcontractor or others suffering such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at their own expense.

5.10. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policies provided under paragraphs 5.6 or 5.7, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

5.11. Waiver of Rights:

5.11.1. OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraphs 5.6 and 5.7 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no right of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, employees and agents for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds under such policies for losses and damages so caused. None of the above waivers shall extend to the
rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

5.11.2. In addition, OWNER waives all rights against CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees and agents of any of them, for:

5.11.2.1. loss due to business interruption, loss of use or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of or resulting from fire or other peril, whether or not insured by OWNER; and

5.11.2.2. loss or damage to the completed Project or part thereof caused by, arising out of or resulting from fire or other insured peril covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to paragraph 14.10, after substantial completion pursuant to paragraph 14.8 or after final payment pursuant to paragraph 14.13.

Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in this paragraph 5.11.2 shall contain provisions to the effect that in the event of payment of any such loss, damage or consequential loss the insurers will have no rights of recovery against any of CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees and agents of any of them.

Receipt and Application of Insurance Proceeds

5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

5.13. OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond for the proper performance of such duties.

Acceptance of Bonds and Insurance; Option to Replace;

5.14. If either party (OWNER or CONTRACTOR) has any objection to the coverage afforded by or other provisions of the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall notify the other party in writing within ten days after receipt of the certificates (or other evidence requested) required by paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

Partial Utilization--Property Insurance:

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6--CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or specification of a specific means, method, technique, sequence or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies with the Contract Documents.

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

Labor, Materials and Equipment:

6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.
6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water sanitary facilities, temporary facilities and all other facilities and incidental necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

**Progress Schedule:**

6.6. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.9 as it may be adjusted from time to time as provided below:

6.6.1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) proposed adjustments in the progress schedule that will not change the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

6.6.2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of paragraph 12.1. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.7. **Substitutes and "or-equal" Items:**

6.7.1. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be accepted by ENGINEER under the following circumstances:

6.7.1.1. "or-equal": If in ENGINEER’s sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER’s sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.

6.7.1.2. Substitute Items: If in ENGINEER’s sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under subparagraph 6.7.1.1., it will be considered a proposed substitute item. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. The procedure for review by the ENGINEER will include the following as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall first make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice CONTRACTOR’s achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute.

6.7.1.3. CONTRACTOR’s Expense: All data to be provided by CONTRACTOR in support of any proposed "or-equal" or substitute item will be at CONTRACTOR’s expense.

6.7.2. **Substitute Construction Methods or Procedures:** If a specific means, method, technique, sequence or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER’s sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.7.1.2.

6.7.3. **Engineer’s Evaluation:** ENGINEER will be allowed a reasonable time within which to evaluate each proposal or substitution made pursuant to paragraphs 6.7.1.2 and 6.7.2. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized without ENGINEER’s prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR’s expense a special performance guarantee or other surety with respect to any "or-equal" or substitute. ENGINEER will record time required by ENGINEER and ENGINEER’s Consultants in
evaluating substitutes proposed or submitted by CONTRACTOR pursuant to paragraphs 6.7.1.2 and 6.7.2 and in making changes in the Contract Documents (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organization (including those who are to furnish the principal items of materials or equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be removed on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute. The Contract Price will be adjusted by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization so identified may be removed on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute. The Contract Price will be adjusted by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization may be removed on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute. The Contract Price will be adjusted by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization to furnish or perform any of the Work shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

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

6.9.2. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR. CONTRACTOR shall require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with the ENGINEER through CONTRACTOR.

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

6.11. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.6 or 5.7, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants and all other additional insureds for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if the actual knowledge of OWNER or ENGINEER as its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from any infringement of patent rights or copyrights incidental to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents.

Permits:

6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.
6.14.2. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses and damages caused by, arising out of or resulting therefrom; however, it shall not be CONTRACTOR’s primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR or CONTRACTOR’s obligations under paragraph 3.3.2.

Taxes:

6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

Use of Premises:

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at Law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless OWNER, ENGINEER, ENGINEER’S Consultant and anyone directly or indirectly employed by any of them from and against all claims, costs, losses and damages arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR’s performance of the Work.

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

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

Record Documents:

6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved Samples and a counter part of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety and Protection:

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

6.20.1. all persons on the Work site or who may be affected by the Work;

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

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

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss, and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER’S Consultant or anyone employed by any of them or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier or other person or organization directly or indirectly employed by any of them). CONTRACTOR’s duties and responsibilities for safety and for protection of the Work shall continue until such time as the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

Safety Representative:

6.21. CONTRACTOR shall designate a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

Hazard Communication Program:

6.22. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with Laws or Regulations.
Emergencies:

6.23. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from OWNER or ENGINEER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued to document the consequences of such action.

6.24. Shop Drawings and Samples:

6.24.1. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawings and Sample submittals (see paragraph 6.29). All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show ENGINEER the materials and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.26.

6.24.2. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with said accepted schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.26. The numbers of each Sample to be submitted will be as specified in the Specifications.

6.25. Submittal Procedures:

6.25.1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

6.25.1.1. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto.

6.25.1.2. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and

6.25.1.3. all information relative to CONTRACTOR's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

6.25.2. Each submittal will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR's review and approval of that submittal.

6.25.3. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawings or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

6.26. ENGINEER will review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals accepted by ENGINEER as required by paragraph 6.29. ENGINEER's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed project as a functioning whole as indicated by the Contract Documents. ENGINEER's review and approval will not extend to means, methods, techniques, sequences or procedures of construction (except where particular means, method, technique, sequence or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and Samples as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of submission as required by paragraph 6.25.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval, nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.25.1.

6.28. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submissions accepted by ENGINEER as required by paragraph 6.29, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

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

6.30. CONTRACTOR's General Warranty and Guarantee

6.30.1. CONTRACTOR warrants and guarantees to OWNER, ENGINEER and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:
6.30.1.1. abuse, modification or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors or Suppliers; or

6.30.1.2. normal wear and tear under normal usage.

6.30.2. CONTRACTOR’s obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR’s obligation to perform the Work in accordance with the Contract Documents:

6.30.2.1. observations by ENGINEER;

6.30.2.2. recommendation of any progress or final payment by ENGINEER;

6.30.2.3. the issuance of a certificate of Substantial Completion or any payment by OWNER to CONTRACTOR under the Contract Documents;

6.30.2.4. use or occupancy of the Work or any part thereof by OWNER;

6.30.2.5. any acceptance by OWNER or any failure to do so;

6.30.2.6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13;

6.30.2.7. any inspection, test or approval by others; or

6.30.2.8. any correction of defective Work by OWNER.

Indemnification:

6.31. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER’s Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from the performance of the Work, provided that any such claim, cost, loss or damage: (i) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.31 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier or other person or organization under workers’ compensation acts, disability benefit acts or other employee benefit acts.

6.32. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.31 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier or other person or organization under workers’ compensation acts, disability benefit acts or other employee benefit acts.

6.33. The indemnification obligations of CONTRACTOR under paragraph 6.31 shall not extend to the liability of ENGINEER and ENGINEER’s Consultants, officers, directors, employees or agents caused by the professional negligence errors or omissions of any of them.

Survival of Obligations:

6.34. All representatives, indemnifications, warranties and guarantees made in, required by or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Agreement.

ARTICLE 7--OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER’s own forces, or let other direct contracts therefore which shall contain General Conditions similar to these, or have other work performed by utility owners. If the fact that such other work is to be performed was not noted in the Contract Documents, then: (i) written notice thereof will be given to CONTRACTOR prior to starting any such other work, and (ii) CONTRACTOR may make a claim therefore as provided in Articles 11 and 12 if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the amount or extent thereof.

7.2. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and such utility owner (and OWNER, if OWNER is performing the additional work with OWNER’s employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If the proper execution or results of any part of CONTRACTOR’s Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects or deficiencies in such other work that render it unavailable or unsuitable...
for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure so to report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent or nonapparent defects and deficiencies in such other work.

Coordination:

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the following will be set forth in Supplementary Conditions:

7.4.1. the person, firm or corporation who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified;

7.4.2. the specific matters to be covered by such authority and responsibility will be itemized; and

7.4.3. the extent of such authority and responsibilities will be provided.

Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility in respect of such coordination.

ARTICLE 8--OWNER'S RESPONSIBILITIES

8.1. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

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

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

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and drawings of physical conditions in existing structures at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents.

8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraph 5.3 through 5.10.

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.9.

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

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

8.9. The OWNER shall not supervise, direct or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences or procedures of construction or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

8.10. OWNER's responsibility in respect of undisclosed Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Materials uncovered or revealed at the site is set forth in paragraph 4.5.

8.11. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereto will be set forth in the Supplementary Conditions.

ARTICLE 9--ENGINEER'S STATUS DURING CONSTRUCTION

OWNER's Representative:

9.1. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER will endeavor for the benefit of OWNER to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and on-site observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work. ENGINEER's visits and on-site observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.13, and particularly, but without limitation, during or as a result of ENGINEER's on-site visits or observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work.

Project Representative:
9.3. IF OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more continuous observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.13 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the site who is not ENGINEER’s Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other person will be as provided in the Supplementary Conditions.

Clarifications and Interpretations:

9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER or CONTRACTOR believes that a written clarification or interpretation justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree to the amount or extent thereof, if any, OWNER or CONTRACTOR may make a written claim therefore as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR who shall perform the Work involved promptly. If OWNER or CONTRACTOR believes that a Field Order justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree as to the amount or extent thereof, OWNER or CONTRACTOR may make a written claim therefore as provided in Article 11 or 12.

Rejecting Defective Work:

9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7. In connection with ENGINEER’s authority as to Shop Drawings and Samples, see paragraphs 6.24 through 6.28 inclusive.

9.8. In connection with ENGINEER’s authority as to Change Orders, see Articles 10, 11, and 12.

9.9. In connection with ENGINEER’s authority as to Applications for Payment, see Article 14.

Determinations for Unit Price:

9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER’s preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER’s written decision thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other and to ENGINEER written notice of intention to appeal from ENGINEER’s decision and: (i) an appeal from ENGINEER’s decision is taken within the time limits and in accordance with the procedures set forth in Exhibit GC-A, “Dispute Resolution Agreement,” entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to ENGINEER’s decision, unless otherwise agreed in writing by OWNER and CONTRACTOR. Such appeal will not be subject to the procedures of paragraph 9.11.

Decisions on Disputes:

9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and Claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph. Written notice of each such claim, dispute or other matter will be delivered by the claimant to ENGINEER and the other party within thirty days after the start of the occurrence or event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after the start of such occurrence or event unless ENGINEER allows an additional period of time for the submission of additional or more accurate data in support of such claim, dispute or other matter. The opposing party shall submit any response to ENGINEER and the claimant within thirty days after receipt of the claimant’s last submittal. (unless ENGINEER allows additional time). ENGINEER will render a formal decision in writing within thirty days after receipt of the opposing party’s submittal, if any, in accordance with this paragraph. ENGINEER’s written decision on such claim, dispute or other matter will be final and binding upon OWNER and CONTRACTOR unless: (i) an appeal from ENGINEER’s decision is taken within the time limits and in accordance with the procedures set forth in Exhibit GC-A, “Dispute Resolution Agreement,” entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a written notice of intention to appeal from ENGINEER’s written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within thirty days after the date of such decision and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute or other matter in accordance with applicable Laws and Regulations within sixty days of the date of such decision, unless otherwise agreed in writing by OWNER and CONTRACTOR.

9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 or
9.11 with respect to any such claim, dispute or other matter (except any
which have been waived by the making or acceptance of final payment
as provided in paragraph 14.16) will be a condition precedent to any
exercise by OWNER or CONTRACTOR of such rights or remedies as
either may otherwise have under the Contract Documents or by Laws
or Regulations in respect of any such claim, dispute or other matter
pursuant to Article 16.

9.13. Limitations on ENGINEER's Authority and Responsibilities:

9.13.1. Neither ENGINEER's authority or responsibility under
this Article 9 or under any other provision of the Contract
Documents nor any decision made by ENGINEER in good faith
either to exercise or not exercise such authority or responsibility or
the undertaking, exercise or performance of any authority or
responsibility by ENGINEER shall create, impose or give rise to
any duty owed by ENGINEER to CONTRACTOR, any
Subcontractor, any Supplier, any other person or organization, or
to any surety for or employee or agent of any of them.

9.13.2. ENGINEER will not supervise, direct, control or have
authority over or be responsible for CONTRACTOR's means,
methods, techniques, sequences or procedures of construction, or
the safety precautions and programs incident thereto, or for any
failure of CONTRACTOR to comply with Laws and Regulations
applicable to the furnishing or performance of the Work.
ENGINEER will not be responsible for CONTRACTOR's failure
to perform or furnish the Work in accordance with the Contract
Documents.

9.13.3. ENGINEER will not be responsible for the acts or
omissions of CONTRACTOR or of any Subcontractor, any
Supplier, or of any other person or organization performing or
furnishing any of the Work.

9.13.4. ENGINEER's review of the final Application for
Payment and accompanying documentation and all maintenance
and operating instructions, schedules, guarantees, bonds and
certificates of inspection, tests and approvals and Other
documentation required to be delivered by paragraph 14.12 will
only be to determine generally that their content complies with
the requirements of, and in the case of certificates of inspections, tests
and approvals that the results certified indicate compliance with,
the Contract Documents.

9.13.5. The limitations upon authority and responsibility set
forth in this paragraph 9.13 shall also apply to ENGINEER's
Consultants, Resident Project Representative and assistants.

ARTICLE 10--CHANGES IN THE WORK

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

10.2. If OWNER and CONTRACTOR are unable to agree as to the
extent, if any, of an adjustment in the Contract Price or an adjustment
of the Contract Times that should be allowed as a result of a Work
Change Directive, a claim may be made therefore as provided in
Article 11 or Article 12.

10.3. CONTRACTOR shall not be entitled to an increase in the
Contract Price or an extension of the Contract Times with respect to
any Work performed that is not required by the Contract Documents as
amended, modified and supplemented as provided in paragraphs 3.5
and 3.6 except in the case of any emergency as provided in paragraph
6.23 or in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate
Change Orders recommended by ENGINEER (or Written Amendments) covering:

10.4.1. changes in the Work which are (i) ordered by OWNER
pursuant to paragraph 10.1, (ii) required because of acceptance of
defective Work under paragraph 13.13 or correcting defective
Work under paragraph 13.14, or (iii) agreed to by the parties;

10.4.2. changes in the Contract Price or Contract Times which
are agreed to by the parties; and

10.4.3. changes in the Contract Price or Contract Times which
embody the substance of any written decision rendered by
ENGINEER pursuant to paragraph 9.11;

provided that, in lieu of executing any such Change Order, an appeal
may be taken from any such decision in accordance with the provisions
of the Contract Documents and applicable Laws and Regulations, but
during any such appeal, CONTRACTOR shall carry on the Work and
adhere to the progress schedule as provided in paragraph 6.29.

10.5. If notice of any change affecting the general scope of the
Work or the provisions of the Contract Documents (including, but not
limited to, Contract Price or Contract Times) is required by the
provisions of any Bond to be given to a surety, the giving of any such
notice will be CONTRACTOR's responsibility, and the amount of each
applicable Bond will be adjusted accordingly.

ARTICLE 11--CHANGE OF CONTRACT PRICE

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

11.2. The Contract Price may only be changed by a Change Order
or by a Written Amendment. Any claim for an adjustment in the
Contract Price shall be based on written notice delivered by the party
making the claim to the other party and to ENGINEER promptly (but
in no event later than thirty days) after the start of the occurrence or
event giving rise to the claim and stating the general nature of the
claim. Notice of the amount of the claim with supporting data shall be
delivered within sixty days after the start of such occurrence or event
(unless ENGINEER allows additional time for claimant to submit
additional or more accurate data in support of the claim) and shall be
accompanied by claimant's written statement that the adjustment
claimed covers all known amounts to which the claimant is entitled as a
result of said occurrence or event. All claims for adjustment in the
Contract Price shall be determined by ENGINEER in accordance with
paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise
agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph 11.2.

11.3. The value of any Work covered by a Change Order or of any claim for an adjustment in the Contract Price will be determined as follows:

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

11.3.2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2);

11.3.3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 11.3.2, on the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 11.6).

Cost of the Work:

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by Contractor in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amount no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen and other personnel employed full-time at the site. Payroll costs for employees not employed full-time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, bereavements, sick leave, vacation and holiday pay applicable thereeto. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed or furnished by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids, if any, will be accepted. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR'S Cost of the Work and fee as provided in paragraphs 11.4, 11.5, 11.6 and 11.7. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

11.4.5. Supplemental costs including the following:

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

11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof—all in accordance with the terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

11.4.5.5. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

11.4.5.6. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR'S fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is
placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

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

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

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

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

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

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

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

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9 above).

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

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

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

11.6.1. a mutually acceptable fixed fee

11.7. Whenever the cost of any Work is to be determined pursuant to paragraphs 11.4 and 11.5, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowance:

11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be furnished and performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

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

11.8.2. CONTRACTOR's cost for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances and no demand for additional payment on account of any of the foregoing will be valid.

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

11.9. Unit Price Work:

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with paragraph 9.10.

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

11.9.3. OWNER or CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 11 if:
11.9.3.1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

11.9.3.2. there is no corresponding adjustment with respect to any other item of Work; and

11.9.3.3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12--CHANGE OF CONTRACT TIMES

12.1. The Contract Times (or Milestones) may only be changed by a Change Order or a Written Amendment. Any claim for an adjustment of the Contract Times (or Milestones) shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Times (or Milestones) shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Times (or Milestones) will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

12.2. All time limits stated in the Contract Documents are of the essence of the Agreement.

12.3. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a claim is made therefore as provided in paragraph 12.1. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, acts of God or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

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

13.1. Notice of Defects: Prompt notice of all defective Work of which OWNER or ENGINEER have actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

Access to Work:

13.2. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories and governmental agencies with jurisdiction interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's site safety procedures and programs so that they may comply therewith as applicable.

Tests and Inspections:

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

13.4. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

13.4.1. for inspections, tests or approvals covered by paragraph 13.5 below;

13.4.2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.9 below shall be paid as provided in said paragraph 13.9; and

13.4.3. as otherwise specifically provided in the Contract Documents.

13.5. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection, or approval. CONTRACTOR shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work.

13.6. If any Work (or the work of others) that is to be inspected, tested or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.
13.7. Uncovering Work as provided in paragraph 13.6 shall be at CONTRACTOR’s expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR’s intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER’s observation and replaced at CONTRACTOR’s expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER’s request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all claims, costs, losses and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefore as provided in Article 11. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction; and if the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefore as provided in Articles 11 and 12.

OWNER May Stop the Work:

13.10. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof; until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any surety or other party.

Correction or Removal of Defective Work:

13.11. If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with Work that is not defective. CONTRACTOR shall pay all claims, costs, losses and damages caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.12. Correction Period:

13.12.1. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER’s written instructions: (i) correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with Work that is not defective, and (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.

13.12.2. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

13.12.3. Where defective Work (and damage to other Work resulting therefrom) has been corrected, removed or replaced under this paragraph 13.12, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of defective Work OWNER (and, prior to ENGINEER’s recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall pay all claims, costs, losses and damages attributable to OWNER’s evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness). If any such acceptance occurs prior to ENGINEER’s recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefore as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.1, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days’ written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR’s services related thereto, take possession of CONTRACTOR’s tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER’s representatives, agents and employees, OWNER’s other contractors and ENGINEER and ENGINEER’s Consultants access to the site to enable OWNER to
exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by OWNER in exercising such rights and remedies will be charged against CONTRACTOR and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefore as provided in Article 11. Such claims, costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR’s defective Work. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER’s rights and remedies hereunder.

ARTICLE 14--PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment

14.2. At least twenty days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER’s interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR’s Warranty of Title:

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

Review of Applications for Progress Payment:

14.5. ENGINEER’s recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER’s on-site observations of the executed Work as an experienced and qualified design professional and on ENGINEER’s review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER’s knowledge, information and belief:

14.5.1. the Work has progressed to the point indicated.

14.5.2. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10, and to any other qualifications stated in the recommendation), and

14.5.3. the conditions precedent to CONTRACTOR’s being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER’s responsibility to observe the Work.

However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

14.6. ENGINEER’s recommendation of any payment, including final payment, shall not mean that ENGINEER is responsible for CONTRACTOR’s means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of Work, or for any failure of CONTRACTOR to perform or furnish Work in accordance with the Contract Documents.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER’s opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.5. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER’s opinion to protect OWNER from loss because:

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

14.7.2. the Contract Price has been reduced by Written Amendment or Change Order,
14.7.3. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.14, or

14.7.4. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.4 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

14.7.5. claims have been made against OWNER on account of CONTRACTOR'S performance or furnishing of the Work;

14.7.6. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens;

14.7.7. there are other items entitling OWNER to a set-off against the amount recommended, or

14.7.8. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.7.1 through 14.7.3 or paragraphs 15.2.1 through 15.2.4 inclusive;

but OWNER must have CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER'S satisfaction the reasons for such action.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefore. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefore. If, after consideration of OWNER'S objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the definitive certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER'S issuing the definitive certificate of Substantial Completion, ENGINEER'S aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

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

Partial Utilization:

14.10. Use by OWNER at OWNER'S option of any substantially completed part of the Work which: (i) has specifically been identified in the Contract Documents, or (ii) OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose, but without significant interference with CONTRACTOR'S performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefore. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection:

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

Final Application for Payment:
14.12. After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance required by paragraph 5.4, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.4.13, (ii) consent of the surety, if any, to final payment, and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu of such releases or waivers of Liens as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material and equipment for which a lien could be filed, and (ii) all payrolls, material and equipment bills and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

**Final Payment and Acceptance:**

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.15. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application.

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

**Waiver of Claims:**

14.15. The making and acceptance of final payment will constitute: paragraph 14.11, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

14.15.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

**ARTICLE 15--SUSPENSION OF WORK AND TERMINATION**

**OWNER May Suspend Work:**

15.1. At any time and without cause, OWNER may suspend the Work, or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes an approved claim therefore as provided in Articles 11 and 12.

**OWNER May Terminate:**

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

15.2.1. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as adjusted from time to time pursuant to paragraph 6.6);

15.2.2. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.3. if CONTRACTOR disregards the authority of ENGINEER, or

15.2.4. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety, if any) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which Owner has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses and damages sustained by OWNER arising out of or resulting from completing the Work such excess will be paid to CONTRACTOR. If such claims, costs, losses and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses and damages incurred by
ARTICLE 16--DISPUTE RESOLUTION

If and to the extent that OWNER and CONTRACTOR have agreed on the method and procedure for resolving disputes between them that may arise under this Agreement, such dispute resolution method and procedure, if any, shall be as set forth in Exhibit GC-A, "Dispute Resolution Agreement," to be attached hereto and made a part hereof. If no such agreement on the method and procedure for resolving such disputes has been reached, and subject to the provisions of paragraphs 9.10, 9.11, and 9.12, OWNER and CONTRACTOR may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17--MISCELLANEOUS

Giving Notice:

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

Computation of Times:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

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

Notice of Claim:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

CONTRACTOR may stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application of Payment within thirty days after it is submitted or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, and provided OWNER and ENGINEER do not remedy such suspension or failure within that time, terminate the Agreement and recover from OWNER payment on the same terms as provided in paragraph 15.4. In lieu of terminating the Agreement and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within thirty days after it is submitted, or OWNER has failed for thirty days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may upon seven days' written notice to OWNER and ENGINEER stop the Work until payment of all such amount due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.5 are not intended to preclude CONTRACTOR from making claim under Articles 11 and 12 for an increase in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping Work as permitted by this paragraph.
Cumulative Remedies:

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.12, 6.16, 6.30, 6.31, 6.32, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

Professional Fees and Court Costs Included:

17.5. Whenever reference is made to "claims, costs, losses and damages," it shall include in each case, but not be limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs.

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STATED ALLOWANCES 38
1. ENUMERATION OF PLANS, SPECIFICATIONS AND ADDENDA

Following are the Plans, Specifications and Addenda which form a part of this contract, as set forth in Paragraph 1 of the General Conditions, "Contract and Contract Documents":

**DRAWINGS**

- General Construction: Nos. ____________________________
- Heating and Ventilating: ____________________________
- Plumbing: ____________________________
- Electrical: ____________________________

**SPECIFICATIONS:**

- General Construction Page 1 of ___ to 02906.1, incl.
- Heating and Ventilating: Page ___ to ___, incl.
- Plumbing: Page ___ to ___, incl.
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**ADDENDA:**

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2. STATED ALLOWANCES

Pursuant to Article 11.8 of the General Conditions, the Contractor shall include the following cash allowances in his proposal:

(a) For N/A _________ (Page _______ of Specifications) $ N/A
(b) For N/A _________ (Page _______ of Specifications) $ N/A
(c) For N/A _________ (Page _______ of Specifications) $ N/A
(d) For N/A _________ (Page _______ of Specifications) $ N/A
(e) For N/A _________ (Page _______ of Specifications) $ N/A
(f) For N/A _________ (Page _______ of Specifications) $ N/A
3. **A. Payments to Contractor**

1. To insure the proper performance of this contract, the Owner shall retain five percent (5%) of the amount of each estimate until final completion and acceptance of all work covered by this contract: Provided that the Contractor shall submit his estimate not later than the first day of the month: Provided further that on completion and acceptance of each separate building, public work, or other division of the contract, on which the price is stated separately in the contract, payment may be made in full, including retained percentages thereon, less authorized deductions.

2. In preparing estimates the material delivered on the site and preparatory work done may be taken into consideration.

3. All material and work covered by partial payments made shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the Owner to require the fulfillment of all of the terms of the contract.

4. **Owner's Right to Withhold Certain Amounts and Make Application Thereof:** The Contractor agrees that he will indemnify and save the Owner harmless from all claims growing out of the lawful demands of subcontractors, laborers, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If the Contractor fails so to do, then the Owner may, after having served written notice on the said Contractor, either pay unpaid bills, of which the Owner has written notice, direct, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor or his Surety. In paying any unpaid bills of the Contractor, the Owner shall be deemed the agent of the Contractor, and any payment so made by the Owner shall be considered as a payment made under the contract by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.

**B. Payments by Contractor**
The Contractor shall pay (a) for all transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered, (b) for all materials, tools, and other expendable equipment to the extent of ninety percent (90%) of the cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at the site of the project, and the balance of the cost thereof, not later than the 30th day following the completion of that part of the work in or on which such materials, tools, and equipment are incorporated or used, and (c) to each of his subcontractors, not later than the 5th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by his subcontractors to the extent of each subcontractor's interest therein.

C. Time for Completion and Liquidated Damages

It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion as specified in the contract of the work to be done hereunder are ESSENTIAL CONDITIONS of this contract; and it is further mutually understood and agreed that the work embraced in this contract shall be commenced on a date to be specified in the "Notice to Proceed".

The Contractor agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

If the said Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this contract, to pay to the Owner the amount specified in the contract, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the contract for completing the work.

The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be retained from time to time by the Owner from current periodical estimates.
It is further agreed that time is of the essence of each and every portion of this contract and of the specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this contract. Provided that the Contractor shall not be charged with liquidated damages or any excess cost when the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner; Provided further that the Contractor shall not to be charged with liquidated damages or any excess cost when the delay in completion of the work is due:

(a) To any preference, priority or allocation order duly issued by the Government.

(b) To unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and

(c) To any delays of Subcontractors or suppliers occasioned by any of the causes specified in subsections (a) and (b) of this article:

Provided further that the Contractor shall, within ten (10) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the contract, notify the Owner, in writing, of the delay and notify the Contractor within a reasonable time of its decision in the matter.

D. Protection of Lives and Health

"The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work. The safety provisions of applicable laws and building and construction codes, in addition to specific safety and health regulations described by Chapter XIII, Bureau of Labor Standards, Department of Labor, Part 1518, Safety and Health Regulations for Construction, as outlined in the Federal Register, Volume 36, No. 75, Saturday, April 17, 1971. Title 29 - LABOR, shall be observed and the Contractor shall take or cause to be taken, such additional safety and health measures as the Contracting Authority may determine to be reasonably necessary."

E. Subcontracts

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5 (a)(1) through (10) and such other clauses as the (Department of Housing and Urban Development) may by appropriate instructions 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 5.5.

F. Interest of Member of or Delegate to Congress
No member of or Delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

G. Other Prohibited Interests

No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part hereof. No officer, employee, architect, attorney, engineer or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

H. Use and Occupancy Prior to Acceptance by Owner

The Contractor agrees to the use and occupancy of a portion or unit of the project before formal acceptance by the Owner, provided the Owner:

(a) Secures written consent of the Contractor except in the event, in the opinion of the Architect/Engineer, the Contractor is chargeable with unwarranted delay in final clean-up of punch list items or other contract requirements.

(b) Secures endorsement from the insurance carrier and consent of the surety permitting occupancy of the building or use of the project during the remaining period of construction, or,

(c) When the project consists of more than one building, and one of the buildings is occupied, secures permanent fire and extended coverage insurance, including a permit to complete construction. Consent of the surety must also be obtained.

I. Photographs of the Project

If required by the Owner, the Contractor shall furnish photographs of the project, in the quantities and as described in the Supplemental General Conditions.

J. Suspension of Work

Should the Owner be prevented or enjoined from proceeding with work either before or after the start of construction by reason of any litigation or other reason beyond the control of the Owner, the Contractor shall not be entitled to make or assert claim for damage by reason of said delay; but time for completion of the work will be extended to such reasonable time as the Owner may determine will compensate for time lost by such delay with such determination to be set forth in writing.

4. FEDERAL LABOR STANDARDS PROVISIONS
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 Standards 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 than 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)(iv). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 FR 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 representative, 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 the 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 persons, 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 and trainees, 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 or trainee, 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 sure 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)(i) and that such information is correct and complete;
(2) That each laborer or mechanic (including each 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 representative of HUD or its designee or the Department of Labor, and shall permit such representative 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. (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.
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 journeyman hourly rate specified in the applicable 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.

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 instructions 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 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.


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. Certification of Eligibility.

(i) 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 to work 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 forty hours in such workweek.

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 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 this 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.

5. SPECIAL HAZARDS

The Contractor's and his Subcontractor's Public Liability and Property Damage Insurance shall provide adequate protection against the following special hazards:

6. CONTRACTOR'S AND SUBCONTRACTOR'S PUBLIC LIABILITY, VEHICLE LIABILITY, AND PROPERTY DAMAGE INSURANCE

As required under Article 5 of the General Conditions, the Contractor's Public Liability Insurance and Vehicle Liability Insurance shall be in an amount not less than $____________ for injuries, including accidental death, to any one person, and subject to the same limit for each person, in an amount not less than $____________ on account of one accident, and Contractor's Property Damage Insurance in an amount not less than $____________.

The Contractor shall either (1) require each of his subcontractors to procure and to maintain during the life of his subcontract, Subcontractor's Public Liability and Property Damage Insurance of this type and in the same amounts as specified in the preceding paragraph, or (2) insure the activities of his subcontractors in his own policy.

7. PHOTOGRAPHS OF PROJECT

As provided in Paragraph 3.1 of the Supplemental General Conditions, the Contractor will furnish photographs in the number, type, and stage as enumerated below:


Given on Pages ______, ______ and _______.

* See Special Conditions
9. **BUILDER'S RISK INSURANCE**

As provided in the General Conditions, Article 5.6, the Contractor **will/will not** maintain Builder's Risk Insurance (fire and extended coverage) on a 100 percent completed value basis on the insurable portions of the project for the benefit of the Owner, the Contractor, and all Subcontractors, as their interests may appear.

** Strike out one.

10. **SPECIAL EQUAL OPPORTUNITY PROVISIONS**

A. **Activities and Contracts Not Subject to Executive Order 11246, as Amended**

(Applicable to Federally assisted construction contracts and related subcontracts $10,000 and under.)

During the performance of this contract, the Contractor agrees as follows:

1. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor shall take affirmative action to ensure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

2. The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by Contracting Officer setting forth the provisions of this nondiscrimination clause. The Contractor shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

3. Contractors shall incorporate foregoing requirements in all subcontracts.

B. **Executive Order 11246 (contracts/subcontracts above $10,000)**

1. Section 202 Equal Opportunity Clause

During the performance of this contract, the Contractor agrees as follows:
The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment, or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration without regard to race, color, religion, sex, or national origin.

The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding a notice to be provided by the Contract Compliance Officer advising the said labor union or workers' representatives of the Contractor's commitment under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Department of the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and others.

In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
g. The Contractor will include the provisions of the sentence immediately preceding paragraph a. and the provisions of paragraphs a. through g. in every subcontract or purchase order unless exempted by rules, regulations, orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, 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 Department may direct as a means of enforcing such provisions, including sanctions for non-compliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Department, the Contractor may request the United States to enter into such litigation to protect the interest of the United States.


(Applicable to contracts/subcontracts exceeding $10,000.)

a. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

b. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

<table>
<thead>
<tr>
<th>Goals for minority participation</th>
<th>Goals for female participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insert Goals</td>
<td>Insert Goals</td>
</tr>
<tr>
<td>26.5%</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

NOTE: THESE GOALS MUST BE PROVIDED. Also, list State Geographic Area to be covered on following page.

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally assisted) performed in the covered area. If the Contractor performs construction work in a geographic area located outside of the covered area, it shall apply the goals established for such geographic area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its Federally involved and non-Federally involved construction.
The contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

c. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

d. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is City of Gleason, Weakley County, Tennessee.


a. As used in these specifications:

(1) "Covered area" means the geographical area described in the solicitation from which this contract resulted;

(2) "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

(3) "Employer identification number" means the federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;

(4) "Minority" includes:

(a) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
(b) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South America or other Spanish Culture or origin, regardless of race);

(c) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands);

(d) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

b. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

c. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
d. The Contractor shall implement the specific affirmative action standards provided in paragraphs g.(1) through (16) of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing contracts in geographical areas where they do not have a Federal or Federally-assisted construction contract shall apply the minority and female goals established for the geographic area where the contract is being performed. Goals are published periodically in the Federal Register in notice form and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

e. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

f. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

g. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
(1) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

(2) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its union have employment opportunities available, and maintain a record of the organization's responses.

(3) Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.

(4) Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

(5) Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under g.(2) above.
(6) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company's EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

(7) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

(8) Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

(9) Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date of the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

(10) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
(11) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.

(12) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

(13) Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

(14) Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

(15) Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

(16) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

h. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations g.(1) through (16). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under g.(1) through (16) of these Specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation shall not be a defense for the Contractor's non-compliance.
i. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

j. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

k. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

l. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

m. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph g. of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
n. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company's EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee, the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number where assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and location at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractor shall not be required to maintain separate records.

o. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

C. Certification of Nonsegregated Facilities (Over $10,000)

By the submission of this bid, the bidder, offeror, applicant or subcontractor certifies that he/she does not maintain or provide for his/her employees any segregated facility at any of his/her establishments, and that he/she does not permit employees to perform their services at any location, under his/her control, where segregated facilities are maintained. He/She certifies further that he/she will not maintain or provide for employees any segregated facilities at any of his/her establishments, and he/she will not permit employees to perform their services at any location under his/her control where segregated facilities are maintained. The bidder, offeror, applicant or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause of this contract. As used in this certification, the term "segregated facilities" 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, transportation and housing facilities provided for employees which are segregated on the basis of race, color, religion, or are in fact segregated on the basis of race, color, religion, or otherwise. He/She further agrees that (except where he/she has obtained identical certifications from proposed subcontractors for specific time periods) he/she will obtain identical certification from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause; that he/she will retain such certifications in his/her files; and that he/she will forward the following notice to such proposed subcontractors (except where proposed subcontractors have submitted identical certifications for specific time periods).

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

E. **Section 109 of the Housing and Community Development Act of 1974**

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 funds made available under this title.

F. **"The Section 3 Clause"**

1. The work to be performed under this contract is on a project assisted under a program providing direct Federal financial assistance from the Department of Housing and Urban Development and is subject to the requirements of section 3 of the Housing Urban Development Act of 1968, as amended, 12 U.S.C. 1701u. Section 3 requires that to the greatest extent feasible, opportunities for training and employment be given to lower income residents of the area of the Section 3 covered project, and contracts for work in connection with the project be awarded to business concerns which are located in, or owned in substantial part by persons residing in the area of the Section 3 covered project.

2. The parties to this contract will comply with the provisions of said Section 3 and the regulations issued pursuant thereto by the Secretary of Housing and Urban Development set forth in 24 Part CFR 135, and all applicable rules and orders of the Department issued thereunder prior to the execution of this contract. The parties to this contract certify and agree that they are under no contractual or other disability which would prevent them from complying with these requirements.

3. The contractor will send to each labor organization or representative of workers with which he has a collective bargaining agreement or other contract or understanding, if any, a notice advising the said labor organization or workers' representative of his commitments under this Section 3 clause and shall post copies of the notice in conspicuous places available to employees and applicants for employment or training.

4. The contractor will include this Section 3 clause in every subcontract for work in connection with the project and will, at the direction of the applicant for or recipient of Federal Financial assistance, take appropriate action pursuant to the subcontract upon a finding that the subcontractor is in violation of regulations issued by the Secretary of Housing and Urban Development, 24 CFR Part 135. The contractor will not subcontract with any subcontractor where it has notice or knowledge that the latter has been found in violation of regulations under 24 CFR part 135 and will not let any subcontract unless the subcontractor has first provided it with a preliminary statement of ability to comply with the requirements of these regulations.
5. Compliance with the provisions of Section 3, the regulations set forth in 24 CFR Part 135, and all applicable rules and orders of the Department issued thereunder prior to the execution of the contract, shall be a condition of the Federal financial assistance provided to the project, binding upon the applicant or recipient, its contractors and subcontractors, its successors, and assigns to those sanctions specified by the grant or loan agreement or contract through which Federal assistance is provided, and to such sanctions as are specified by 24 CFR Part 135.

G. 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.

H. Section 504 Handicapped

Non-Discrimination for Handicapped Workers

No otherwise qualified handicapped individual in the U.S., as defined in Section 7, Paragraph 6 of the Rehabilitation Act of 1973 shall, solely by reason of this handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

11. CERTIFICATION OF COMPLIANCE WITH AIR AND WATER ACTS

(Applicable to Federally assisted construction contracts and related subcontracts exceeding $100,000)

Compliance with Air and Water Acts

During the performance of this contract the contractor and all subcontractors shall comply with the requirements of the Clean Air Act, as amended, 42 USC 1857 et seq., the Federal Water Pollution Control Act, as amended, 33 USC 1251 et seq., and the regulations of the Environmental Protection Agency with respect thereto, at 40 CFR Part 15, as amended.

In addition to the foregoing requirements, all nonexempt contractors and subcontractors shall furnish to the Owner, the following:

1. A stipulation by the Contractor or subcontractors, that any facility to be utilized in the performance of any nonexempt contract or subcontract, is not listed on the List of Violating Facilities issued by the Environmental Protection Agency (EPA) pursuant to 40 CFR 15.20.
2. Agreement by the Contractor to comply with all the requirements of Section 114 of the Clean Air Act, as amended, (42 USC 1857c-8) and Section 308 of the Federal Water Pollution Control Act, as amended, (33 USC 1318) relating to inspection, monitoring, entry, reports and information, as well as all other requirements specified in said Section 114 and Section 308, and all regulations and guidelines issued thereunder.

3. A stipulation that as a condition for the award of the contract, prompt notice will be given of any notification received from the Director, Office of Federal Activities, EPA, indicating that a facility utilized, or to be utilized for the contract, is under consideration to be listed on the EPA List of Violating Facilities.

4. Agreement by the Contractor that he will include, or cause to be included, the criteria and requirements in paragraph (1) through (4) of this section in every nonexempt subcontract and requiring that the Contractor will take such action as the Government may direct as a means of enforcing such provisions.

12. SPECIAL CONDITIONS PERTAINING TO HAZARDS, SAFETY STANDARDS AND ACCIDENT PREVENTION

A. Lead-Based Paint Hazards

(Applicable to contracts for construction or rehabilitation of residential structures.)
The construction or rehabilitation of residential structures is subject to the HUD Lead-Based Paint regulations, 24 CFR Part 35. The Contractor and Subcontractors shall comply with the provisions for the elimination of lead-base paint hazards under sub-part B of said regulations. The Owner will be responsible for the inspections and certifications required under Section 35.14(f) thereof.

B. Use of Explosives (Modify as Required)

When the use of explosives is necessary for the prosecution of the work, the Contractor shall observe all local, state and Federal laws in purchasing and handling explosives. The Contractor shall take all necessary precaution to protect completed work, neighboring property, water lines, or other underground structures. Where there is danger to structures or property from blasting, the charges shall be reduced and the material shall be covered with suitable timber, steel or rope mats.

The Contractor shall notify all owners of public utility property of intention to use explosives at least eight hours before blasting is done, close to such property. Any supervision or direction of use of explosives by the engineer, does not in any way reduce the responsibility of the Contractor or his Surety for damages that may be caused by such use.

C. Danger Signals and Safety Devices (Modify as Required)
The Contractor shall make all necessary precautions to guard against damages to property and injury to persons. He shall put up and maintain in good condition, sufficient red or warning lights at night, suitable barricades and other devices necessary to protect the public. In case the Contractor fails or neglects to take such precautions, the Owner may have such lights and barricades installed and charge the cost of this work to the Contractor. Such action by the Owner does not relieve the Contractor of any liability incurred under these specifications or contract.

13. FLOOD DISASTER PROTECTION

This Contract is subject to the requirements of the Flood Disaster Protection Act of 1973 (P.L. 93-234). Nothing included as a part of this Contract is approved for acquisition or construction purposes as defined under Section 3(a) of said Act, for use in an area identified by the Secretary of HUD as having special flood hazards which is located in a community not then in compliance with the requirements for participation in the national flood insurance program pursuant to Section 201(d) of said Act; and the use of any assistance provided under this Contract for such acquisition or construction in such identified areas in communities then participating in the national flood insurance program shall be subject to the mandatory purchase of flood insurance requirements of Section 102(a) of said Act.

Any contract or agreement for the sale, lease, or other transfer of land acquired, cleared or improved with assistance provided under the Contract shall contain, if such land is located in an area identified by the Secretary as having special flood hazards and in which the sale of flood insurance has been made available under the National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 et seq., provisions obligating the transferee and its successors or assigns to obtain and maintain, during the ownership of such land, such flood insurance as required with respect to financial assistance for acquisition or construction purposes under Section 102(a) of the Flood Disaster Protection Act of 1973.

14. ACCESS TO RECORDS/MAINTENANCE OF RECORDS

The Contractor shall maintain accounts and records, including personnel, property, and financial records, adequate to identify and account for all costs pertaining to the contract and such other records as may be deemed necessary by the locality to assure proper accounting for all funds. These records will be available for audit purposes to the locality or the State or any other authorized representative, and will be retained for three years after contract completion unless permission to destroy them is granted by the locality. Moreover, the locality, State, or any authorized representative shall have access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

15. CONFLICT OF INTEREST OF OFFICERS OR EMPLOYEES OF THE LOCAL JURISDICTION, MEMBERS OF THE LOCAL GOVERNING BODY, OR OTHER PUBLIC OFFICIALS

No officer or employee of the local jurisdiction or its designees or agents, no member of the governing body, and no other public official of the locality who exercises any function or responsibility with respect to this contract, during his/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. Further, the contractor shall cause to be incorporated in all subcontracts the language set forth in this paragraph prohibiting conflict of interest.
16. **DRUG-FREE WORKPLACE**

Under the provisions of Tennessee Code Annotate § 50-9-113 enacted by the General Assembly effective 2001, a) employers with five (5) or more employees who contract with either the state or a local government to provide construction services are required to submit an affidavit stating that they have a drug free workplace program that complies with Title 50, Chapter 9, in effect at the time of submission of a bid at least to the extent required of governmental entities. The statute, imposes other requirements on the contractor, but the grantee’s responsibility is specifically limited in section (b) of the state as follows:

(b) A written affidavit by the principal officer of a covered employer provided to a local government at the time such bid or contract is submitted stating that the employer is in compliance with this section shall absolve the local government of all further responsibility under this section and any liability arising from the employer’s compliance or failure of compliance with the provisions of this section.

17. **PROJECT SIGN**  
*Not Applicable*

If a project sign is erected, it must include the following:

- Governor *(Name)*
- Department of Economic and Community Development
- Commissioner *(Name)*
- CDBG Grant *(Amount)*
SC-1.00 NOTICE

1.01 The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above-mentioned documents.

1.02 Anything mentioned in the Specifications and not shown on the Drawings or shown on the Drawings and not mentioned in the Specifications, shall be of like effect as if shown or mentioned in both.

1.03 In case of a difference between the Drawings and the Specifications, the Specifications shall govern. If there are further differences between the Special Conditions and other sections of the Technical Specifications, the Special Conditions shall govern.

SC-2.00 SHOP DRAWINGS

Detailed shop drawings, in amplification of the drawings referred to in this Contract, on all equipment, steel, piping arrangements and all other items requiring the Engineer's approval, shall be submitted to the Engineer before proceeding with the work. Five (5) copies of such drawings shall be submitted to the Engineer in the form of blueprints for approval. If approved, two (2) sets of such prints will be returned to the Contractor marked approved. If changes or corrections are necessary, one (1) set will be returned to the Contractor with such changes or corrections noted, and the Contractor shall re-submit corrected or changed prints in five (5) copies. It is understood that the approval by the Engineer of the Contractor's drawings, whether general or detailed, is a general approval relating only to their sufficiency and compliance with the intention of the Contract and shall not excuse or constitute a waiver of error, discrepancies or omissions.

When submitted for the Engineer's review, Shop Drawings shall bear the Contractor’s certification that he has reviewed, checked and approved the Shop Drawings and that they are in conformance with the requirements of the Contract Documents.

SC-3.00 RIGHTS OF ENTRY

The right to enter on any site of construction or material storage is reserved by the Owner and all Government agencies involved in any way with the project.

SC-4.00 LIQUIDATED DAMAGES

Bidder hereby agrees to commence work under this contract on or before a date to be specified in the Notice to Proceed and to fully complete the project within the number of days stated on the
Bid Schedule. Bidder further agrees to pay as liquidated damages as stated in the bid for each consecutive calendar day thereafter until completion of the project.

**SC-5.00 SCHEDULE AND PROGRESS CHART**

5.01 Upon starting construction, Contractor shall submit to Owner, a schedule and progress chart which indicates the manner in which he anticipates meeting the time schedule requirements of this Contract. This chart shall be realistic and shall meet the approval of the Owner.

5.02 The Contractor shall cooperate in scheduling his work to complete these portions of his Contract as soon as practicable. This scheduling by the Contractor shall meet the approval of the Owner.

**SC-6.00 MINIMUM INSURANCE AND SAFETY COVERAGE REQUIREMENTS**

6.01 All requirements of the Occupational Safety and Health Act and recommendations of the insurance carrier shall be heeded by the Contractor.

6.02 INSURANCE COVERAGE: The limits of liability for the insurance required in the General Conditions shall provide coverage for not less than the following amounts or greater where required by law:

A. Worker’s Compensation: Insurance required in connection with the performance of the work:
   1. State: Statutory
   2. Applicable Federal: Statutory
   3. Employer’s Liability: $100,000

B. Comprehensive General Liability (including Premises-Operations; Independent Contractors’ Protection; Products Liability and Completed Operations; Broad Form Property Damage):
   1. Bodily Injury (including completed operations and products liability):
      $1,000,000 each occurrence; $2,000,000 annual aggregate
   2. Property Damage: $1,000,000 each occurrence; $2,000,000 annual aggregate
   3. Property Damage Liability insurance will provide explosion, collapse and underground coverages.
   4. Personal Injury, with employment exclusion deleted.

C. Comprehensive Automobile Liability: Insurance shall cover all owned, non-owned, and hired motor vehicles subject to the following limits:
   1. Bodily Injury: $1,000,000 each person; $1,000,000 each occurrence
   2. Property Damage: $1,000,000 each occurrence
D. Contractual Liability:

1. Bodily Injury: $1,000,000 each occurrence

2. Property Damage: $1,000,000 each occurrence; $1,000,000 annual aggregate

E. Umbrella Excess Liability: $1,000,000 Single Limit Bodily Injury and Property Damage.

The Contractor shall carry the above-mentioned minimum coverage for the life of the construction project. This coverage may be in the form of a special policy or an Endorsement on the basic policy of the Contractor and additional costs (if any) to Owner will be included in the original Contract Total Bid Amount.

Contractor agrees to purchase such insurance from companies acceptable to Owner, to furnish Owner upon request from time to time with satisfactory evidence that such insurance is being properly carried, and to furnish the Owner and the Engineer with Certificates of Insurance of all policies and/or Endorsements before Owner will issue an order to commence Work.

All Contractor's insurance policies shall name the Owner, Contractor, Subcontractor(s), Engineer, and Engineer's Consultants on the Certificates of Insurance as additional insured.

All insurance policies shall provide that no cancellation or modification of the policy or Endorsement shall be effective until thirty (30) days following the mailing of written notices of such cancellation to the Engineer and to the Owner.

SC-7.00 ADDITIONAL HELP BY CONTRACTOR

The Contractor will be required to furnish assistance, as needed, to the Resident Inspector in measuring for construction record drawings and/or determination of quantities.

SC-8.00 COMPETENCE OF WORKERS

Any worker on any part of the work shall be competent to perform the task to which they are assigned. Supervision for each crew shall be done by a foreman or superintendent that is capable of directing the work. Conditions which require the constant presence of an Inspector to assure the quality of the work will not be tolerated. Any worker who does not produce quality workmanship through lack of cooperation or incompetence shall be removed from the job. The judge of quality of workmanship shall be the Engineer.

SC-9.00 UNDERGROUND UTILITIES AND STRUCTURES

Location of utilities and underground structures shown on the plans are approximate and those shown are not necessarily all of the existing utilities and structures. It is the Contractor's responsibility to determine the exact location and existence of all utilities and underground structures.
SC-10.00  CONCRETE

Unless otherwise specified, concrete shall be 3500 PSI ready mix concrete designed by an independent laboratory. Placement shall meet the requirements of Section 501 of the Standard Specifications for Road and Bridge Construction, Tennessee Highway Department.

SC-11.00  FOUNDATION GRAVEL, SAND AND CONCRETE

Foundation gravel, sand or concrete shall be used when existing conditions require stabilization as determined by the Engineer. Foundation gravel shall be washed rock.

SC-12.00  ASPHALTIC CONCRETE

12.01 The specifications that shall govern the materials, equipment and construction requirements shall be Section 407 and all sections referred to therein of the “Standard Specifications for Road and Bridge Construction”, latest revision, Tennessee Department of Transportation. The base course shall meet the requirements of Section 411, Grade E of the above-mentioned specification.

12.02 The street repair shall consist of 6-inches of compacted granular base and 2-inch compacted asphalt.

12.03 Asphalt is not expected to be damaged on this project.

SC-13.00  CONSTRUCTION STAKING

13.01 The Contractor shall provide all labor, materials and equipment required to properly stake the work covered by these Specifications.

13.02 There will not be a separate pay item for this work. Cost for such work will be included in the bid price for the proposed construction.

SC-14.00  GAS MAIN REPAIR

14.01 Gas mains are within the project limits. Before any construction is begun, the Contractor will have a representative from the gas utility company locate all high-pressure mains, low-pressure mains, and all house service lines that will be crossed during construction. The Contractor shall and hereby does assume entire responsibility for determining the exact location of all gas mains and their proper protection, support and maintenance during all construction operations of this project.

14.02 Should the trencher or a backhoe hit or damage the gas main during construction of the sewer lines, the gas main or gas service shall immediately be repaired.

14.03 Should the trencher or backhoe yank or bend the gas main substantially, the Contractor shall check the gas main above and below the ditch excavation for possible breaks in the gas main.
14.04 Any damage should be followed by a call to the Gas Company and an expert should review the damage and repair before it is backfilled.

**SC-15.00 TESTING**

The Owner shall pay the cost of all independent laboratory fees and fees charged by an independent laboratory for field tests during construction of the project. Testing or test results for products such as seed, cement, etc. shall be provided by the supplier to the Contractor for approval by the Engineer.

**SC-16.00 EXISTING CONDITIONS**

The Contractor shall be responsible for arrangements to locate underground gas, telephone, electricity, and TV lines. Existing sanitary sewers and water lines shall be adequately located by the Contractor to avoid damage to underground facilities. Excessive and/or irresponsible damage to existing facilities will not be tolerated.

**SC-17.00 PROTECTION OF LIVES AND HEALTH**

The Contractor alone shall be responsible for the safety, efficiency, and adequacy of this plant, appliances and methods, and/or any damage which may result from their failure or their improper construction, maintenance, or operation.

**SC-18.00 GUARANTEE**

The Contractor shall guarantee all workmanship and materials under this contract for a period of twelve (12) months after final acceptance of the contract and shall, in the event of failure of any item due to workmanship or materials, replace same without cost to the Owner.

**SC-19.00 BASIS OF PAYMENT**

All work included under this contract shall be paid for by the lump sum or unit price bid method for work actually performed. The Proposal Form shall indicate pay items. All work of any nature required to complete the items shall be included in the lump sum or unit price bid for such item.

**SC-20.00 CLEAN UP**

After completion of construction, the Contractor shall remove all surplus material, tools, and temporary structures from the site. All rubbish and excess earth shall be removed and the construction site left in a clean, satisfactory condition.

**SC-21.00 BUDGET AMOUNT AND BASIS OF AWARD**

If the lowest responsible bid is within the budget amount, the contract will be awarded to the low bidder. If the base bid exceeds the funds available, Deductive Alternate No. One will be used to reduce the cost of the contract. Then, if funds are available, the contract will be awarded to the bidder with the lowest responsible base bid less Deductive Alternate No. One. The same principle applies to remaining deductive alternates.
SC-22.00 DETERMINATION OF LOW BIDDER

All bids will be checked by the Engineer for mathematical accuracy. The quantities will be multiplied by the unit prices bid. Then the sum of the products will be calculated. The unit prices govern. If there are errors in the multiplication or addition, the Engineer will make corrections in order to determine the lowest bidder. Consideration will be given as to a bidder’s intent rather than what was written on the bid form only under unusual circumstances.

SC-23.00 SANITARY SEWER MAIN CONSTRUCTION

23.01 Sewer construction shall meet the requirements of the Sanitary Sewer Construction Section in the technical specifications. Additional requirements of PVC Gravity Sewer Pipe Section in the technical specifications shall be met. Bedding for plastic pipe shall be as specified in the PVC Gravity Sewer Pipe Section in the technical specifications and as shown on the Plans. Four-inch (4") service pipe will not require bedding.

23.02 Services shall have 54-inches or more of cover when possible.

SC-24.00 BACKFILLING

24.01 Water jetting may be used only on repairs where streets will not be damaged. Care shall be exercised to see that the force of the water jet does not extend low enough to dislodge the pipe bedding or to move the pipe itself. In special cases, sand backfill and immediate paving may be required across driveways and streets. Payment to be made at unit prices bid. Water will be furnished by the Owner at no cost to the Contractor.

24.02 All drives and street crossings shall be backfilled and tamped with mechanical tampers in 6-inch layers immediately after crossing same. The above shall be done regardless of other methods used for backfilling and compacting of remaining trench. All timber used for temporary traffic support shall be removed before the work is completed.

24.03 All backfilled trenches shall be maintained by the Contractor until completion and acceptance of the Owner. Upon acceptance of completed construction, maintenance will be assumed by others.

24.04 In asphalted areas where concrete is used for backfilling, the concrete shall be left 2-inches lower than the top of the street in order to fill this 2-inches with asphalt at a later date.

24.05 Base limestone shall be compacted to one hundred percent (100%) of the standard proctor. The Engineer may approve compaction when no movement is experienced under the weight of a loaded gravel truck or road patrol.

24.06 In asphalted areas, the compacted backfill shall be placed to within 8-inches of the top of the street. Limestone shall be placed on the compacted backfill to a compacted thickness of 6-inches to grade. Then 2-inches of compacted asphalt shall be added.
24.07 The Contractor shall make such repairs as required to maintain traffic and provide safety on the traffic areas. Temporary limestone base shall be placed in the proper thicknesses and manners to avoid later excavation and regraveling of the base. Base thickness shall match the existing base except that 8-inches minimum thickness shall be used. Concrete base may be ordered by the Owner.

24.08 The Contractor shall maintain the ditches until his work is substantially completed. The Owner will inspect the areas to be paved prior to beginning of pavement repairs. Upon acceptance of the work for repairs, the Contractor shall be responsible only for the work done by him, the Owner shall be responsible only for the work done by him, and the Owner shall be responsible for further maintenance and pavement repairs. Street repairs caused by leaks or other defective workmanship will be charged to the Contractor.

**SC-25.00 ROAD GRAVEL**

25.01 Road gravel shall meet the requirements of mineral aggregate Section 303 of the Standard Specifications for Road and Bridge Construction, Tennessee Department of Transportation.

25.02 Compaction: 100% of the standard proctor. The Engineer may approve compaction when no movement is experienced under the weight of a loaded gravel truck or road patrol.

25.03 Repairs shall be paid for on a linear foot basis.

25.04 The granular material is locally known as limestone, CR-610 or simply as “33-C”. Any reference on the plans or in the specifications to limestone, CR-610 or “33-C” shall be defined as the above described granular material.

**SC-26.00 MANHOLE REHABILITATION**

26.01 The Technical Specifications have two alternative methods of rehabilitating the deteriorated manholes. Either method is acceptable. If the Strong-Seal method or equal is used, there must be a bid for ring sealer. If the Spectra Shield product or equal is used, the Contractor may write “No Bid” on the line on the bid form for ring sealer.

26.02 Contact information is as follows:

The Strong Company, Inc.:  
4505 Emmett Sanders Road  
Pine Bluff, AR  71601  
Phone: 800-982-8009  
Fax: 870-850-6933  
Email: info@strongseal.com  
Website: www.strongseal.com
SC-27.00 SELECTION OF EQUIPMENT AND MATERIALS - SANITARY SEWERS

27.01 All equipment items and materials used in the work are subject to the Engineer's approval. They shall be products of reputable manufacturers and shall conform to specification requirements, accepted standard practice and to State, Federal and Municipal laws and regulations. These items shall be the best of respective equipment and materials available for the purpose for which used. Equipment and materials not conforming to specifications will not be considered.

27.02 The Contractor shall furnish to the Engineer complete, accurate information regarding all equipment and materials he proposes to furnish. Selection and approval of equipment for use in the work is based in part upon information furnished by the Contractor.

27.03 The materials to be used shall conform to the following provisions of the specifications:

a) Concrete - See description previously stated in these Special Conditions.

b) Sewer Construction - The sewers shall be constructed as specified in the Sanitary Sewer Construction Section in the Technical Specifications.

c) Gravity Sewer Mains - The sewer pipe shall be PVC as specified in the PVC Gravity Sewer Pipe Section in the Technical Specifications.

d) Road Gravel - shall meet the requirements so stated in these Special Conditions.

SC-28.00 TRENCH DEWATERING

Dewatering of ground water is not expected to be necessary. If dewatering does become necessary, it will be paid by change order.

SC-29.00 BYPASS PUMPING

Bypass pumping is not a pay item because in most cases it is anticipated that the upstream sewer main will be plugged with the repair made quickly enough so that bypass pumping is not required. (This statement supersedes Part 5.00 of Section 02733.21). Nevertheless, the Contractor is fully responsible for ensuring that no overflows or backing up into houses occur. This means that items for the repair shall be on hand prior to cutting out the damaged area. If repair is done by cured-in-place pipe (CIPP), there will be no extra payment for bypass pumping.
SC-30.00 BUDGET CONSTRAINTS

Due to the uncertainty of quantities related to unknown conditions, it is possible that the scope of work will exceed the contract amount. It is the responsibility of the Contractor to work closely with the Inspector to keep a running total of cost. Once the contract amount is reached, work shall cease.

Certain extenuating circumstances will be taken into consideration, such as a small overrun needed to finish the last point repair rather than leaving it half way done.

SC-31.00 PROPRIETORY PRODUCTS

Use of brand names in these specifications is so that a standard of quality may be set. Any product that meets the specifications may be used regardless of brand name.

SC-32.00 TRENCH BOX

Some of the work is close to a city street. A trench box is required for all work close to pavement. Some minor damage to streets is expected. Pavement to be removed to accommodate trench box shall be saw cut. Excessive damage or unnecessary damage will not be tolerated. If in the opinion of the Engineer excessive damage is being done to streets, the work shall cease with payments to be made only on previously acceptable completed work. No further payments will be made. Remaining work will be rebid.

SC-33.00 SEEDING, MULCHING AND WATERING

This work shall be included in the price bid for any operation that disturbs ground.

SC-34.00 PRESSURE AND VACUUM TEST

In order to minimize bypass pumping, pressure testing of sewer mains and vacuum testing of rehabilitated manholes will not be required. Nevertheless, high quality workmanship will be required.

SC-35.00 PIPE SIZES

35.01 The pipe sizes of the mains are 8-inch and 10-inch.

35.02 Pipe sizes that are shown on the map shall be confirmed by the Contractor during the cleaning and CCTV portion of the project. The Contractor shall not fabricate the impregnated resin until all pipe sizes have been confirmed.

SC-36.00 TRAFFIC CONTROL

The Contractor shall maintain traffic on all streets or reroute traffic with City permission during the entire repair and curing period (if applicable) at each rehabilitation site. This includes all blockades, signs, warning lights, culverts, gravel, etc. necessary to maintain site traffic movement in any area. There is no pay item for this work.
Page 9 of Section 02733.43 of the Technical Specifications discusses “Acceptance Tests”. The Contractor shall submit these samples to the Engineer for review on a weekly basis. These samples shall then be immediately submitted to the testing lab. In order for the Engineer to sign monthly pay requests, lab reports for completed work must be submitted to the Engineer.

END OF SPECIAL CONDITIONS
PART 1.00 NOTICE

The General Conditions, Special Conditions, and all other herein bound and accompanying documents are part of these specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above mentioned documents. All materials are subject to the Engineer’s approval.

PART 2.00 APPLICABLE PUBLICATIONS


PART 3.00 SCOPE OF WORK

3.01 The work under this section consists of furnishing all materials, accessories, equipment, tools, transportation, services, labor and performing all operations necessary to completely execute the sanitary sewer (all types) work for this project, all as indicated on the drawings, approved shop drawings and as herein specified.

3.02 Build all sanitary sewer work of sizes, sections and materials at locations, and to grades shown on the drawings. Provide all concrete work, manholes, junctions, overflows, lateral service connections, and appurtenances, all as indicated on the drawings.

3.03 Bidder’s proposal and the contract price shall include cost of all incidental work such as removal of trees, roots, timber, masonry structures and all other obstacles, and restoration of existing surfaces, including delay and damage occasioned by same.

PART 4.00 SHOP DRAWINGS

Before commencing work, submit for the Engineer’s approval shop drawings required in connection with sanitary sewer work. See the General Conditions regarding shop drawings requirements.

PART 5.00 JOB CONDITIONS

Refer to the General Conditions for detailed information regarding job conditions requirements.

PART 6.00 PIPE TESTS

Refer to Pipe Specification for test requirements.
PART 7.00 CONCRETE WORK

Unless otherwise noted on the drawings or elsewhere specified herein, all concrete work of every description in connection with sanitary sewer work shall be same as specified in the Concrete Section for Class “A” concrete. Refer to drawings and details for locations and extent of concrete items required.

PART 8.00 MANHOLES

Provide all manholes required in connection with the sanitary sewer work, all as indicated on the drawings and approved shop drawings. All manholes shall be of the construction specified in Manholes Section of the specifications for type or types shown on the drawings.

PART 9.00 LINE AND GRADE

9.01 The “sewer grade line” or “sewer flow line” as herein specified means: inside bottom or invert of sewer, whether laid directly on the ground or otherwise supported. All necessary lines, benchmarks, and grades are given on the plans. The Contractor shall provide at his own expense and without extra cost to the Owner, all forms, materials, surveys as required for staking the work.

9.02 The Contractor shall:

A. Indicate offset distances and excavation cuts on the cut sheets.

B. Laser beam systems for maintaining line and grade shall be used. The Superintendent will make all setups and adjustments to the laser beam unless other persons are authorized by the resident engineer. A suitable tripod or compression bar will be used to hold the laser beam in a steady position during construction. Machinery operations should not affect the accuracy of the laser beam. The laser beam equipment shall be accurately adjusted and serviced as needed so as to assure proper placement of sewer pipe. A line finder transit will be used above ground to accurately determine the proposed centerline of the sewer pipe. During hot weather, heat waves may affect the accuracy of the laser beam. The Contractor will provide fresh air blowers to cool air inside of sewer pipe. The Contractor shall use manufacturers’ recommendations for care and operation of the laser beam and equipment.

PART 10.00 REMOVAL OF EXISTING PAVEMENTS

10.01 Rigid pavements include those incorporating Portland cement concrete surface or base course, bituminous concrete surface and binder course and similar type surfaces and bases. Non-rigid pavements include dirt surface, brick surface, gravel or crushed stone surface, bituminous surface course, and similar type surfacing not constructed on a rigid base.

10.02 Where rigid pavement must be removed to permit trench excavation, the pavement shall be broken out as directed along the edge of the proposed trench. The pavement shall be removed in an approved manner such that the pavement to remain in place is not
10.03 Where non-rigid pavements must be removed to permit trench excavation, the pavement shall be removed to the limits of the trench by the use of an air hammer or other approved equipment.

10.04 All cuts shall be perpendicular to the pavement surface and shall be truly and accurately made along a predetermined and carefully marked line. If necessary, a suitable stationary guide shall be used.

10.05 Removal of pavement under the jurisdiction of the local State Highway Department shall be performed according to their requirements.

**PART 11.00 EXCAVATION**

11.01 All excavation work for sewers, manholes, sewer structures and appurtenances includes: clearing of site, loosening, loading, removal, transporting and disposal of all excavated materials (wet or dry) necessary to be removed and replaced (backfilling) for purposes of sewer construction. Such work also includes all backfilling operations. All excavations shall be unclassified unless otherwise specified.

11.02 Excavate in open trenches unless shown on drawings or directed to be bored and jacked and/or in tunnel.

11.03 Excavate trenches to required depth for bedding and foundations of sewers and appurtenances, all as shown on drawings and profiles. Where conditions require, excavate to greater depths, upon Engineer's signed order, stipulating cost of additional work.

   A. Should trenches be excavated deeper than shown on drawings without the Engineer's signed authority, the Contractor shall at his own expense and without extra cost to the Owner, fill said excess excavation to required elevation with Class C concrete or approved bank run sand, or screened gravel, as directed. Tamp sand or gravel solidly in place.

   B. Bottoms of all excavations shall be of the shapes and dimensions shown on the drawings.

11.04 In general, trenches shall be only of sufficient width to provide a free working space on each side of the pipe sewer according to the size of the pipe and the character of the ground as shown on the plans; but, in every case, there shall be sufficient space between the pipe and the sides of the trench to make it possible to thoroughly ram the bedding around the pipe and to secure proper tight joints. Minimum trench width shall be 4/3 diameter of pipe plus 15-inches.

11.05 Place excavated materials and materials used in sewer construction so as not to endanger the work and so that there is free access at any time to all parts of trench, to all fire
hydrants, and to all water valves in the vicinity. Provide at all cross streets for free passage of vehicles and pedestrians either by bridging or other approved means.

11.06 Where sand backfill is required, the Contractor shall remove all surplus excavated materials from trench and streets as soon as excavated at his own expense and without extra cost to the Owner.

11.07 Excavation of trench shall not advance over 200-feet ahead of completed pipework except where it is necessary to drain wet ground in the Engineer’s opinion.

11.08 The Contractor shall and hereby does assume entire responsibility and risk of encountering quicksand, hardpan, boulder clay, rubbish, unforeseen obstacles, underground conduit and utilities, railroad tracks, pavements, and other obstacles. No claim for extra payment over and above the amount of the contract price for this work will be considered or paid to the Contractor on account of obstacles and character of ground in which trench and other excavations are made.

11.09 Where abandoned pipes, conduits, or sewers are removed from the trench leaving dead ends in the ground, such ends shall be carefully plugged or bulkheaded with concrete by the Contractor without additional compensation.

11.10 Nothing contained in these specifications relieves or implies relieving any person, firm or corporation owning or using any pipes, conduits, utilities and tracks from the obligation to maintain and protect such pipes, conduits, utilities and tracks without expense to the Owner.

11.11 Where rock is encountered in trench excavation, excavate the trench to the width and shape for classified bedding, as directed by the Engineer. Excavate a minimum of 6-inches below the bottom of the pipe. Payment for rock excavation shall be in accordance with the contract prices, or if no prices are included in the contract, in accordance with the Article entitled “Changes” of the General Conditions unless otherwise provided for within these specifications or noted on the drawings.

PART 12.00 BLASTING

In case blasting is done when excavating trench, the Contractor shall and hereby does assume entire responsibility for accidents and damage to public and private property which is caused by blasting operations and the use or storage of explosives. He shall make good at his own expense any and all such damage(s) without extra cost to the Owner.

PART 13.00 SHEETING, SHORING AND BRACING

13.01 Shoring and bracing shall be used as safety or ground conditions warrant their use.

13.02 Where trenches cannot be opened to provide safe side slopes, the contractor shall provide trench boxes to install pipe, bedding and provide worker safety.
13.03 Trench boxes shall be used and maintained in accordance with manufacturer’s recommendations and in accordance with State and Federal regulations.

13.04 No separate payment will be made using trench boxes. The Contractor shall therefore include compensation in his price per linear foot of sewer.

13.05 The Contractor under this contract shall and hereby does assume entire and sole liability for injury to persons and damage to public and private property.

**PART 14.00 PROTECTION AGAINST WATER**

14.01 Do all pumping, bailing, build all sub-drains and drains in wet trenches, form all dams, flumes, and do all other work necessary to keep all trenches free from water during progress of work and while sewers and their foundations (if any) are being constructed. Protect all newly laid mortar and fresh concrete free from damage resulting from dewatering by means of waterproofed membrane or other approved methods.

14.02 Where excavation, for its depth, is wholly or partly in wet sand or where, in the Engineer’s opinion, job conditions require, the Contractor shall install a drainage system (gravel sub-drain, well points, etc.) which shall effectively drain water from water-bearing strata.

14.03 Where necessary to remove existing sewers, the Contractor shall provide and maintain temporary outlets for all private and public drains, sewers, and catch basins. He shall take care of and discharge all sewage and storm water received from said drains and sewers for which purpose he shall provide and maintain, at his own expense without extra cost to the Owner, an approved, efficient pumping plant and temporary outlets. The Contractor shall at all times properly dispose of all water and sewage received from said temporary connections until permanent connections are made from this section of the specifications.

**PART 15.00 FOUNDATIONS**

In case additional excavation below established grade (in order to secure firm foundation) is ordered in writing by the Engineer, fill said additional depth with Class C concrete or solidly compacted washed gravel, as directed. The Contractor will be paid for “foundations” so ordered and constructed beyond the limits for classified bedding. Payment therefore shall be in accordance with the contract prices, or if no prices are included in the contract, in accordance with the Article entitled “Changes” of the General Conditions. The bid price for foundation material in place shall include the cost of additional excavation as required by the Engineer’s signed order.

**PART 16.00 TYPES OF BEDDING**

Refer to Pipe Specifications and details on Plans for bedding requirements. The price for bedding shall be included in the price bid per foot of sewer pipe.
PART 17.00 PIPE LAYING OPERATIONS

17.01 Lay all sewer pipe, under all conditions, in a dry trench, on an even firm bed throughout full length of barrel and so that no uneven strain is placed on any pipe. Maintain dry trench at all times. Conduct all pipe laying operations so as to insure proper subsequent lateral and vertical alignment of pipe and also eliminate groundwater infiltration. Bed pipe full length of barrel shaping bedding material so that a firm, even bearing will result for bottom quadrant of pipe as shown on drawings. Make bell holes carefully (for bell end pipe) and no larger than required to properly free bell from bearing on subgrade or bedding and to properly make pipe joints.

17.02 Lay socket end of all pipe upgrade. Insert spigot end of the next pipe into socket until face of spigot is in contact all around with shoulder of pipe. Join pipes in accordance with manufacturer’s recommendations.

17.03 After pipe is joined, ram and tamp bedding material into bell hole so that no voids occur in the bedding.

PART 18.00 BACKFILLING

18.01 After laying sewers, and bedding same in open cut as specified, backfill trenches to original ground surface. Unless otherwise directed, do not leave backfilling unfinished for over 200-feet behind completed pipework.

18.02 The Owner reserves the right to withhold pay requests until sewers are properly backfilled and tested.

18.03 Maintain existing roadways at intersecting streets for as long a time as possible. In refilling trench, provide and maintain a completely filled, thoroughly compacted roadway across trench ready for traffic at earliest possible time. Where directed, backfill sewer trenches with approved bank-run sand or similar granular material to prevent after-settlement.

18.04 Backfill sewer trenches above classified sewer beddings with approved excavated materials (free from organic or other deleterious materials) or bank-run sand to limits shown on drawings.

18.05 Type of sewer trench backfill shall conform to requirements as follows:

A. Compacted: Generally applicable in improved, subdivided areas, in traveled portion of an unimproved street, under a sidewalk or under a paved street for which sand backfill is not directed. Compact and place backfill above the sewer bedding in the following manner:

1) Originally excavated materials, exclusive of organic material, boulders, broken pavement or similar materials, shall be deposited in successive horizontal layers, each layer not exceeding 6-inches in thickness. Each layer shall be compacted solidly so that the compacted earth bears the
weight of a heavy piece of equipment without excessive deflection of the backfill. If the Engineer and Contractor cannot agree to this visual test for compaction, then the compaction of the backfill shall meet the standard of 90% Modified Proctor, AASHTO T99 or the same density as the original firm earth, whichever is lesser. Compaction shall be with a sheeps foot roller attached to a trackhoe. Other methods shall be submitted to the Engineer for approval.

18.06 In lieu of mechanically compacted backfill, and while not specifically excluded or otherwise restricted on the drawings or in the specifications and/or contract documents, the Engineer may require the Contractor to compact the earth backfill by water jetting where the earth is suitably permeable. Water jetting shall be done in strict conformity with the following requirements.

A. Compacted earth backfill shall be of same density, after compaction, as the original firm earth of 90% Standard Proctor, whichever is the lesser.

B. The Contractor shall provide all required water, hose equipment and accessories, all subject to the Engineer’s approval.

C. Break any crust which has bridged over the trench.

D. Space holes through which water is injected between 5-feet and 8-feet apart, as directed from time to time, and along centerline of trench. Jet all holes. Drilling or auguring is prohibited.

E. Carry holes to top of pipe. Inject water pressure just sufficient to sink holes at a moderate rate of speed and without undue cutting and washing. Pipe used to inject water into trench should be 1½-inch to 2-inch in diameter. Pipe should be of adequate length to reach the depth of the sewer pipe. If pump is used, it should be of adequate size to provide the volume needed to flood trench.

F. After jetting holes, inject water, at a rate slow enough not to overflow surface, until entire backfill is thoroughly water soaked. Water soaking period shall continue until free water appears on surface of backfill.

G. As soon as jetting work is completed, fill all holes with sand or soil as required so that there are no voids or pockets.

H. Backfilling by water jetting shall in no way relieve the Contractor from providing backfill compacted to extent and density required under this specification.

18.07 Sand: Where trench is in improved streets and pavements and other locations where it is required that after-settlement be minimized and traffic be restored with minimum interruption, place sand backfill in accordance with the following requirements:
A. Sand used for special backfilling shall be clean and hard grained. Not more than five percent (5%) of humus or dirt shall be present in the sand. Submit samples if requested.

B. Immediately after placing bedding around sewers where sand backfill is required, backfill sewer trenches with approved material to top of grade in such manner as shall insure immediate compaction of backfill with no after-settlement. If necessary to water jet backfill so as to prevent after-settlement, perform jetting as part of backfill work at no extra cost to the Owner. Such water jetting is subject to the Engineer's signed consent. Maintain approved, suitable surface conditions across trenches until improved surfaces are replaced.

C. In any event, regardless of the type of trench backfill (compacted or uncompacted), mechanical compaction or sand backfill will be required wherever existing drains or sewers cross the trench excavation. Such compacted earth or sand backfill shall extend up to the center of the crossing line and shall be compacted as herein specified in a manner to prevent after-settlement below the existing pipe. No extra compensation will be allowed for such compaction work and all associated costs shall be included in the respective unit prices for the various contract items of work.

D. All surplus excavated material not otherwise disposed of on the site shall be removed at once by the Contractor at his own expense.

E. All rubbish must be removed and the surface must be left in as it was before the commencement of the work, and it must be maintained in such condition during the period of construction and clean up of the entire job.

F. Ditches shall be opened and connected to any storm water inlets so as to provide for the adequate drainage of the surface of the adjacent lands and ditches.

G. Backfill within 5-feet of manholes, inlets, and other special structures shall be of the same quality as that specified above for compacted trench backfill. It shall be uniformly deposited on all sides and, unless otherwise permitted, solidly tamped in such manner as to avoid injuring the structures or producing unequal pressures on them.

H. All backfilling will be paid for under each respective unit price for sewers, and no special or extra compensation will be allowed.

I. If rock is encountered in the trench, the trench should be excavated 6-inches below grade and filled with ¾-inch or less crushed stone. No stone longer than 6-inches along any axis can be used for backfill.
**PART 19.00 CHECK DAMS**

Check dams shall be installed in the bedding and backfill of all new or replaced sewer lines to limit the drainage area subject to the french drain effect of gravel bedding. Major rehabilitation projects should also include check dams in the design. Dams shall consist of compacted clay bedding and backfill at least 3-feet thick to the top of the trench and cut into the walls of the trench 2-feet. Alternatively, concrete may be used, keyed into the trench walls. Dams shall be placed no more than 500-feet apart. The preferred location is upstream of each manhole. All stream crossings will include check dams on both sides of the crossing. There shall not be a separate pay item for check dams. The price per foot shall include this work.

**PART 20.00 ENCASEMENT (CONCRETE) FOR SEWER PIPE**

Where concrete encasement for sewer pipe is indicated on drawings or otherwise by the Engineer's signed order, provide Class C concrete, as specified in the Concrete Section, including placing and handling thereof. Encasement shall be at least the minimum dimensions indicated on the drawings. Fill entire trench bottom with rammed and compacted concrete or other approved, selected material (as shown on drawings) for entire width of excavation and with no voids or pockets remaining. During construction, support pipe in place on blocks or wedges. Ram and tamp concrete solidly under and around it. Backfill with approved, selected materials as specified in Backfilling for Sewers paragraph. Said backfill shall be included with and considered a part of the concrete encasement.

**PART 21.00 BORING AND JACKING OPERATIONS**

21.01 All boring and jacking operations of steel casing pipes, also installation of sewer pipes in casing pipes are included in the contract, all as shown on drawings, approved shop drawings and as herein specified. Such installation will generally be for crossing under railroads, private rights-of-way, highways, arterial streets, or other special cases. Both casing pipe and carrier pipe shall be provided in lengths short enough for proper placement and handling in the jacking pit.

21.02 The work specified herein covers two (2) basic methods of installing casing pipe mechanically (and in which diameter of casing pipe is too small to permit hand working at heading of casing pipe).

A. Pushing casing pipe into fill or earth simultaneously with boring auger as it drills the earth.

B. Drilling hole through the earth or fill and pushing casing and carrying pipe into the hole after drill auger has completed bore.

21.03 Open a suitable trench adjacent to slope of embankment or adjacent to bored or jacked section as shown on drawings. Length of approach trench shall be sufficient to accommodate selected lengths of pipe sections to be jacked and wide enough to provide sufficient working space. Set and maintain guide timers or rails accurately in bottom of approach trench, in order to keep casing pipe on correct line and grade.
Provide and install heavy timber backstop supports by rear of approach trench, adequate to take thrust of jacks without movement or distortion. It is requisite to securing of tolerance limits or boring and jacking operation to set all rails, guides and jacks exactly so that casing pipe in final position is within limits of acceptability as noted on drawings and approved by the Engineer.

21.04 Casing pipe shall be of steel and of a diameter and thickness as shown on the drawings. Joints shall be made by continuous weld completely around the perimeter of the pipe. Joint shall be watertight and shall provide a strength through the joint equal to that of the casing pipe. All said requirements are minimum and subject to the Engineer’s approval.

21.05 Carrier pipes for boring and jacking operations shall be ductile iron with slip joints of thickness, size, and style specified elsewhere in these contract documents, and as shown on the drawings for each location. If not specified elsewhere, ANSI Class 51 ductile iron shall be used. Assemble joints adjacent to casing pipe and push the assembly through casing pipe so that carrier pipe will be on a uniform grade as indicated on drawings. Provide blocking in annular space between carrier pipe and casing if carrier pipe is 10-inches in diameter or greater to prevent floating of carrier pipe inside casing pipe. The blocking shall consist of completely filling the annular space with sand pneumatically placed or pressure grouted with concrete. Bulkheads will be provided at each end of the casing pipe where so shown on the plans.

21.06 The Owner will obtain formal approval for rights-of-way. Before starting construction, secure permit by agreement with private companies, Owner, State, County, or Municipal agency as required. Commencing work before securing permit is at the Contractor’s risk. The requirements contained within the permits shall be considered a part of these specifications.

PART 22.00  MINING AND JACKING OPERATIONS

22.01 Where steel casing pipes of a size adequate to allow mining operation at the pipe heading (generally 36-inch and greater in diameter) are shown on the drawings, the casing may be installed by mining and jacking. The jacking operation will be similar to that specified under Boring and Jacking Operations. Mining shall be performed by hand digging beyond the pipe heading with the pipe jacked to follow such excavation. Mining should in no case proceed more than 12-inches to 18-inches beyond the end of the casing pipe, and if the seal is loose, may be further limited. Excavation should not extend beyond the outside diameter of the pipe. Should excavation extend beyond such limits or if materials slough off during excavation leaving voids outside the casing pipe, then holes shall be drilled in the casing pipe and such voids completely filled by pressure grouting with cement mortar.

22.02 During the course of the mining and jacking operation, provisions shall be made for continual accurate checking of line and grade so that no deviation from planned alignment will occur.

22.03 Mining and jacking operations shall comply with all pertinent portions of the specification for Boring and Jacking Operations, except that, where shown on the drawings, carrier pipe may be of reinforced concrete pipe as specified under Materials for
Sewers. In such event, placement of the carrier pipe shall include provisions for holding the pipe sections together to preclude any drifting of pipe and/or opening of pipe joints.

PART 23.00 JUNCTION WYES FOR HOUSE CONNECTIONS

23.01 Junction tees or wye branches (for house connections) shall be of same material as main sewer, furnished and laid in manner indicated on drawings and in locations directed during construction. Include cost of all stoppers in unit cost for wyes and tees. Where branches are installed for future connections, install watertight stoppers as approved by the Engineer. Branches installed to receive sanitary house connections at a later construction date shall also be plugged with watertight stoppers.

23.02 Provide all junction wyes or tees along sewers at points indicated on drawings or as directed during construction. Locate same in front of abutting properties in order to best serve such properties with sanitary sewer outlets for sewage facilities.

23.03 Unless otherwise indicated on drawings, place Y-branches in the upper quadrants above horizontal diameter of sewer at angle varying from horizontal, depending on depth of sewer and relative topography of property to be served as shown on drawings or as directed during construction.

23.04 For purpose of as-built drawings, record measurements for station of each wye and the end of each house service. Final payment shall not be made without said measurements.

PART 24.00 RISERS FOR HOUSE CONNECTIONS

Construct risers for house connections at sewer depths as shown on the drawings.

PART 25.00 SANITARY HOUSE CONNECTIONS

Construct sanitary house connection or connection sewer similar to that specified for sewers and so approved from junction wye or riser to the location shown on drawings or as directed. Close service line at end socket with approved, suitable PVC cap or stopper, properly sealed (watertight) in place. Lay service pipe at minimum slope of 1/8-inch per foot with special permission). Terminate at property line.

PART 26.00 EXISTING UTILITIES

The Contractor alone is responsible for locating all underground utilities. All damage to underground utilities shall be repaired immediately without cost to Owner.

The horizontal separation between water and sewer mains shall be at least 10-feet. The distance shall be measured edge-to-edge. When water and sewer mains cross, the vertical separation shall be at least 18-inches between the bottom of the water main and the top of the sewer.

PART 27.00 RESTORATION OR EXTENSION OF EXISTING DRAINS OR SEWERS

27.01 Restore or reconnect as directed any existing drain or sewer which is distributed or moved on account or new work under this contract, whether shown on drawings or not and even
though not in conflict with new work. The Contractor shall do all such restoration and reconnection work at his own expense without extra cost to the Owner, except that extension to existing work, new portions of such existing drains or sewers which are authorized by the Engineer's signed order, or relocations ordered by the Engineer to avoid conflict (physical obstruction of existing line due to new sewer pipe, manholes, structures, etc.) will be paid for at the contract price for sewer of the same size or as extra work.

27.02 Build pipe drains and sewers of approved sewer pipe of same quality and dimensions and laid in same manner as specified herein for sewer construction.

27.03 Where existing or restored drains or sewers extend across excavated areas, they shall rest upon compacted backfill. They shall further be supported firmly across the excavated areas by timbering, blocking, masonry or other approved, suitable manner conforming in all applicable cases to requirements herein specified for similar conditions.

PART 28.00 EARTH COVERING

28.01 In conditions where sewers shall be exposed to traffic, cover sewers with approved clean earth fill to a depth of at least 4-feet. In fields and other places not exposed to traffic, fill shall be 36-inches.

28.02 Where additional fill is required over sewer, provide and spread approved, clean earth free from stones, vegetation and other deleterious matter in sufficient quantity so that after thorough compaction, the embankment will be of uniform grade, cross section and of dimensions shown on drawings. This item will be paid for at the unit price bid, or if no unit price is bid, in accordance with provisions for payment of extra work in the General Conditions.

PART 29.00 TEMPORARY SURFACES OVER TRENCHES

29.01 Temporary surfacing shall be constructed to the grade elevation of the undisturbed adjacent surface, subsequent to the backfill operation wherever existing improved street surfacing or pavement is disturbed during construction, in accordance with the following:

A. Gravel: Temporary surfacing shall be constructed of the materials and in accordance with the requirements for State Highway Department. Unless otherwise noted on the drawings, the minimum thickness of the deposited material shall be 6-inches. The temporary surfacing may serve as the final surface.

29.02 Temporary surfacing shall be maintained to grade until restoration of the permanent street or road surface.

29.03 Costs of temporary surfacing shall be included in each respective unit bid price for sewer construction, and no additional compensation will be allowed.

29.04 Temporary surfacing shall be constructed within a reasonable time after the installation of the sewer and backfilling of the trench. It is the intent of this specification that the
A surface shall be maintained suitable for normal traffic subsequent to placing of the backfill material. Contractors are advised that where water jetting is used as a method of compaction, continual maintenance, grading, shaping and addition of temporary surfacing material may be necessary during the period while the trench backfill is drying out. In no event will the temporary surfacing and maintenance of same be delayed for prolonged periods awaiting dewatering of the backfill.

A. If, in the opinion of the Engineer, the temporary surfacing is not being constructed within a reasonable time, the Engineer may order other operations stopped until said temporary surfacing is constructed.

PART 30.00 RESTORATION OF SURFACED STREETS AND ROADS

30.01 Improved street drives, sidewalks and other appurtenant street items and road surfaces which are disturbed during construction operations shall be restored in an approved manner and with approved materials to a condition equal to or better than the existing condition before construction began, all as specified herein and/or noted on the drawings. Unless otherwise specified, all restoration work shall conform to applicable provisions of the section entitled Pavement Replacement of the State Highway Specifications.

30.02 Restoration of the surface on improved streets and roads shall not be initiated until the base is firm enough to stand the weight of a motor patrol or loaded gravel truck without movement.

30.03 Where rigid pavement exists, the existing pavement will be removed to a distance of at least 1-foot outside the edge of the sewer trench. Such removal shall be made in accordance with the part entitled REMOVAL OF EXISTING PAVEMENTS in this section of the specifications.

30.04 Portland cement concrete surface shall be restored to the lines and depth as shown on the drawings, or directed by the Engineer, in accordance with applicable provisions of the State Highway Specifications.

A. Thickness shall be the same as that of the existing surface but not less than 6-inches.

30.05 Bituminous or oiled surfaces shall be restored with a surface approved by the Engineer at least equal to the surface disturbed, but shall in no case be less than that specified in State Highway Specifications. The previously constructed temporary surfacing shall be used as the base course if, as determined by the Engineer, it is in satisfactory condition to receive the surface treatment. The Contractor shall reconstruct the base course to an approved condition if so directed by the Engineer.

30.06 Bituminous concrete surface shall be restored to the lines and grades as shown on the drawings or directed by the Engineer in accordance with applicable provisions of the State Highway Specifications.
30.07 Gravel surface shall be restored to the grade elevation of the undisturbed adjacent surface with gravel surface course.

30.08 Curbs, curb and gutters, drives, sidewalks and other appurtenant street items shall be restored to the shape, depth, width and length of the removed item using materials which are the same as the original construction.

30.09 Restoration of surfaces which lie within the jurisdiction of the State Highways shall meet the requirements of the State and these requirements are hereby understood to be a part of these specifications.

30.10 When replacement and restoration work is completed, remove all surplus material, earth, and rubbish. Leave surface of each street included in this contract in as good condition as it was before commencement of this work and so approved. Maintain all such street surfaces in approved condition so long as the Contractor is working on the contract.

PART 31.00 RESTORATION OF GRASSED SURFACE AREAS

31.01 All original grassed surface areas on both public and private rights-of-way shall be restored to a condition equal to that found prior to the start of work by seeding. All embankments created by the sewer construction shall be seeded.

31.02 Seeding shall be done in accordance with the section entitled SEEDING AND LANDSCAPING of these specifications.

31.03 Costs of seeding shall be included in a unit price bid for seeding.

PART 32.00 CLEANING AND MAINTENANCE OF SEWER

32.01 Exercise care during sewer construction to prevent sand and rubbish (all kinds) from entering or remaining in sewers. Remove rubbish and sand promptly and periodically, as the sewer work progresses. As construction of sewers nears completion, clean entire sewer system thoroughly and make all necessary adjustments, repairs, and replacements throughout entire length of sewers and outfall. Provide all required tools, equipment water (for balling and flushing sewers), and labor for said cleaning and repairs work. Arrange and conduct cleaning and repairs work, as far as practicable, so it and sewer construction work will be completed at the same time. Upon completion of cleaning work, the Engineer will make final inspection of same.

32.02 Upon completion of sewer construction, dismantle and remove all building and other structures provided and erected in order to facilitate sewer construction. Remove all rubbish from the ground occupied by said structures and leave entire line of work clean, in good condition and so approved. Include cost of all cleaning, repairs, maintenance and leaving sewers ready for operation in unit price bid by the Contractor for all sewer pipe in place complete.
PART 33.00 INSPECTION

On completion of each block or section of sewer or at such times as the Engineer may direct, a block or section of sewer shall be cleaned, tested and inspected. All repairs shown necessary by the inspection shall be made. Broken or cracked pipe shall be replaced; defective joints, if any, replaced; all deposits removed; and the sewer left true to line and grade, entirely clean, free from lumps or protruding jointing material, etc., and ready for use. Each section of sewer between manholes shall show, upon examination from either end, a reasonably full circle of light.

34.00 METHODS OF TESTING

34.01 Low Pressure Air Test:

A. Clean pipe to be tested by propelling snug fitting inflated rubber ball through the pipe with water. Plug all pipe outlets with suitable test plugs. Brace each plug securely. If the pipe to be tested is submerged in ground water, insert a pipe probe by boring or jetting, into the backfill material adjacent to the center of the pipe, and determine the pressure in the probe when air passes slowly through it. This is the back pressure due to ground water submergence over the end of the probe. All gauge pressures in the test should be increased by this amount. Add air slowly to portion of the pipe installation under test until the internal air pressure is raised to 4.0 PSIG. After an internal pressure of 4.0 PSIG is obtained, allow at least two (2) minutes for air temperature to stabilize, adding only the amount of air required to maintain pressure. When pressure decreases to 3.5 PSIG, start stopwatch. Determine the time in seconds that is required for the internal air pressure to reach 2.5 PSIG. Minimum permissible pressure holding times for runs of single pipe diameter and for systems of 4-inch, 6-inch, or 8-inch laterals in combination with trunk lines are indicated in the following tables in seconds. The air test may be dangerous if, because of ignorance or carelessness, a line is improperly prepared. It is extremely important that the various plugs be installed and braced in such a way as to prevent blow outs. Inasmuch as a force of 250-pounds is exerted on an 8-inch plug by an internal pipe pressure of five (5) psi, it should be realized that sudden expulsion of a poorly installed plug or of a plug that is partially deflated before the pipe pressure is released can be dangerous.

As a safety precaution, pressurizing equipment should include a regulator set at perhaps ten (10) psi to avoid over-pressurizing and damaging an otherwise acceptable line. No one shall be allowed in the manholes during testing.
AIR TEST TABLES

MINIMUM HOLDING TIME IN SECONDS REQUIRED
FOR PRESSURE TO DROP FROM 3-1/2 TO 2-1/2 PSIG

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NOTE: TO BE USED WHEN TESTING ONE DIAMETER ONLY.

B. Vacuum test shall be conducted on newly constructed manholes. Before entering any manhole, follow all local, state, and federal safety precautions.

Plug all manhole entrances and exits other than the manhole top access using suitably sized pneumatic or mechanical pipeline plugs. Make sure plugs are properly rated for the pressures required for the test. The standard test is equivalent to approximately 5 PSIG backpressure. It is recommended that the plugs be rated a minimum of 10 PSIG backpressure. Brace inverts if lines entering manhole have not been backfilled to prevent pipe from being dislodged and pulled into the manhole. Install the vacuum tester head assembly at the top access of manhole. Adjust the cross brace to ensure that the inflatable sealing element inflates and seals against the straight top section of the manhole if possible. Attach the vacuum pump assembly to the proper connection on the test head assembly. Make sure the vacuum inlet/outlet valve is in the closed position. Inflate sealing element to the manufacturers recommended inflation pressure. Start the vacuum pump assembly engine and allow preset RPM to stabilize. Open the inlet/outlet ball valve and evacuate the manhole to 5 PSIG. Do not pressurize the manhole. Close the vacuum inlet/outlet ball valve and monitor vacuum
for specified test period (see table). If vacuum does not drop in excess of 1-inch Hg., manhole is considered acceptable. If manhole fails the test, complete necessary repairs and repeat test until satisfactory results are obtained.

<table>
<thead>
<tr>
<th>Depth of Manhole (Feet)</th>
<th>Manhole Diameter (inches)</th>
<th>Time (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>48&quot;</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>14</td>
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<td>10</td>
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<td>49</td>
</tr>
<tr>
<td>30</td>
<td></td>
<td>53</td>
</tr>
</tbody>
</table>

**PART 35.00 COMPETENCE OF WORKERS**

Any worker on any part of the work shall be competent to perform the task to which he is assigned. Supervision for each crew shall be done by a foreman or superintendent that is capable of directing the work. Conditions which require the constant presence of the Engineer to assure the quality of the work will not be tolerated. Any worker who does not produce quality workmanship through lack of cooperation or incompetence shall be removed from the job. The judge of quality of workmanship shall be the Engineer.

**PART 36.00 EXISTING MANHOLE CONNECTIONS**

36.01 Where required, old manholes shall be reworked to divert the sewage into the new sewer. Existing lines below the manhole shall be plugged. Finished lines below the manhole shall be plugged. Finished invert shall be formed as shown on the manhole detail.

36.02 The price bid for connection to an existing manhole shall include reworking the invert in the locations where this type of connection is planned. Construction of a new manhole over an existing sewer will not be classified as connecting to an existing manhole.

**PART 37.00 GUARANTEE**

37.01 The Contractor shall and hereby does guarantee that all material and work for sanitary sewer work shall be free from defects of material and labor and shall be and remain in good condition for a period of one (1) year from date of Owner's final acceptance of same.
37.02 The Contractor shall and hereby does further agree that he will, at his own expense and without extra cost to the Owner, remove, repair and replace all said defective work occasioned by operations under this section of the specifications which occur during the one (1) year guaranty period, and that he will also make good at his own expense and without extra cost to the Owner, any and all damages to other work caused by such repair and replacement operations.

**PART 38.00 MINIMUM SEWER GRADES**

All sewers should be constructed at the following minimum grades:

<table>
<thead>
<tr>
<th>SEWER SIZE</th>
<th>MINIMUM SLOPE IN FEET/100-FEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>0.6</td>
</tr>
<tr>
<td>8&quot;</td>
<td>0.38</td>
</tr>
<tr>
<td>10&quot;</td>
<td>0.26</td>
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<tr>
<td>12&quot;</td>
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<tr>
<td>18&quot;</td>
<td>0.103</td>
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<tr>
<td>21&quot;</td>
<td>0.088</td>
</tr>
<tr>
<td>24&quot;</td>
<td>0.072</td>
</tr>
</tbody>
</table>

END OF SECTION
PART 1.00 NOTICE

The General Conditions, Special Conditions, and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above mentioned documents.

PART 2.00 PVC PIPE

2.01 The pipe shall conform to ASTM Standard Specifications for PVC Sewer Pipe ASTM Designation D-3034, latest revision, except as otherwise specified herein.

2.02 The minimum wall thickness for PVC pipe shall conform to standards shown on the chart in Part 10. Pipe lengths shall not be greater than 20-feet.

PART 3.00 JOINTS

Flexible gasketed joints shall be compression type with a gasket confined in a machined groove in the spigot end of the pipe. Rubber gasket rings shall conform to the requirements of ASTM D1689. Gaskets shall be neoprene or other synthetic material. Natural rubber gaskets will not be acceptable.

PART 4.00 FITTINGS

Fittings defined as tee connections suitable for assembly to 4-inch or 6-inch house or buildings sewers shall be injection molded fittings of PVC plastic.

PART 5.00 INSTALLATION

The pipe shall be installed in accordance with ASTM Standard Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe, ASTM Designation D-2321, latest revision.

PART 6.00 BEDDING REQUIREMENTS

PVC sewer pipe shall be bedded with Class A or Class B aggregate as specified in Section 903.05 of the Standard Specifications for Road and Bridge Construction, Tennessee Department of Transportation; March 1, 1995. Class A or Class B aggregate shall be used in lieu of those aggregates as described in ASTM-2321-74. Cost of bedding shall be included in other items bid. No additional payment will be made for bedding.

PART 7.00 ALIGNMENT AND DEFLECTION

Upon completion of backfilling and street repair, checks for alignment and tests for deflection shall be conducted by the Contractor. A deflection of more than five percent (5%) of the inside
diameter shall be cause for rejection and the line will be removed and replaced at the Contractor’s expense. Deflection Testing Mandrell shall be used for determining deflection of plastic pipe 8-inches and above in size. See Standard Sewer Detail Sheet in Plans. Test shall be conducted at least 24-hours after backfilling.

PART 8.00 CONNECTION TO MANHOLE

Gravity sewer pipe shall be connected to the manhole by a flexible connector. Sleeve material shall be high quality polyisoprene rubber with 304 stainless steel straps as manufactured by PSX Press-Seal Gasket Corp. or equal. Couplings shall be flexible, water and airtight.

PART 9.00 CONNECTION TO OTHER TYPES OF SEWERS

Where PVC sewer pipe is used to connect house services to sewer mains of a different material (clay, concrete, etc.) special fittings manufactured to satisfy the situation must be used. A sturdy watertight connection must be achieved. Also pipe of different material or sizes shall be connected by means of neoprene rubber couplings as manufactured by Femco or approved equal.

PART 10.00 STANDARD WALL THICKNESS POLYVINYL CHLORIDE PIPE

STANDARD WALL THICKNESS POLYVINYL CHLORIDE PIPE

WALL THICKNESSES BY PIPE CLASSIFICATION

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>SDR 26</th>
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</thead>
<tbody>
<tr>
<td>4&quot;</td>
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<tr>
<td>12&quot;</td>
<td>.490</td>
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<tr>
<td>16&quot;</td>
<td>.615</td>
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</tbody>
</table>

SANITARY SEWER PIPE SELECTION CRITERIA

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0'-3'</td>
<td>Cover Use Ductile Iron Pipe</td>
</tr>
<tr>
<td>3'-26'</td>
<td>Cover Use SDR 26 Sewer Pipe and Fittings</td>
</tr>
<tr>
<td>26' and Over</td>
<td>Use Ductile Iron Pipe</td>
</tr>
</tbody>
</table>

END OF SECTION
SECTION 02733.21
SEWER FLOW CONTROL

PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above-mentioned documents.

PART 2.00 SCOPE OF WORK

This item shall be used when flows in sewer lines warrant by-passing in order to make the required inflow point source repairs or CIPP process. This item shall include all apparatus, labor, and incidentals necessary to route sewage flow around a point source repair during the repair and until the curing period has passed (if applicable) or for maintaining sewage flows during televising and cleaning operations.

PART 3.00 MATERIALS

Generally, the materials used under this item shall be of sufficient quantity and quality to perform the services required under the operation portion of this specification. Submittals shall be made to the Engineer for approval prior to beginning work under this item showing the equipment to be used.

PART 4.00 OPERATION

Plugging is permitted with the following procedure to be followed:

A sewer line plug shall be inserted into the line at a manhole upstream from the section being repaired. The plug shall be so designed that all or any portion of the sewage flow can be released. During the repair, flows shall be shut off. After the work tasks have been completed, flows shall be restored to normal.

1) Where plugging will not sufficiently control sewage flow in a sewer line, the following pumping or bypassing procedure shall be followed.

2) When pumping/by-passing is required, the Contractor shall supply the necessary pumps, conduits and other equipment to divert the flow of sewage around the manhole section in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flows plus additional flow that may occur during periods of a rainstorm. The Contractor will be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and by-passing system. If pumping is required on a twenty-four (24) hour basis, all engines shall be equipped in a manner to keep the pump noise at a minimum.
3) Whenever flows in a sewer line are blocked, plugged or by-passed, sufficient precautions must be taken to protect the sewer lines from damage that might be inflicted by excessive sewer surcharging. Further, precautions must be taken to ensure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved.

PART 5.00 PAYMENT

There will not be a separate pay item for by-pass pumping or plugging. Include the cost of these two items in other bid items.

END OF SECTION
SECTION 02733.23
TRENCH DEWATERING AND STABILIZATION

PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above-mentioned documents.

PART 2.00 SCOPE OF WORK

This task covers work required for replacing sewer lines, manholes or other rehabilitation related items in water bearing sands. This item will cover methods of dewatering from sump pumps to well pointing. It is not intended to compensate the Contractor for additional work encountered due to surface waters entering the trench. This item is also not intended to compensate the Contractor for any type of bedding otherwise required by other specifications or plans.

PART 3.00 MATERIALS

Gravel shall conform to Tennessee Department of Transportation Specification for Stabilizer Aggregate, Commercial Coarse.

PART 4.00 NOTIFICATION REQUIRED

Before beginning any work called for under this task, the Contractor shall notify the resident inspector of the station number the work should begin on. The resident inspector shall have final decision on the beginning and ending station for this task.

PART 5.00 MINIMUM REQUIREMENT FOR PAY

When working under this task, the Contractor shall, as a minimum, supply 6-inches of gravel in the trench bottom in addition to that required in the specification for Sewer Line Replacement. The Contractor shall also supply any additional labor, forming, pumping equipment, and materials necessary to overcome the adverse laying conditions, including well pointing if required.

PART 6.00 MEASUREMENT AND PAYMENT

Trench dewatering and stabilization, per linear foot, shall be complete compensation for overcoming adverse laying conditions due to water bearing sands at any depth of lay.

END OF SECTION
PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above-mentioned documents.

PART 2.00 SCOPE OF WORK

This item will be used for uncovering inflow sources and will consist of all work and materials that are used to excavate for inflow sources as described herein and shown on the plans.

PART 3.00 MATERIALS

The materials shall consist of all the necessary equipment, labor, materials, and supervision needed to perform the work as specified in the operations part of these specifications.

PART 4.00 PERFORMANCE OF THE WORK

4.01 No excavation shall be done without the presence of the Engineer or his Inspector to observe and take due note of the Contractor's actions and degree of care exercised. Any pipeline damaged by the Contractor's actions shall be replaced or satisfactorily repaired at the Contractor's expense.

4.02 The Contractor may use mechanical equipment to dig to a depth of no closer than 6-inches above the top of the pipe. Suitable probing rods or other depth devices shall be used to insure that the mechanical equipment digs no closer than specified above. Excavation around the pipeline shall be by hand shovels.

4.03 Upon completion of the excavation, the Inspector shall then determine the means of repair. If the Contractor does not feel that the selected means will pass the testing specified for said repair, he shall so state before commencement of the repair. If no agreement can be made in the field, the Engineer shall be summoned for a final decision.

4.04 A trench shall be dug deep enough to uncover the 8-inch or larger sanitary sewer line and shall be wide enough to work in and long enough to uncover sixteen (16) linear feet of sewer pipe which accommodates a trench box.

4.05 For each point or joint repair, the Contractor will be paid only once for "Excavation and Backfilling". A point repair is defined as 3-feet of main repaired. Wyes will be paid for separately or, in other words, in addition to the 3-feet. Any repair/replacement of main beyond 3-feet will be paid for on a linear foot basis. This repair/replacement may or may not be greater than the original 10-feet of uncovered sewer main.

4.06 The above principal shall also apply to service lines.
4.07 If the Resident Inspector determines that more than one (1) type repair is to be accomplished within the above dimensions, the Contractor shall only be paid for one (1) excavation for point repair plus extra length excavation for point repair where required.

4.08 The Contractor shall maintain and/or remove any fences, storm sewers, other utilities, etc., that interfere with the excavation made at each specified point. The Contractor shall replace same fences, storm sewers, other utilities, etc., in the same or better condition than previously existed as determined by the Engineer.

4.09 Dewatering shall be paid for as found elsewhere in these specifications.

PART 5.00 OSHA REQUIREMENTS

Excavation techniques shall be in accordance with the latest OSHA requirements. When point repair is open area, side slopes of excavation pits shall be no more flat or no more steep than OSHA requirements. This requirement is being made in order to minimize backfill material and damage to yards.

PART 6.00 EARTHEN BACKFILL

6.01 Trenching and excavation shall be backfilled immediately after the pipes are laid. The backfilling material shall be carefully selected and deposited, then tamped around the haunches of the pipe. The first section of backfill from the top of the bedding to 12-inches above the pipe shall be firm, loose soil, free from large clods, stone, frozen earth, debris, or any material with an exceptionally high void content. Backfill shall be in 6-inch lifts to a point 12-inches above the pipe. Each layer shall be thoroughly and carefully tamped to ninety percent (90%) Standard Proctor Density before the next layer is placed. From 12-inches above the top of the pipe, backfill shall be compacted to 95% Standard Proctor Density for roadways and 90% outside of roadways. Compaction shall be done with mechanical equipment and optimum moisture content.

6.02 Clean up around the area so that no debris is left on the ground shall be included in this pay item and shall be the Contractor’s responsibility.

6.03 In areas where the “before excavation” condition was a grassed or landscaped area, the Contractor shall replace such grass or shrubs as are destroyed during the excavation and backfilling process. Grass or shrubs shall be of the same type as formerly existed. Exceptions to these Specifications are that mulch will not be asphalt coated; no mowing will be required after backfilling. Permanent seeding can be accomplished from May to August. Temporary seeding can be accomplished all other months. In either case, the Contractor is responsible for achieving a permanent stand of grass prior to acceptance and payment will be made only once.

PART 7.00 NON-EARTHEN BACKFILL

Where streets have been damaged by excavation, they shall be restored by backfilling with 33C limestone, 57 stone, or sand. The Contractor is cautioned that if sand is selected, more care in
compaction will be expected than if 33C limestone or 57 stone is used. Regardless, all three materials shall be installed such that damage to streets caused by settlement will not occur.

PART 8.00 MEASUREMENT AND PAYMENT

8.01 The following pay items shall be complete compensation for providing all materials, labor, incidentals and equipment. Pay for excavation and backfill shall be made at the stated price in the bid proposal per each for the various depths of excavation shown in the Bid Schedule.

A. Excavation and Earthen Backfill for Point Repair - Each
B. Trench Dewatering and Stabilization - Change order basis
C. Non-Earthen Backfill - Per ton of 33C limestone, sand, or 57 stone. This item is not sewer bedding.
D. Bedding for Sanitary Sewer - Include in price bid for sanitary sewer main

8.02 Measurement for excavations shall be made from the center of the excavation at ground level to the top of the pipe at the point beneath it (see Plans). Payment shall be made to the nearest 0.5-feet.

END OF SECTION
PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above-mentioned documents.

PART 2.00 SCOPE OF WORK

This item covers the removal of collapsed or broken pipe and the furnishing of materials, labor, equipment, and incidentals for the installation of 8-inch and larger sewer pipe of any type. All pipe shall either be stamped or a certification by the manufacturer shall be submitted to the Engineer verifying conformance with the applicable ASTM Standards prior to delivery or installation of any pipe. Pipe used for replacement may only be PVC. Technical Specification Sanitary Sewer Construction shall govern this work with exceptions as stated in this Section 02733.25.

PART 3.00 DEFINITIONS

For bidding and payment purposes, a point repair shall be defined as a repair that consists of 3-feet or less of 8-inch or larger main. Wye replacement will not be an additional point repair. For example, replacement of wye and repair of broken pipe adjacent to wye will only be considered as one point repair. However, extra will be paid for a new wye at the price bid. Additional payment will be made for service line. Repair on a main beyond 3-feet will be paid for on a per foot basis.

PART 4.00 MATERIALS

See Technical Specification PVC Gravity Sewer Pipe.

PART 5.00 FLEXIBLE CONNECTORS

Couplings shall be elastomeric plastic or neoprene with stainless steel straps as manufactured by Fernco, Inc., Mission Rubber Company or equal. Couplings shall be flexible, water and air-proof. These will be paid for per each furnished and installed.

PART 6.00 UTILITIES

The Contractor is responsible for contacting Tennessee One Call before excavating.

PART 7.00 GRAVEL BEDDING

Gravel shall be graded from 1½-inch to ¼-inch and shall conform to the Tennessee Department of Transportation Specifications for Road and Bridge Construction for Stabilizer Aggregate.
PART 8.00 INSTALLATION

8.01 Sewer pipe shall be installed in a prepared bed with support along the entire length of each joint of pipe at the location and at the existing grade or as directed by the Engineer within a tolerance of 0.03-feet.

8.02 The bedding shall first be prepared as described below under “Excavation and Backfill”. The flexible connector shall be placed on one end of the repair section and pipe laid to grade. The two ends of pipe are placed together and the coupling then slid into place. All straps are then tightened to form a watertight joint.

8.03 In the case where the bell of the new pipe will fit the existing pipe, no coupling will be required at this end; however, where the bell of the new pipe will not fit the existing pipe, a coupling will be used. This may require the removal of the bell on the new pipe.

8.04 Backfill to the top of the pipe shall be as specified below. The backfill above the pipe shall be as specified under “Excavation and Backfill for Point Repair”.

8.05 All pipe shall be replaced in accordance with details on the plans and as specified herein.

8.06 Removal and disposal of existing sewer pipe shall be done by Contractor and is an absorbed item.

8.07 The area is to be cleaned up so than no trash or salvaged pipe is left lying around.

PART 9.00 EXCAVATION AND BACKFILL

9.01 Excavation included under this pay item shall be from 6-inches above the pipe to a depth of 8-inches below the invert of the pipe. Gravel bedding shall be placed below all pipe to a depth of 8-inches. The bedding shall then be hand shaped prior to installing any pipe. Gravel shall be placed to a width of diameter plus 18-inches.

9.02 Backfill shall be hand placed and tamped to ninety percent (90%) Standard Proctor Density up to the spring-line of the pipe for all types of pipe, and material shall be placed from the spring-line to the top of the pipe and hand tamped. Backfill from the top of the pipe to the surface of the ground shall be placed and paid for as specified under “Excavation for Point Repair”.

PART 10.00 STAKING

All staking necessary for construction shall be provided by the Contractor.

PART 11.00 UTILITIES

The Contractor shall be responsible for the location and preservation of all utilities.
PART 12.00 FLUSHING AND CLEANING

All dirt, debris and grit shall be removed from the sewer pipeline prior to acceptance by the Owner.

PART 13.00 TESTING

It is recognized that pressure testing is not practical. However, the Contractor shall install all materials in a high quality workmanship manner.

PART 14.00 MEASUREMENT AND PAYMENT

14.01 Gravity sewers will be paid for as stated in the bid proposal per linear foot laid. The length of the repaired line will be based upon the actual length installed (after connections are made). The pay per linear foot shall include all labor, materials and supplies necessary to install replacement sewer line and items not covered by other pay items including gravel.

14.02 Any sewer pipes broken by the Contractor, outside of the required feet of pipe, to be determined by the Engineer, shall be replaced or repaired at the Contractor's expense. All such occurrences shall be pointed out by the Contractor to the Inspector when they happen.

A. Sewer Line Replacement 8-Inch and Larger - Linear Foot U.S. Depth

B. Excavation for Point Repair - Each

  Extra Length - Linear Foot
  Flexible Connectors - Each
  Sewer By-passing - Include in price bid for point repair
  Sewer Plugging - Include in price bid for point repair

C. Backfill - per ton for sand, 57 stone, 33-C limestone but only if authorized by Engineer due to unusual conditions.

END OF SECTION
PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above-mentioned documents.

PART 2.00 SCOPE OF WORK

This item covers the supply and installation of 4-inch PVC sewer pipe. All pipe shall either be stamped or a certification by the manufacturer shall be submitted to the Engineer verifying conformance with the applicable ASTM Standards prior to delivery or installation of any pipe.

PART 3.00 MATERIALS

PVC sewer pipe shall be constructed from PVC material with rubber gasket joints and conform to the following ASTM Standards:

a) D 3034 SRD Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings
b) D 618 Conditioning Plastics and Electrical Insulating Materials for Testing
c) D 883 Definition of Terms Relating to Plastics
d) D 1784 Rigid (Vinyl Chloride) Compounds and Chlorinated Poly (Vinyl Chloride) Compounds
e) D 2122 Determining Dimensions of Thermoplastic Pipe and Fittings
f) D 2152 Test for Quality of Extruded Poly Vinyl Chloride Pipe by Acetone Immersion
g) D 2321 Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe (Latest Edition)
h) D 2412 Test for External Loading Properties of Plastic Pipe by Parallel Plate Loading
i) D 2444 Test for Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)

PART 4.00 FLEXIBLE CONNECTORS

Couplings shall be elastomeric plastic or neoprene with stainless steel straps as manufactured by Fernco, Inc., Mississippi Rubber Company or equal. Couplings shall be flexible, water and air-proof.
PART 5.00 UTILITIES

The Contractor is responsible for all utilities encountered in the work. The cost of location and repair of all utilities shall be absorbed in the cost of the work.

PART 6.00 GRAVEL BEDDING

Not required.

PART 7.00 STRUCTURAL INTEGRITY SHALL BE GUARANTEED BY THE CONTRACTOR

7.01 The Contractor shall backfill the pipe in such a manner that the pipe does not deflect excessively (more than 5%), crack or break during construction or any time during the one (1) warranty period.

7.02 Any pipe proving defective shall be removed or replaced by the Contractor at no additional expense to the Owner.

PART 8.00 INSTALLATION

8.01 The grade shall be set and the flexible connector shall be placed on one end of the repair section. The two ends of pipe are placed together and the coupling then slid into place. All straps are then tightened to form a watertight joint. Unless in unusual circumstances, only one flexible connector per repair will be required.

8.02 Removal and disposal of existing sewer pipe shall be done by the Contractor and is an absorbed item.

8.03 The area is to be cleaned up so than no trash or salvaged pipe is left lying around.

8.04 All backfill shall be thoroughly compacted as specified below and under the specifications for “Excavation and Backfill for Point Repair”. All sewers shall be laid in a prepared bed with support along the entire length of each joint of pipe.

8.05 PVC pipe shall be installed in accordance with ASTM D2321 (Latest Edition).

PART 9.00 EXCAVATION AND BACKFILL

Backfill shall be hand placed and tamped to ninety percent (90%) Standard Proctor Density up to the spring-line of the pipe for all types of pipe, and material shall be placed from the spring-line to the top of the pipe and hand tamped. Backfill from the top of the pipe to the surface of the ground shall be placed and paid for as specified under “Excavation for Point Repair”. For areas under roadways, the compaction shall be to 95% Standard Proctor Density.

PART 10.00 STAKING

All staking necessary for construction shall be provided by the Contractor.
PART 11.00 TESTING

It is recognized that pressure testing is not practical. However, the Contractor shall install all materials in a high quality workmanship manner.

PART 12.00 MEASUREMENT AND PAYMENT

12.01 Description of all faults to be corrected by the Contractor is included in the Bid Form. The Bid Form contains provisions for separate bids for repair of each inflow fault.

12.02 Gravity sewers will be paid for as stated in the bid proposal per linear foot laid. The length of the repaired line will be based upon the actual length installed (after connections are made). The pay per linear foot shall include all labor, materials and supplies necessary to install replacement sewer line and items not covered by other pay items including gravel.

12.03 Any sewer pipes broken by the Contractor, outside of the required feet of pipe, to be determined by the Engineer, shall be replaced or repaired at the Contractor’s expense. All such occurrences shall be pointed out by the Contractor to the Inspector when they happen.

   a)  4-Inch Pipe Replacement - Linear Foot
   
   b)  Excavation for Point Repair - Each
       Point Repair - Each up to 3-foot long
       Extra Length - Linear Foot
       Flexible Connectors - Each
       Sewer Bypassing - Include in price bid for point repair
       Sewer Plugging - Include in price bid for point repair

   c)  Backfill – Per ton for sand, 57 stone, 33-C limestone but only if authorized by the Engineer due to unusual conditions.

END OF SECTION
SECTION 02733.29
REPLACEMENT OF WYES AND/OR TEES

PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above mentioned documents.

PART 2.00 SCOPE OF WORK

Tee branches shall be installed and connected as needed during pipe replacement or repair or at points designated by the Engineer at the time of construction.

PART 3.00 MATERIALS

Tee branches shall be PVC. The branch opening shall be of the same size as the existing branch line.

PART 4.00 CONSTRUCTION

4.01 The tee branches shall be installed such that there are no sags between the existing branch line and the sewer line. Where possible, the tee branches will be installed at the “up 45°” position and appropriate connection made to the existing branch line.

4.02 The requirements for excavation, jointing, line and grade, backfilling and leakage shall be found in the specification for sewer line replacement (8-inches and larger). A pre-cast blind plug shall be set watertight in the branch of each tee unless a service line is attached. The plug shall be so set that removal will not injure the tee.

4.03 Each tee without a service line shall be marked with a sewer stub tape, ASTM D882, 3-inches wide. Tie the tape around the bell and extend vertically to the surface in the backfill. Allow 12-inches to lie on the ground above.

4.04 Tees that are connected to service lines shall be reconnected as a part of this pay item. Service line will be paid for on a linear foot basis.

PART 5.00 MEASUREMENT AND PAYMENT

Tee branches will be paid for at the stated price in the accepted bid proposal for size and materials involved. This amount shall include payment for all materials used, including blind plugs, bricks, tape, and all labor expended and is extra, over and above the payment for the straight run of the corresponding size, length and depth of cut of sewer line.

A. Tees - Each

END OF SECTION
PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above mentioned documents.

PART 2.00 SCOPE OF WORK

The work shall consist of repairing joints in pipe where determined by the Engineer that pipe replacement is not warranted. Excavation shall be paid for as specified elsewhere.

PART 3.00 INSTALLATION

3.01 Excavation to the point of repair shall be paid for as specified elsewhere. Sewage by-passing shall be paid for elsewhere if required by the Engineer. Excavation around the joint for the purpose of making the repair shall be considered incidental to the work and shall be included in the price of the repair. Excavation around the joint shall be sufficient to allow proper installation and inspection of the finished product.

3.02 The Contractor may repair the defective joint by cutting the defective joint out and replacing the joint with a short segment of pipe. The pipe segment needs to be only as long as twice the length of the flexible connector or for complete removal of the joint. The two (2) cuts required to remove the defective joint will be made in such a manner that results in a smooth butt joint. The flexible connectors will then be placed loosely on the replacement pipe segment. The end of the pipe segment and existing pipe are placed together and the couplings then slid into place. All straps are then tightened to form watertight joints. All straps are then tightened to form watertight joints. The specification Point Repair and Sewer Line Replacement 8-Inch and Larger shall become a part of the specifications if this method is employed. However, payment will be as stated below.

3.03 Backfill will be carefully placed and tamped according to the specifications for excavation and backfill for point repair.

PART 5.00 MEASUREMENT AND PAYMENT

Joint repair shall be paid for at the stated price in the bid proposal per each and shall include all labor, materials, equipment, and incidentals necessary to furnish a joint repair in place. This also includes excavation around the joint and backfill around the joint to the point noted on the plans.

A. Joint Repair - Each. Include all material and labor
B. Excavation and Backfill for Point Repair - Each

C. Sewage By-passing - No extra payment

D. Sewage Plugging - No extra payment

END OF SECTION
A. CLEANING AND TELEVISION INSPECTION OF SEWER MAIN PRIOR TO LINING:

Prior to installing cured-in-place pipe lining, the Contractor shall first thoroughly clean and televise the sewers and submit one copy of the final television inspection DVDs and logs to the Engineer for review. The final inspection shall mean that the sewer is free from debris, roots, grease, pipe tuberculation, that all protruding services have been cut flush with the main sewer internally with a remote robotic cutter, and that the sewer is ready to be lined (except for required point repairs). If, upon review of the inspection DVDs, the Engineer sees that the sewer is not ready for lining, the Contractor shall re-clean and re-inspect the sewers and submit the DVDs and logs to the Engineer again for review. No additional payment will be made to the Contractor in this case. Payment will only be made one time for cleaning and televising each sewer segment after receipt of the final pre-rehabilitation inspection DVDs and logs.

The equipment used for the cleaning operations shall be specifically designed for cleaning sewers. The Contractor shall use the appropriate equipment to clean all debris, silt, sand, roots and grease from each sewer segment thoroughly. The required equipment may be high velocity water jet cleaning equipment with various attachments or mechanical cleaning equipment such as power buckets or power rodders. The Contractor shall select the cleaning equipment and procedures based on the conditions of the sewers at the time the work commences. All solids shall be removed at the downstream manhole of the section being cleaned. Passing material from one sewer segment to another will not be permitted. The solids shall be removed from the site and properly disposed of.

Sewer cleaning shall proceed from upstream sewers to downstream sewers unless otherwise approved by the Engineer. No cleaning shall take place in a particular sewer segment until all upstream pipe segments have been cleaned. If cleaning is done in a downstream pipe segment in order to facilitate overall cleaning operations, the segment shall be re-cleaned at no additional cost, after all pipe upstream of that segment has been cleaned.

The Contractor shall take precautions to avoid damage or flooding to public or private property being served by the line being cleaned. The Contractor shall be responsible for all flooding and pay for cleanup from flooding to the satisfaction of the property owner. The Contractor shall take care in cleaning old sewers and shall protect existing sewers from damage caused by improper use of cleaning equipment.

After the sewers are completely cleaned, the sewers shall be inspected via closed circuit television (CCTV). The purposes of the CCTV inspections are to verify that the sewers have been thoroughly cleaned, to document the condition of the existing sewers and the locations of service connections and to confirm that the liner can be properly installed and cured. The camera equipment used for the CCTV inspections shall be one specifically
designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. The camera shall be a color, pan-and-tilt camera.

The camera shall be moved through the line in either direction at a uniform rate. The camera shall be stopped at major defects and service connections and shall be panned, tilted and rotated to fully view the defects and connections. All such inspections shall be documented. The Owner shall advise whether the services are active, abandoned or plugged.

The inspections shall be complete from manhole to manhole without the need for reverse setups unless approved otherwise by the Engineer. If, during the work, the CCTV inspection is blocked by debris, roots, a protruding lateral or sewer system defect, the Contractor shall remove the blockage or repair the defect as authorized by the Engineer and then continue the inspection. No additional payment will be made for the initial CCTV inspections that were blocked.

There is no separate pay item for reverse setups and this will only be allowed and accepted for payment if the blockage or defect preventing the CCTV inspection in the initial direction does not need to be removed or repaired prior to installing the liner. The Contractor shall notify the Engineer in writing of such situations for the Engineer’s review and approval. If approved, payment will be made for the total length of sewer segment not to exceed the actual length of the sewer from manhole to manhole.

The accuracy of the measurements cannot be stressed too strongly. The pre-rehabilitation television inspections shall be within 3 feet of the actual sewer length from center of manhole to center of manhole as measured above ground. Inspections that do not meet this requirement shall be re-performed by the Contractor at no additional cost to the Owner.

Upon completion of the cleaning and television inspection work, the Contractor shall submit one copy of the final television inspection DVDs and logs to the Owner for review and approval. The DVDs and logs shall be clearly labeled as to their contents. The final inspection shall mean that the sewer has been completely prepared and ready to be lined. The final inspection shall be complete from one manhole to another without the need for a reverse setup unless otherwise approved. With the submittal, the Contractor shall (1) identify sewer defects that should be repaired prior to lining, (2) identify sewer defects that may cause problems with the final liner installation (such as wrinkles, ribs, and lifts) if not repaired, (3) identify the specific location of each service line, (4) recommend the thickness of the liner based on the existing pipe conditions and depths, and (5) recommend point repairs. The Owner will review the submittal within five (5) days and provide comments to the Contractor. The Contractor shall not proceed with liner installation until the Owner has made comments.

The Contractor will be paid for all cleaning and television inspections at the unit prices bid.
B. **CURED-IN-PLACE PIPE LINING:**

**Product Requirements:** Cured-in-place pipe lining (CIPP) shall be one of the following products:

- Invert -A-Pipe by Improved Technologies Group or equal
- National Liner by National EnviroTech Group, LLC or equal
- Inliner by Inliner Technologies, Inc. or equal
- Premier - Pipe, USA or equal
- Insituform Technologies, Inc. or equal

The above products shall adhere to all requirements specified herein and shall be modified as necessary to meet these requirements.

The liner shall be composed of tubing material consisting of one or more layers of a flexible non-woven polyester felt with or without other additives such as fiberglass or other reinforcing additives. The felt tubing shall be impregnated with a thermosetting isothalic polyester resin and catalyst or vinyl ester and catalyst. The liner material and resin shall be completely compatible. The inside and/or outside layer of the tube shall be coated with an impermeable material compatible with the resin and fabric. The liner shall cure per manufacturer’s specifications at the required temperature for the resin system.

The felt material shall be manufactured by companies specializing in felt production for CIPP. The manufacturer shall have manufactured felt material for CIPP for at least 2 years as documented by references. The felt manufacturer, references and location of the manufacturing facility shall be submitted to the Engineer for review and approval. The felt material manufacturer and facility shall not change throughout the duration of the Contract unless specifically approved by the Engineer in writing.

The polyester or vinyl ester resin shall be PREMIUM, NON-RECYCLED resin only. PET resins, or those containing fillers, additives or enhancement agents shall not be used. The resin manufacturer shall not include any old resin or rework in the product shipped to the wet-out facility. The resin shall be manufactured under ISO 9002 certified procedures. Such certification shall be submitted to the Engineer for each shipment of resin to the wet-out facility. The proposed resin shall be Reichhold Polylite 33420 resin (for isothalic polyester resin) or equal or Reichhold Atlac 580-20 (for vinyl ester resin) or equal.

The exact makeup of the resin shall be submitted to the Engineer including chemical resistance information, cure logs and temperatures. The exact mixture ratio of resin and catalyst shall also be submitted. The catalyst system shall be identified by product name. Polyester resins shall have a minimum Heat Distortion Temperature of 212 degrees Fahrenheit per ASTM D648. Vinyl ester resins shall have a minimum Heat Distortion Temperature of 220 degrees Fahrenheit per ASTM D648. Resins, catalysts and resin/catalysts mixing ratios shall not be changed during this Contract unless specifically approved by the Engineer in writing.
The resin shall be shipped directly from the resin manufacturer's facility to the CIPP wet-out facility. The resin shall not be sent to any intermediate mixing facility. Copies of the shipment documents from the resin manufacturer shall be submitted to the Engineer showing dates of shipment, the originating location and the receiving location.

The resin shall be used to manufacture the CIPP as shipped. No fillers or additives shall be added at the wet-out facility except for the required catalyst as recommended by the resin manufacturer. The Contractor shall submit the catalyst product and quantity recommended by the resin manufacturer (submittal to include direct correspondence from the resin manufacturer). The Contractor shall also submit a Certificate of Authenticity from the resin manufacturer for each shipment to the wet-out facility (to include the date of manufacture and the Heat Distortion Temperature). This information shall be submitted prior to manufacturing any CIPP.

The Contractor shall identify the wet-out facility where all CIPP under this Contract will be manufactured. All CIPP shall be manufactured from this designated wet-out facility throughout the entire Contract unless specifically approved otherwise by the Engineer in writing. Multiple wet-out facilities shall not be allowed.

The Engineer, Owner and/or an agent of the Owner may inspect the CIPP during manufacturing (during “wet-out”). If the Engineer and/or Owner decide to inspect the manufacturing of the CIPP, the Contractor shall provide full access to witness the wet-out process and shall provide any and all information related to the manufacturing as requested by the Engineer, Owner or the Owner's agent without delay and without claims of confidentiality or product privacy.

The Engineer or Owner may take samples of the resin from the wet-out facility for infrared analyses (IR Scan) throughout the duration of this Contract. This standard analytical test involves shining a beam of light in the infrared frequency region through a thin sample of the subject resin. The frequency of light is then varied across the infrared spectrum. Chemical functional groups present in the resin being analyzed will absorb infrared light as specific frequencies and with characteristic absorption intensities.

The Owner will pay for all such infrared analyses and resin testing. To allow the resin samples to be taken, the Contractor shall place a sampling valve in-line at a point prior to the resin/catalyst mixing stage and after the resin/catalyst mixing stage. These sampling valves shall remain in place throughout the duration of the Contract and shall always be accessible to the Engineer and Owner.

The infrared analyses will be used to verify that the resin and resin/catalyst composition and mixture being used is the approved resin and resin/catalyst system. Payment will not be made for any CIPP manufactured with unapproved resin and resin/catalyst mixtures. The Contractor shall submit results of infrared analyses of the proposed resin and resin/catalyst mixture, performed and certified by the resin manufacturer, prior to manufacturing any CIPP as a shop drawing. The results of these analyses (the resin’s chemical fingerprint) will be used as the standard for verifying the resin and resin/catalyst mixture being used throughout the Contract.
The Engineer will compare the submitted chemical fingerprint with the fingerprint of Reichhold Polylite 33420 resin (for isothalic polyester resin) or equal or Reichhold Atlac 580-20 (for vinyl ester resin) or equal for a baseline comparison. The Contractor and resin manufacturer shall fully describe, explain and justify any differences between the Reichhold and proposed resin fingerprints without delay or claim to confidentiality.

When cured, the CIPP shall form a continuous, tight-fitting, hard, impermeable liner which is chemically resistant to any chemicals normally found in domestic sewage. The liner shall be chemically resistant to trace amounts of gasoline and other oil products commonly found in municipal sewerage and soils adjacent to the sewer pipe to be lined.

The CIPP shall be fabricated to a size that will tightly fit the sewer being rehabilitated after being installed and cured. The liner shall be capable of fitting into irregularly shaped pipe sections and through bends and dips within the pipeline. Allowance for longitudinal and circumferential expansion shall be taken into account when sizing and installing the liner. All dimensions shall be verified in the field by the Contractor prior to fabrication of the liner. Field measurements shall be used to ensure maximum closure between the new liner and the existing sewer pipe. There shall be no leakage of groundwater between the existing pipe and the CIPP at the manhole connection or service lateral connections. Any leakage found shall be eliminated by the Contractor at no additional cost to the Owner.

The application of the resin to the felt tubing (wet-out) shall be conducted under factory conditions and the materials shall be fully protected against UV light, excessive heat and contamination at all times.

After wet-out, the exterior of the liner shall have multiple perforations which will allow excess resin to escape and create a bond with the host pipe.

The length of the liner shall be the length deemed necessary by the Contractor to effectively carry out the insertion of the liner and sealing of the liner at the outlet and inlet manholes. The required length of liner shall be verified in the field by the Contractor prior to fabrication of the liner.

The Contractor shall submit complete shop drawings of CIPP to demonstrate compliance with these specifications, to show materials of construction (including resins, catalysts, etc.) and to detail installation procedures. Installation procedures shall include acceptable inversion heads and pressures, heating ("cooking") and cool-down procedures and temperatures, times for each stage of the process, and cure logs for the resin/resin system used. The Contractor shall provide this information without delay or claim to any confidentiality. Testing procedures and quality control procedures shall also be submitted.

Certifications that the CIPP was manufactured in accordance with these specifications and the appropriate ASTM standards shall be submitted with each shipment. In addition, wet-out forms documenting the wet-out shall be submitted for each section of CIPP manufactured. The wet-out forms shall be submitted prior to requesting payment and shall be provided without delay or claim to any confidentiality. The wet-out forms shall document the date and time of wet-out, the wet-out supervisor, the wet-out facility address, the location where the CIPP will be installed (by work order and manhole
numbers), the CIPP diameter, the length of wet-tube and dry-tube, the thickness of the CIPP, the roller gap setting for establishing the liner thickness, the felt manufacturer, the resin used (by product name and batch/shipment number) and quantity, the catalyst(s) used (by product name) and quantity, any quality control samples taken, and all else pertinent to the wet-out process.

**Liner Thickness:** The Contractor shall submit liner thickness calculations to the Engineer for review. The CIPP shall be designed in accordance with the applicable provisions of ASTM F1216 and D2412 for "partially deteriorated gravity pipe conditions" and shall meet the following design conditions:

a. AASHTO H-20 Live Load with two trucks passing for CIPP in streets (16,000 lbs).

b. A soil modulus of elasticity of 1,000 psi, soil weight of 120 pounds per cubic foot and a coefficient of friction of $K_u = 0.130r$.

c. Short-term flexural modulus of 250,000 psi and long-term flexural modulus of 125,000 psi. Flexural strength of 4,500 psi.

d. Safety factor of 2.0 shall be used.

e. Groundwater elevation at the ground surface.

f. Pipe ovality of 2%.

g. Poisson’s ratio of 0.3.

h. Enhancement factor (K) of 7.

i. Service temperature range shall be 40 to 140 degrees F.

j. Maximum long-term deflection shall be 5 percent.

k. The installed, cured thickness shall be the largest thickness as determined by calculations for deflection, bending, buckling and minimum stiffness.

The minimum installed, cured liner thickness shall be as follows, regardless of what the calculations indicate as the required minimum thickness:

- **8” sewer:** 6 mm up to 17 feet deep
  7.5 mm up to 25 feet deep

- **10” sewer:** 6 mm up to 11 feet deep
  7.5 mm up to 18 feet deep
  9 mm up to 25 feet deep

- **12” sewer:** 7.5 mm up to 12 feet deep
  9 mm up to 18 feet deep
  10.5 mm up to 25 feet deep
<table>
<thead>
<tr>
<th>Sewer Size</th>
<th>Minimum Thickness Requirements</th>
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| - 15" sewer: | 7.5 mm up to 10 feet deep  
               9 mm up to 14 feet deep  
               10.5 mm up to 20 feet deep |
| - 16" sewer: | 7.5 mm up to 8 feet deep  
               9 mm up to 12 feet deep  
               10.5 mm up to 17 feet deep  
               12 mm up to 23 feet deep |
| - 18" sewer: | 9 mm up to 10 feet deep  
               10.5 mm up to 14 feet deep  
               12 mm up to 18 feet deep |
| - 21" sewer: | 9 mm up to 6 feet deep  
               10.5 mm up to 10 feet deep  
               12 mm up to 13 feet deep  
               13.5 mm up to 17 feet deep |
| - 24" sewer: | 10.5 mm up to 6 feet deep  
               12 mm up to 10 feet deep  
               13.5 mm up to 13 feet deep  
               15 mm up to 16 feet deep |
| - 27" sewer: | 13.5 mm up to 10 feet deep  
               15 mm up to 12 feet deep  
               16.5 mm up to 15 feet deep  
               18 mm up to 18 feet deep |
| - 30" sewer: | 15 mm up to 10 feet deep  
               16.5 mm up to 12 feet deep  
               18 mm up to 14 feet deep  
               19.5 mm up to 17 feet deep |
| - 36" sewer: | 18 mm up to 10 feet deep  
               19.5 mm up to 12 feet deep  
               21 mm up to 14 feet deep  
               22.5 mm up to 16 feet deep |

The installed thickness shall be measured as specified elsewhere herein. The Contractor shall submit his proposed plan for ensuring that the installed CIPP meets the above minimum thickness requirements. The plan shall include the proposed CIPP thickness to be installed (pre-installation thickness) and detailed inversion or pull-in procedures to reduce stretching and to reduce migration of resin.

**Qualifications:** The Contractor performing the CIPP lining work shall be fully qualified, experienced and equipped to complete this work expeditiously and in a satisfactory manner and shall be certified and/or licensed as an installer by the CIPP manufacturer.
The Contractor shall have installed a minimum of 300,000 feet of CIPP for a minimum of 5-years.

Delivery, Storage and Shipping: Care shall be taken in shipping, handling and laying to avoid damaging the CIPP. Extra care shall be taken during cold weather construction. Any CIPP damaged in shipment shall be replaced as directed by the Engineer. Any CIPP showing a split or tear or has been mishandled shall be marked as rejected and removed at once from the work. The liner shall be maintained at a proper temperature in refrigerated facilities to prevent premature curing at all times prior to installation. Any liner showing evidence of premature curing will be rejected for use and will be removed from the site immediately.

Installation: The Contractor shall clean and televise each length of pipe to be lined as specified. Prior to lining the main sewer and the pre-rehabilitation television inspection, protruding service lateral connections shall be internally cut/ground down flush with the pipe wall with a robotic cutter specifically designed for this purpose. The internal cutter shall be capable of cutting cast iron, PVC, vitrified clay pipe, ductile iron pipe and orangeburg pipe.

The Contractor shall notify all property owners that will be affected by the work 48-hours in advance of the work, giving the date, start time and estimated completion time for the work being conducted and the expected impacts to the property owner.

If necessary, the Contractor shall bypass pump wastewater around the lining work while it is being performed.

The Contractor shall furnish and install the CIPP lining in the full length of sewer. The installation of the CIPP shall be in complete accordance with the applicable provisions of ASTM F1216 or ASTM F1743 except as modified here in, these specifications and the manufacturers’ specifications.

Installation/Inversion shall be as specified in ASTM F1216 or ASTM F1743. (Steam or water curing is acceptable). The water inversion shall be accomplished by using natural water pressure (head) only. Natural water pressure shall be achieved by erecting platforms or scaffolding to an elevation determined by the Contractor necessary to provide adequate inversion heads (pressure). CIPP installation vessels/units used to create water pressure shall not be used for this Contract. Water pressure shall not be varied by any means throughout the inversion process except by increasing the height of the platform/scaffolding when approved by the Engineer. The Contractor shall submit required inversion heads for each installation as a shop drawing without delay and claim to confidentiality or product/installation privacy.

Where possible, the Contractor shall line multiple sewer segments at one time as determined by the Contractor. When this is done, the top one-half of the liner in the intermediate manhole shall be neatly removed, and the void behind the liner pipe shall be filled with non-shrink grout. The manhole bench shall be reconstructed if necessary to make a smooth transition at no additional cost to the Owner.
The CIPP shall be neatly cut 2-inches from the manhole walls after installation. The CIPP shall be sealed at the manholes to provide a watertight liner connection at the manhole. A hydrophilic waterstop and non-shrink grout shall be installed to seal the connection. There shall be no leakage of groundwater into the manhole between the CIPP and existing sewer pipe and between the existing sewer pipe and manhole wall. The hydrophilic waterstop (nonbentonite), shall be comprised of modified chloroprene rubber and shall be installed around the liner 6-inches from each manhole wall prior to processing the liner to provide additional waterstop protection. As the CIPP is expanded, the waterstop shall be pressed tightly against the existing sewer to provide a leak-tight seal. The waterstop shall be Hydrotite as manufactured by Greenstreak (St. Louis, Missouri) or equal. CIPP lining shall be sealed to manhole linings in an acceptable manner as approved by the Engineer. Submit detailed drawings of the pipe-manhole connections to the Engineer for approval, including termination points in manholes and transitions with manhole linings where installed.

The Contractor shall fully reopen all of the existing active service connections in each length of sewer following lining. The service connections shall be reopened from inside the sewer by means of a closed-circuit television camera controlled cutting device appropriate for the CIPP. All openings shall be clean and neatly cut and shall be flush with the lateral pipe. The openings shall also be buffed with a wire brush to remove rough edges and provide a smooth finish in instances where the lateral is not replaced after the CIPP is installed. The bottom of the openings shall be flush with the bottom of the lateral pipe to remove any lip that could catch debris. Openings shall be 95% of the service lateral pipe. The Contractor shall re-open any service lateral that does not meet this requirement as evidenced by the post-rehabilitation inspections at no additional cost to the Owner. Sanitary sewer services shall not be outlet service for more than 24-hours.

Installation reports shall be generated for each segment of liner installed. The reports shall document installation, including manhole numbers, street names/sewer location, project number, date, time, temperature, curing temperature, curing time, liner thickness, etc. A sample report shall be submitted to the Engineer for approval prior to installing any lining. The reports shall be submitted to the Engineer prior to requesting payment.

Acceptance Tests: For every sewer segment that is lined (sewer segment is defined as the sewer between two manholes), Contractor shall remove one restrained sample of the installed liner at least 12-inches in length for testing of installed CIPP flexural properties and thickness. The number of samples may be reduced by the Engineer if requested by the Contractor and if samples taken and tested demonstrate compliance with these Specifications. The decision to reduce the number of test samples shall be solely the Engineer’s decision.

For sewers 12-inches in diameter and smaller, the sample shall be captured by installing the lining through a section of PVC pipe (same diameter as the existing sewer diameter) within the most downstream manhole of the installation and at all intermediate manholes if multiple sewer segments are lined at the same time. For sewers 15-inches in diameter and larger, plate samples shall be taken and cured in the same water as the installed CIPP. From each sample taken, the Contractor shall cut and deliver a 1-inch wide representative sample (taken at least 2-inches from the end of the specimen) to the Engineer.
sample delivered to the Engineer shall be labeled. The Engineer may return such samples to the Contractor for disposal.

The tests shall be used to verify that the installed CIPP meets these specifications. CIPP thickness shall be measured in accordance with ASTM D5813. Flexural properties shall be determined per ASTM D790. Tensile strength shall be determined per ASTM D638. The Contractor shall label and date all samples and forward the samples directly to the testing laboratory for testing. The Engineer shall be copied on all transmittals to the testing laboratory. All testing shall be paid for by the Contractor and shall be performed by an independent testing laboratory. The testing laboratory shall also submit their ASTM certification. Results of the tests for each liner shall be submitted within 30-days after the liner is installed or payment will be withheld.

Any lining that does not meet within an 85% minimum of the specified installed strength and/or thickness requirements, regardless of the amount below the specified requirements, shall be corrected by the Contractor in a manner approved by the Engineer at no additional cost to the Owner. The Engineer's decision on how to correct deficient CIPP installations shall be final. Options for correcting deficient liner that will be considered by the Engineer include removing the liner and re-lining the sewer, excavating and replacing the sewer from manhole to manhole, re-lining sewers completely from manhole to manhole, or providing the Owner with a substantial credit. The primary option that will be considered is to re-line the sewers. Credits will only be considered for lining that does not meet the required thickness. If a credit is acceptable to the Engineer and Owner, the credit shall be calculated by multiplying the bid price by the percent that the liner thickness is below the minimum required installed thickness as follows:

$$\text{Credit} = (1 - \frac{\text{installed CIPP thickness}}{\text{min required thickness}}) \times \text{Bid Price}$$

The Contractor shall not assume that a credit will be acceptable to the Engineer or Owner.

Following installation of the CIPP, reopening and brushing of all active service lateral connections, completion of all specified manhole rehabilitation including vacuum testing and installation of all new service laterals, the Contractor shall conduct a final post-rehabilitation television inspection of the completed work to verify that the liner installation is acceptable as defined herein. The sewers shall be thoroughly cleaned prior to performing the television inspections, and the pipe shall be dry so that the entire CIPP can be seen. This may require that temporary plugging or bypass pumping be provided for all post-rehabilitation television inspections.

The television inspections shall be complete from manhole to manhole without any reverse setups. The camera skid or tractor assembly used for the inspections shall be the appropriate size assembly for the pipe being televised according to the manufacturer of the television equipment. For example, an 8-inch skid or tractor assembly shall be used to televise lined 8-inch-diameter sewers. The inspections shall begin at the center of the manhole, shall clearly show the pipe connection of the sewer to be inspected at the manhole including the top and bottom of the CIPP at the manhole connection, and shall
pan and tilt around the manhole to provide a clear view of the rehabilitated manhole and all pipe connections.

At every downstream manhole, the camera shall be panned and tilted within the manhole to provide a clear view of the rehabilitated manhole and all pipe connections.

The television inspection shall include video documentation and computer generated logs to document the inspection. The post-rehabilitation television inspections shall be performed such that the sewer lining can be clearly seen (not too much or too little light). The camera shall be panned, tilted and rotated at all lining defects and at service lateral connections for a complete video documentation. Footages and locations of all defects and service laterals shall be documented on the DVDs and logs. The entire lateral opening shall be clear.

The post-rehabilitation television inspections shall be within 3-feet of the actual sewer length as measured above ground from center of manhole to center of manhole. Any inspection that exceeds this limit shall be re-performed and re-submitted to the Engineer prior to payment at no additional cost to the Owner.

The Contractor shall submit a sample television inspection after the final inspection of the first section of sewer is performed so that the Contractor and Engineer can agree on performance and quality of the inspections which must be met throughout the Contract. Sewers not inspected to the Engineer's satisfaction shall be re-inspected by the Contractor at no additional cost to the Owner.

One copy of the final post-rehabilitation DVDs and logs shall be submitted to the Engineer for review and approval. If post-rehabilitation inspections on the submitted DVDs and logs are not approved by the Engineer, the DVDs and logs will be returned to the Contractor. The Contractor shall remove all unapproved sewers from the DVDs and logs so that the final DVDs submitted to the Engineer include only those sewers approved and acceptable. The Contractor shall provide correct DVD counter numbers on the logs after all such editing is performed.

Payment will not be made for the installed CIPP until the post-rehabilitation television inspections are submitted and approved by the Engineer. The Contractor shall submit the required DVDs and logs a minimum of 10 days in advance of any payment request to provide the Engineer ample time to review the information.

There shall be no holes, dry spots, lifts, ribs, wrinkles, ridges, splits, bulges, cracks, delaminations or other type defects in the CIPP lining unless predicted in writing by the Contractor prior to lining. Defective lining or groundwater leakage shall be repaired in a manner suitable to and approved by the Engineer at no additional cost to the Owner. The Engineer's decision on how to correct defective lining shall be final. Options for repairing defective lining that will be considered by the Engineer include removing the liner and re-lining the sewer, excavating and replacing the sewer from manhole to manhole, re-lining sewers completely from manhole to manhole, or installing a sectional CIPP patch to repair the defective area.
If a CIPP patch is approved as a repair method, the Owner will not pay the full bid price for that sewer segment (manhole to manhole). The price reduction (credit) shall be negotiated with the Contractor and shall be acceptable to the Owner. The credit shall be equal to at least 25% of the unit price bid for the CIPP installation and shall apply to the entire CIPP lining from manhole to manhole. The Owner shall have the final decision on the amount of the credit.

In addition, there shall be no groundwater leakage through the CIPP or between the liner and the existing pipes. Any leakage shall be completely eliminated in a manner approved by the Engineer. Options for eliminating leaks that will be considered by the Engineer include installation of specialized grout by injection methods and sealing leaks with specialized waterstop materials.

Reference Standards: The following American Society for Testing and Materials (ASTM) standards are referenced herein:

- ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines and conduits by the Inversion and Curing of a Resin-Impregnated Tube

Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.
PART 1.00 - GENERAL

1.01 DESCRIPTION

The work described within details a complete program for manholes. This section details the methods, procedures, materials and equipment as required to produce "A Total System for Manholes". The completed system will provide a corrosion resistant liner to rehabilitate deteriorated manholes and prevent any further deterioration from hydrogen sulfide and other corrosive gases/ acids within the wastewater stream.

1.02 SUBMITTALS

All materials and procedures required to establish compliance with the specifications shall be submitted to the Owner/Engineer for review/approval. Submittals shall include at least the following:

1. Descriptive literature, bulletins and or catalogs of materials

2. Work procedures including flow diversion plan, method of repair, etc.

3. Material and method for repair of leaks or cracks in manholes

4. Final installation report on completed manholes

1.03 QUALITY ASSURANCE

A. The manufacturer and/or installer of the total liner system of manholes shall be a company that specializes in the design, manufacture or installation of corrosion protection systems for manholes. Installer shall be completely trained in leak repair, surface preparation and corrosion materials application on manholes. Corrosion materials/products shall be suitable for installation in a severe hydrogen sulfide environment without any deterioration to the liner.

B. To ensure total unit responsibility, all materials and installation thereof shall be furnished and coordinated with/by one supplier/installer who turnkeys the work and assumes full responsibility for the entire operation.

1.04 WARRANTY

The manufacturer of the material shall warrant its manhole liner for a period of 10-years. “Failure” will be deemed to have occurred if the protective lining fails to (a) prevent the internal damage or corrosion of the structure (b) protect the substrate and environment.
from contamination by effluent. If any such failure occurs within 10-years of initial completion of work by manufacturer on a structure, manufacturer will repair the damage and restore the lining at no cost to the Owner within 60 days after written notification of the failure. "Failure" does not include damage resulting from mechanical or chemical abuse or act of God. Mechanical or chemical abuse means exposing the lined surfaces of the structure to any mechanical force or chemical substance not customarily present or used in connection with structures of the type involved. Manufacturer makes no warranties express or implied other than those specifically stated in this section 1.04. Any liability for consequential and incidental damages is expressly disclaimed. Manufacturer’s liability is limited to and shall not exceed the purchase price paid.

PART 2.00 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. The materials to be utilized in the lining of manholes shall be designed and manufactured to withstand the severe effects of hydrogen sulfide in a wastewater environment. Manufacturer of corrosion protection products shall have long proven experience in the production of the lining products utilized and shall have satisfactory installation record.

B. 3000 psi hydro blasting equipment shall be suited to remove corroded materials from the existing concrete/brick structure.

C. Equipment for installation of lining materials shall be high quality grade and be as recommended by the manufacturer.

D. The lining system to be utilized for manhole structures shall be a multi-component stress panel liner system as described below:

1. Liner

   **Installation**                  **Liner**
   
   Moisture barrier               Modified Polymer
   Surfacer                       Polyurethane/Polymeric blend
   Final corrosion barrier       Modified polymer

2. Modified polymer shall be sprayable, solvent free, two-component polymeric, moisture/chemical barrier specifically developed for the corrosive wastewater environment.
TYPICAL CHEMICAL ANALYSIS

“A” Component
Viscosity, 77° F, cps., ASTM D-1638 300-400
Physical State Liquid
Color Clear to amber
Hygroscopicity Reacts with water

“B” Component
Viscosity, 160° F, cps., ASTM D-1638 400-600
Physical State Liquid
Color Flamingo Pink
Non-Volatile 100%

Reaction Profile (100 grams, 175° F sample)
Gel Time, seconds 1-2
Tack Free Time, seconds 15
Cure Time, seconds 30

Processing
A System / B System, volume ratio 1.00 / 1.00

TYPICAL PHYSICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>ASTM</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength (PSI)</td>
<td>D412</td>
<td>4280</td>
</tr>
<tr>
<td>Elongation (%)</td>
<td>D412</td>
<td>200</td>
</tr>
<tr>
<td>100% Modulus</td>
<td>D412</td>
<td>2200</td>
</tr>
<tr>
<td>300 % Modulus</td>
<td>D412</td>
<td>2600</td>
</tr>
<tr>
<td>Tear Strength (PLI)</td>
<td>D2240</td>
<td>350</td>
</tr>
<tr>
<td>Hardness (shore D)</td>
<td>D1737</td>
<td>60D</td>
</tr>
<tr>
<td>Flexibility (1/8 “Mandrel”)</td>
<td>D1737</td>
<td>Pass</td>
</tr>
<tr>
<td>Flashpoint (°F)</td>
<td>Pensky-Martin</td>
<td>&gt;200</td>
</tr>
<tr>
<td>Taber Abrasion (mg loss)</td>
<td>D4060</td>
<td>52</td>
</tr>
</tbody>
</table>

3. Polyurethane Rigid Structure, low viscosity two-component, containing flame-retardants.

TYPICAL CHEMICAL ANALYSIS

“A” Component
Viscosity, 77° F, cps., ASTM D-1638 200
Physical State Liquid
Color Dark Brown
Hygroscopicity Reacts with water and evolves CO2 gas
“B” Component

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity, 77°F, cps., ASTM D-1638</td>
<td>600-1000</td>
</tr>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Tan</td>
</tr>
<tr>
<td>Hygroscopicity</td>
<td>Absorbs water rapidly thus changing ratio</td>
</tr>
</tbody>
</table>

Reaction Profile (100 grams, 77°F sample)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cream Time, seconds</td>
<td>1-4</td>
</tr>
<tr>
<td>Tack Free time, seconds</td>
<td>5-8</td>
</tr>
<tr>
<td>Rise Time, seconds</td>
<td>6-10</td>
</tr>
</tbody>
</table>

Processing

A System / B System, volume ratio 1.00 / 1.00

4. Total thickness of multi-component stress panel liner shall be a minimum of 500 mils.

5. The product shall be Spectra Shield as manufactured by CCI Spectrum, Inc. or approved equal.

PART 3.00 - EXECUTION

3.01 INSPECTION

Prior to conducting any work, perform inspection of structure to determine need for protection against hazardous gases or oxygen-depleted atmosphere and the need for flow control or flow diversion.

Submit plan for flow control or bypass to Owner/Engineer for approval prior to conducting the work. The cost of flow control or bypassing shall be included in the price bid for manhole rehabilitation.

3.02 SURFACE PREPARATION

A. Conduct surface preparation program to include monitoring of atmosphere for hydrogen sulfide, methane, low oxygen or other gases, approved flow control equipment, and hydro blasting equipment.

B. Hydro blasting equipment shall remove all corrosion from structure. Final product shall be a cleaned, dry surface ready for liner application.

C. After completion of surface preparation, blasting phase, perform the seven point check list, which is the inspection for:
1. Leaks
2. Cracks
3. Holes
4. Exposed Rebar
5. Ring and Cover Condition
6. Invert Condition
7. Inlet and Outlet Pipe Condition

D. After the defects in the structure are identified, repair all leaks with a chemical or hydraulic sealant designed for use in field sealing of ground water. Severe cracks shall be "repaired with a urethane based chemical" sealant. Product to be utilized shall be as approved by Owner/Engineer prior to installation. Repairs to exposed rebar, defective pipe penetrations or inverts, etc. shall be repaired utilizing non-shrink grout or approved alternative method.

3.03 MATERIAL INSTALLATION

A. The limits of the corrosion protection system shall be all exposed concrete/brick surfaces including walls, tap sections, risers, etc., unless otherwise directed by the Owner/Engineer.

B. Application of multi-component system shall be in strict accordance with manufacturer’s recommendation. Final installation shall be a minimum of 500 mils.

C. Provide final written report to Owner/Engineer detailing the location, date of report, and description of repair.

3.04 INSPECTION

Final concrete/brick structure corrosion protection system shall be completely free of pinholes or voids. Entire exposed concrete/brick surface shall be protected with corrosion protection system. Liner thickness shall be the minimum value as described here.

3.05 REPAIR OF DEFECTS

All defects identified during inspection such as pinholes, low film millage, etc. shall be repaired with same material.
GENERAL SECTION 02742.4
MANHOLE REHABILITATION
STRONG-SEAL OR EQUAL

1.0 GENERAL

1.1 This specification shall govern all work, materials, and equipment required for substrate rehabilitation for the purpose of eliminating infiltration, repair of voids, and restoration of the structural integrity of the substrate as a result of applying a monolithic fiber-reinforced structural cementitious liner to the wall and bench surfaces of brick, concrete, or any other masonry construction material.

1.2 INTENT: To provide a system for manhole reconstruction that stops inflow, infiltration, exfiltration, restores structural integrity and provides protection for structures subject to mild hydrogen sulfide corrosion.

1.3 Described are procedures for cleaning, preparation, application and testing. The applicator, approved and trained by the manufacturer, shall furnish all labor, equipment and materials for applying a cementitious mix to form a structural monolithic liner of a minimum ½-inch thickness, with machinery specially designed for the application. All aspects of the installations shall be in accordance with the manufacturer’s recommendation and per the following specifications, which includes:

A. The removal of any loose and unsound material
B. Cleaning of the area to be sprayed
C. The elimination of active infiltration prior to liner application
D. The repair and filling of voids
E. The repair and sealing of the invert and benches
F. Spray application of a cementitious mix to form a structural monolithic liner

1.4 The cost of flow control or bypassing shall be included in the price bid for manhole rehabilitation.

2.0 MATERIALS

2.1 PATCHING MATERIAL (Strong-Seal® QSR or equal)

Strong-Seal® QSR or equal, a quick setting fiber reinforced calcium aluminate 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:
2.2 INFILTRATION CONTROL MATERIAL (Strong-Seal® Strong-Plug® or equal)

Strong-Plug® or equal, a rapid setting cementitious product specifically formulated for leak control, shall be used to stop minor water infiltration and shall be mixed and applied according to manufacturer’s recommendations and shall have the following minimum requirements:

<table>
<thead>
<tr>
<th>Strong-Seal® Strong-Plug® or Equal Minimum Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive Strength</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Sulfate Resistance</td>
</tr>
<tr>
<td>Freeze/Thaw</td>
</tr>
<tr>
<td>Pull Out Strength</td>
</tr>
<tr>
<td>Set Time</td>
</tr>
</tbody>
</table>

2.3 GROUTING MATERIAL

2.3.1 Strong-Seal® Grout 250 or equal, 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 28-day compressive strength of 250 psi.

2.3.2 Strong-Seal® Grout 1000 or equal, 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 28-day compressive strength of 1000 psi.
2.3.3 Chemical grouts may be used for stopping very active infiltration and shall be mixed and applied per manufacturer's recommendation.

2.4 STRONG-SEAL® MS2-C® LINER MATERIAL OR EQUAL

Strong-Seal® MS2-C® or equal cementitious liner product shall be used to form a structural monolithic liner covering all interior substrate surfaces and shall have the following minimum requirements:

<table>
<thead>
<tr>
<th>MS2-C® or Equal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive Strength</td>
</tr>
<tr>
<td>Tensile Strength</td>
</tr>
<tr>
<td>Flexural Strength</td>
</tr>
<tr>
<td>Shrinkage @90% R.H.</td>
</tr>
<tr>
<td>Bond</td>
</tr>
<tr>
<td>Density, When applied</td>
</tr>
<tr>
<td>Freeze/Thaw</td>
</tr>
</tbody>
</table>

2.4.1 Strong-Seal® MS2-C® or equal shall be made with calcium aluminate cement and shall be used according to manufacturer's recommendations in applications where there is evidence of mild sulfide conditions (substrate surface of pH 2.0 or higher). Strong-Seal® MS2-C® product or approved equal shall be factory blended requiring only the addition of water at the jobsite. The bag weight shall be 63-67 pounds. The contents shall have a dry bulk density of 82-85 pounds per cubic foot. When mixed with manufacturer's recommended amount of water, it shall have a wet nozzle density in the range of 129-139 pounds per cubic foot and shall have a typical yield of .57 cubic feet per bag.

2.4.2 Strong-Seal® products or equal shall be reinforced with alkaline resistant fiberglass rods not less than an inch in length.

2.4.3 The material shall meet or exceed industry standards and shall not have any basic ingredient that exceeds EPA maximum allowable limits for any heavy metal.

2.5 WATER

Water used to mix product shall be clean and free from contaminants. Questionable water shall be tested by a laboratory per ASTM C-94 procedure. Potable water need not be tested.
2.6 OTHER MATERIALS

No other material shall be used with the mixes described in 2.1, 2.2, and 2.3 without prior approval or recommendation from the manufacturer.

3.0 EQUIPMENT

3.1 Applicator must use approved equipment designed and manufactured by material supplier specifically for the application of cementitious liner in sanitary systems.

3.2 Specially designed machines consisting of a progressive cavity pump and an air system for low velocity spray application of product, shall be used for applying Strong-Seal® Systems products or equal. Equipment is complete with water storage and metering system. SprayMate® models 35C and 35D or equal are approved machines for applying Strong-Seal® Systems products or equal. Other models may be approved after review by manufacturer’s personnel of equal systems.

4.0 APPLICATION

4.1 PREPARATION

4.1.1 Place covers over invert to prevent extraneous material from entering the sewer lines before cleaning.

4.1.2 All foreign material shall be removed from the manhole wall and bench using a high pressure water spray (minimum 3000 psi). If grease, chemicals, previous coatings or other surface contaminants are present, the surface will be cleaned with steam, chemical cleaning compounds or surface abrading as necessary to provide a clean substrate. Loose and protruding brick, mortar, and concrete shall be removed using a mason’s hammer and chisel and/or scraper. Fill any large voids with a quick setting patching mix Strong-Seal® QSR (2.1) or equal.

4.1.3 Active leaks shall be stopped using quick setting, specially formulated mixes, such as Strong-Plug® (2.2) or equal according to manufacturer’s recommendations. Some leaks may require weep holes to localize the infiltration during the application. After application, the weep holes shall be plugged with the quick setting material Strong-Seal® Strong-Plug® (Part 2.2) or equal prior to final coat. When severe infiltration exists, drilling may be required in order to pressure grout using a cementitious grout, Strong-Seal® Grout 250 or equal or Strong-Seal® Grout 1000 or equal or chemical grouts (2.3). Manufacturer’s recommendations shall be followed when pressure grouting is required.

4.2 INVERT REPAIR

4.2.1 After all preparations have been completed, remove all loose material and wash wall again.
4.2.2 Any bench, invert, or service line repairs shall be made at this time using the quick setting patching mix, Strong-Seal® QSR (2.1) or equal and shall be used per manufacturer’s recommendations.

4.2.3 Invert repair shall be performed on all inverts with visible damage or where infiltration is present or when vacuum testing is specified. After blocking flow through the manhole and thoroughly cleaning invert, the quick setting patch material, Strong-Seal® QSR (2.1) or equal 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 ⅜-inch at the invert extending out onto the bench of the manhole sufficiently to tie into the structural monolithic liner to be spray applied. The finished invert surfaces shall be smooth and free of ridges.

The flow may be re-established in the manhole within 30 minutes after placement of the material.

4.3 MIXING LINER MATERIALS

4.3.1 For each bag of product, use the amount of water required per manufacturer’s recommendations following mixing procedures noted on product bag. Only enough water will be used to produce a mix consistency to allow application of liner material up to one-inch thick in a single application without material “sagging” on vertical surface and using the approved equipment for mixing and application.

4.3.2 Prepared mix shall be discharged into a hopper and another batch prepared to occur in such a manner as to allow spraying continuously without interruption until each application is complete.

4.4 SPRAYING

4.4.1 The surface shall be clean and free of all foreign material be damp without noticeable free water droplets or running water, but totally saturated just prior to the application of material. Materials shall be applied up to one (1) inch thick in one or more passes from the bottom of the frame; however, minimum total thickness shall not be less than ⅜-inch. The surface is then troweled to a relatively smooth finish being careful not to over trowel.

4.4.2 A brush finish shall be applied to the trowel finished surface. Manufacturer’s recommendations shall be followed whenever more than 24 hours have elapsed between applications.

4.5 BENCH APPLICATION

4.5.1 The wooden covers shall be removed at this time and the bench sprayed with materials mixed per specifications as per 4.3 and spray applied in such a manner that a gradual slope is produced from the walls to the invert with the thickness at
the invert to be no less than ½-inch. The wall/bench intersection shall be rounded to a uniform radius the full circumference of the intersection.

5.0 CURING

Caution will be taken to minimize exposure of applied product to quick surface drying and air movement. If time between applications of additional coats is to be longer than 15 minutes, place cover over manhole. In extremely hot and arid climates, manhole should be shaded while reconstruction is in process and a concrete curing agent should be used. Contact manufacturer for curing compound recommendations.

5.1 Strong-Seal® MS2-C® liner product or equal shall have the following minimum cure times before being subjected to flow:

<table>
<thead>
<tr>
<th>Hold Times Before Releasing Flow</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Storm Run-off &amp; Surcharge</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>Force Main Impact</td>
<td>6 hrs.</td>
</tr>
</tbody>
</table>

| After final application of the Strong-Seal® liner product or equal, street traffic shall be held | 6-8 hrs. |

6.0 WEATHER

6.1 No application shall be made if ambient temperature is below 40 degrees Fahrenheit. No application shall be made to frozen surfaces, or if freezing is expected to occur within the substrate within 24 hours after application.

6.2 Precautions shall be taken to keep the mix temperatures at time of application below 90 degrees Fahrenheit. Water temperature shall not exceed 80 degrees Fahrenheit. Chill with ice if necessary.

7.0 PRODUCT TESTING

Four (4) - 2-inch cubes shall be cast each day or from every pallet of product used, and shall be properly packaged, labeled and returned to manufacturer for testing in accordance with the owner’s or manufacturer’s directions for compression strength per ASTM C109 procedure.

8.0 FINAL ACCEPTANCE TESTING

8.1 At the direction of the owner or his assignee, the reconstructed structure shall be tested by any one of the following methods:

8.1.1 Visually verify the absence of leaks.

8.1.2 Perform an exfiltration test.
8.1.2.1 For manholes 0 to 6-feet deep, if water loss is 1-inch or less in 5 minutes, manhole reconstruction is acceptable.

8.1.2.2 For manholes over 6-foot deep, if water loss is 1-inch plus \(\frac{1}{4}\)-inch for each additional foot of depth or less in 5 minutes, manhole is acceptable.

8.1.3 Vacuum testing per ASTM C1244-93 procedure. Vacuum testing shall not be conducted earlier than 7 days after application.
PART 1.0 General

1.1 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 frame and chimney area of the manhole.

1.2 Strong-Seal® Sealant Specification or equal, a permanent method of sealing the interior of the chimney and casting in manholes and catch basins.

1.3 Intent: A method of providing corrosion protection and a flexible seal to prevent infiltration through the interior of the manhole frame and chimney area of the manhole.

1.4 Described are procedures for cleaning, preparation, and application of Strong-Seal® Sealant or equal. The applicator, approved and trained by Strong-Seal® Systems or equal shall furnish all labor, equipment and materials for applying Strong-Seal® Sealant or equal to form an interior flexible seal between the manhole frame and chimney area of the manhole or catch basin to provide corrosion protection and eliminate infiltration.

   A. The removal of any loose and unsound material.
   B. Cleaning of the area to be sealed.
   C. The elimination of active infiltration prior to sealing.
   D. The repair and filling of voids.
   E. The application of Strong-Seal® Sealant or equal.

1.5 The cost of flow control or bypassing shall be included in the price bid for manhole rehabilitation.

PART 2.0 MATERIALS

2.1 PATCHING MATERIAL (Strong-Seal® QSR or Equal)

Strong-Seal® QSR or equal, a quick setting corrosion resistant cementitious material, shall be used as a patching material to provide a smooth surface on concrete, masonry, or brick structures for a uniform application of Strong Seal® Sealant or equal. Strong Seal® QSR or equal is to be mixed and hand applied according to Strong-Seal® Systems or equal recommendations and shall have the following minimum requirements:
A. Compressive Strength | ASTM C109 | 1400 psi, 6 hours  
B. Bond | ASTM C882 | >1600 psi, 28 days  
C. Calcium Aluminate Cement |  | sulfate resistant  
D. Applied Density |  | 105 pcf ± 5 lbs  
E. Shrinkage | ASTM C490 | 0% @90% R.H.  
F. Placement Time |  | 5-10 Minutes  
G. Set Time |  | 15-30 Minutes

2.2 INFLTRATION CONTROL MATERIAL (Strong-Seal® Strong- Plug® or Equal)

Strong-Plug® or equal, a rapid setting cementitious product specifically formulated for leak control, shall be used to stop minor water infiltration and shall be mixed and applied according to Strong-Seal® Systems or equal recommendations and shall have the following minimum requirements:

| A. Compressive Strength | ASTM C109 | >1000 psi, 1 hour  
| B. Sulfate Resistance | ASTM C267 | No weight loss after 15 cycles @ 2000ppm  
| C. Freeze/Thaw | ASTM C666 “Method A” | 100 cycles  
| D. Pull Out Strength | ASTM C234 | 14,000 pounds  
| E. Placement time |  | <1.0 minute

PART 3.0 APPLICATIONS

3.1 New Structures

3.1.1 Standard Portland cement or new concrete (not quick set high strength cement) must be well cured prior to the application of the Strong-Seal® Sealant or equal protective coating. Generally, 28-days are adequate cure time for standard Portland cement. If earlier application is desired, contact Strong-Seal® Systems or equal for recommendations.

3.1.2 Contact Strong-Seal® Systems or equal for application recommendations if the structure contains a quick setting high strength concrete with latex or curing compound additives.

3.1.3 Contact Strong-Seal® Systems or equal for application recommendations if the structure has been coated.

3.2 Surface Preparation (chimney)

3.2.1 Applicator shall inspect all surfaces specified to receive the Strong-Seal® Sealant or equal prior to application. Applicator shall notify owner of any noticeable disparity in the surfaces, which may interfere with the proper application of Strong-Seal® Sealant or equal.
3.2.2 Place cover over bench and invert. Plug all pipe openings and plug to prevent extraneous material from entering the sanitary sewer system.

3.2.3 Remove all form release agents, curing compounds, salts, efflorescence, laitance, and other foreign matter by sandblasting, shot blasting, mechanical scarification, (such as grinding) or suitable chemical means.

3.2.4 Active leaks shall be stopped using quick setting, specially formulated mix, Strong-Seal® Strong Plug® (2.2) or equal according to Strong-Seal® Systems or equal recommendations.

3.2.5 Openings or gaps larger than 1/8-inch shall be patched using specially formulated mix Strong-Seal® QSR (2.1) or equal according to Strong-Seal® Systems or equal recommendations.

3.2.6 Check pH of structural liner surfaces prior to application of Strong Seal® Sealant or equal. Rinse thoroughly to achieve a final pH between 8.0 and 11.0. Allow to dry thoroughly prior to coating.

3.2.7 Surface must be clean, dry, sound and offer sufficient profile to achieve optimum adhesion.

3.3 Surface Preparation (manhole frame)

3.3.1 Place cover over bench, invert and plug all pipe openings to prevent extraneous material from entering the sanitary sewer system.

3.3.2 Remove all oil and grease from surface by shot blasting, mechanical scarification (grinding) or suitable chemical means to produce a near white surface.

3.3.3 Surface must be clean, dry, and sound with a near white metal finish prior to applying Strong-Seal® Sealant or equal.

3.4 Existing Structures

3.4.1 Brick Constructed manholes

3.4.1.1 Follow procedures in 3.2

3.4.1.2 Using quick set cement, Strong-Seal® QSR (2.1) or equal 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.

3.4.1.3 The manhole frame shall be blasted using water blasting, sandblasting or mechanical scarification (grinding) to a near white finish.

3.5.1 Rehabilitated manholes

3.5.1 Follow procedures in 3.2
PART 4.0  APPLICATION OF STRONG-SEAL® SEALANT OR EQUAL

4.1  Strong-Seal® Sealant or Equal Physical Properties

<table>
<thead>
<tr>
<th>ASTM Standard</th>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. D4060</td>
<td>Abrasion Resistance</td>
<td>1000 Cycles CS-17 5mg less</td>
</tr>
<tr>
<td>B. D4541</td>
<td>Adhesion</td>
<td>&gt;350 PSI</td>
</tr>
<tr>
<td>C. D2240</td>
<td>Durometer hardness</td>
<td>Shore D-50</td>
</tr>
<tr>
<td>D. D624</td>
<td>Tear Strength</td>
<td>525 psi</td>
</tr>
<tr>
<td>E. D638</td>
<td>Tensile Elongation</td>
<td>530 %</td>
</tr>
<tr>
<td>F. D638</td>
<td>Tensile Strength</td>
<td>&gt;2400 psi</td>
</tr>
<tr>
<td>G. D570</td>
<td>Water Absorption</td>
<td>&lt;0.0%</td>
</tr>
<tr>
<td>H. C666</td>
<td>Freeze/Thaw</td>
<td>100 cycles no visible damage</td>
</tr>
<tr>
<td></td>
<td>Temp. Service Range</td>
<td>-20°F to 250°F</td>
</tr>
</tbody>
</table>

4.2  Application

4.2.1  Application procedures shall conform to the recommendations of Strong Seal® Systems or equal including material handling, mixing, safety, spray equipment and environmental controls during application.

4.2.2  Applicator shall inspect all surfaces specified to receive the sealant prior to application. Applicator shall notify owner of any noticeable disparity in the surfaces, which may interfere with the proper application of Strong-Seal® Sealant or equal.

4.2.3  Using the specified plural component air powered gun, apply the Strong-Seal® Sealant or equal 2-inches up onto the interior of the frame to 4-inches below the frame onto the interior of the manhole chimney.

4.2.4  The final thickness shall be a minimum of 125 mils (one cartridge kit will do one 24-inch diameter interior).

4.2.5  Strong-Seal® Sealant or equal will dry to touch in approximately 30 minutes. Manhole cover may be replaced immediately. Withhold traffic for 2 hours after installation is complete.

END OF SECTION
SECTION 02901.1
SODDING

PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above-mentioned documents.

PART 2.00 SCOPE OF WORK

This item shall consist of furnishing, hauling, and placing approved live sod on prepared areas in accordance with this Specification at the locations shown on the plans or as directed by the Engineer.

PART 3.00 MATERIALS

3.01 SOD:

Sod furnished by the Contractor shall have a good cover of living or growing grass. This shall be interpreted to include grass that is seasonally dormant during the cold or dry seasons and capable of renewing growth after the dormant period. All sod shall be obtained from areas where the soil is reasonably fertile and contains a high percentage of loamy topsoil. Sod shall be cut or stripped from living, thickly matted turf relatively free of weeds or other undesirable foreign plants, large stones, roots, or other materials which might be detrimental to the development of the sod or to future maintenance. At least seventy percent (70%) of the plants in the cut sod shall be composed of the species stated in the special provisions, and any vegetation more than 6-inches in height shall be mowed to a height of 3-inches or less before sod is lifted. Sod, including the soil containing the roots and the plant growth showing above, shall be cut uniformly to a thickness not less than that stated in the special provisions.

3.02 WATER:

The water shall be sufficiently free from oil, acid, alkali, salt, or other harmful materials that would inhibit the growth of grass. It shall be subject to the approval of the Engineer prior to use.

PART 4.00 CONSTRUCTION METHODS

4.01 GENERAL:

Suitable equipment necessary for proper preparation of the ground surface and for the handling and placing of all required materials shall be on hand, in good condition, and shall be approved by the Engineer before the various operations are started.
4.02 PREPARING THE GROUND SURFACE:

A. Prepare site by applying “Round-Up” or equal as per label directions to weed growth on site. Allowing sufficient time for herbicide to take effect, scarify planting areas to a minimum depth of 6-inches. Float beds to grade, and rake to remove weeds, clods, or rocks 1-inch in diameter or greater. Thoroughly water-settle all soil.

B. Work shall be performed only during periods when beneficial results are likely to be obtained.

C. Perform soil testing to determine what nutrients and fertilizers are needed. As a minimum, sodded lawn areas shall receive eight (8) pounds of ammonium phosphate, three (3) cubic yards of mulch, and six (6) pounds of ground ferrous sulfate evenly incorporated into the soil per thousand square feet (1000 SF) prior to planting. These areas shall be rolled to remove all potential and actual air pockets in the soil prior to planting.

D. Immediately prior to sodding, all areas to be sodded shall be watered, wetting the soil to a depth of 4-inches.

4.03 OBTAINING AND DELIVERING SOD:

A. After inspection and approval of the source of sod by the Engineer, the sod shall be cut with approved sod cutters to such a thickness that after it has been transported and placed on the prepared bed, but before it has been compacted, it shall have a uniform thickness of not less than 2-inches. Sod sections or strips shall be cut in uniform widths, not less than 10-inches, and in lengths of not less than 18-inches, but of such length as may be readily lifted without breaking, tearing, or loss of soil. Where strips are required, the sod must be rolled without damage with the grass folded inside. The Contractor may be required to mow high grass before cutting sod.

B. The sod shall be transplanted within 24-hours from the time it is stripped, unless circumstances beyond the Contractor’s control make storing necessary. In such cases, sod shall be stacked, kept moist, and protected from exposure to the air and sun and shall be kept from freezing. Sod shall be cut and moved only when the soil moisture conditions are such that favorable results can be expected. Where the soil is too dry, permission to cut sod may be granted only after it has been watered sufficiently to moisten the soil to the depth the sod is to be cut.

4.04 LAYING SOD:

A. Sod shall be installed within 36-hours of being cut.

B. Sodding shall be accomplished in accordance with the ASPA Guideline Specifications to Sodding.
C. Sod shall be laid with closely fitted joints, and ends of the strips shall be staggered.

D. On irregular-shaped areas, sod shall be laid in both directions from the longest straight line that can be drawn through the area.

E. Additionally, sod shall be laid at right angles to slopes or the flow of water. On slope areas, sodding shall be started at the bottom of the slope.

F. Sod shall be rolled with a minimum 300-pound roller after an initial watering to eliminate irregularities. CAUTION: Immediate initial watering is very important to sod survival.

G. Do not over-irrigate, creating a spongy condition for roller. After rolling, water thoroughly to penetrate subsoil at least 8-inches to 10-inches.

H. Repeat watering at regular intervals to keep sod moist at all times until rooted.

4.05 STAKING:

A. Sod placed on slopes of 3:1 or steeper shall be staked, stapled or otherwise mechanically anchored to prevent sliding.

B. Stakes for sod shall be 1-inch by 1-inch by 12-inches. Longer stakes may be required in some circumstances to ensure the sod stays in place.

C. Install stakes at an angle with the head directed up-slope.

D. Use a minimum of 33 stakes per 100 square feet.

4.06 TURF REINFORCEMENT MAT (TRM):

Turf reinforcement mats (TRM) may be utilized along with sod in areas of highly erosive soils or high storm water velocities. Staking of the reinforcement mat and sod shall be in accordance with the recommendations of the TRM manufacturer.

4.07 WATERING:

Turf watering shall be at intervals to obtain a moist soil condition to a minimum depth of 2-inches. Frequency of watering and quantity of water shall be adjusted in accordance with the growth of the turf. Run-off, puddling, and wilting shall be prevented.

4.08 ESTABLISHING TURF:

A. Newly sodded areas need to be inspected frequently to ensure the grass is growing.
B. If the sodded area is damaged due to runoff, additional storm water measures may be needed. Spot sodding or seeding can be done on small areas to fill in bare spots where grass did not grow properly.

C. When the surface has become gullied or otherwise damaged during the period covered by this Contract, the affected areas shall be repaired to re-establish the grade and the condition of the soil, as directed by the Engineer, and shall then be re-sodded as specified herein.

END OF SECTION
PART 1.00 GENERAL

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all said documents.

PART 2.00 SCOPE OF WORK

This work shall consist of furnishing and placing seed, plant material, commercial fertilizer, agricultural limestone, and/or mulch material, and of caring for such areas where permanent vegetative cover cannot be established because of the season of the year.

PART 3.00 TEMPORARY SEEDING - LATE WINTER AND EARLY SPRING

3.01 SPECIES RATE (lb/acre)
    Rye 120

3.02 SEEDING DATES

    West Tennessee - December 1 - April 15

3.03 SOIL AMENDMENTS

    Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.

3.04 MULCH

    Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

3.05 MAINTENANCE

    Re-fertilize if growth is not fully adequate. Reseed, re-fertilize and mulch immediately following erosion or other damage.

PART 4.00 TEMPORARY SEEDING - SUMMER

4.01 SPECIES RATE (lb/acre)
    Oats 60
    Brown top millet 30
4.02 SEEDING DATES
West Tennessee - April 15 - August 15

4.03 SOIL AMENDMENTS
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.

4.04 MULCH
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

4.05 MAINTENANCE
Re-fertilize if growth is not fully adequate. Reseed, re-fertilize and mulch immediately following erosion or other damage.

PART 5.00 TEMPORARY SEEDING - FALL

5.01 SPECIES RATE (lb/acre)

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>RATE (lb/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oats</td>
<td>30</td>
</tr>
<tr>
<td>Winter Wheat</td>
<td>30</td>
</tr>
</tbody>
</table>

5.02 SEEDING DATES
West Tennessee - August 15 - December 30

5.03 SOIL AMENDMENTS
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.

5.04 MULCH
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

5.05 MAINTENANCE
Re-fertilize if growth is not fully adequate. Reseed, re-fertilize and mulch immediately following erosion or other damage. If necessary to extend temporary cover beyond June 15, overseed with 50 lb/ac crimson clover in late February or early March.
PART 6.00 CONSTRUCTION REQUIREMENTS

6.01 GRADING AND SHAPING

Excessive water runoff shall be reduced by properly designed and installed erosion control practices such as ditches, dikes, diversions, and sediment basins. No shaping or grading is required if slopes can be stabilized by hand-seeded vegetation or if hydraulic seeding equipment is to be used.

Complete grading before preparing seedbeds, and install all necessary erosion control practices such as dikes, waterways, and basins. Minimize steep slopes because they make seedbed preparation difficult and increase the erosion hazard. If soils become compacted during grading, loosen them to a depth of 6-8 inches using a ripper, harrow, or chisel plow.

6.02 SEEDBED PREPARATION

Good seedbed preparation is essential to successful plant establishment. A good seedbed is well pulverized, loose and uniform. Where hydroseeding methods are used, the surface may be left with a more irregular surface of large clods and stones.

6.03 LIMING

Apply lime according to soil test recommendations. If the pH (acidity) of the soil is not known, an application of ground agricultural limestone at the rate to 1 to 1½ tons/acre on coarse textured soils and 2-3 tons/acre on fine textured soils is usually sufficient. Apply limestone uniformly and incorporate into the top 4-6 inches of soil. Soils with a pH of 6 or higher do not need to be limed.

6.04 FERTILIZER

Base application rates on soil tests. When soil tests are not possible, apply a 10-10-10 grade fertilizer at 700-1000 lb/acre. Both fertilizer and lime should be incorporated into the top 4-6 inches of soil. If a hydraulic seeder is used, do not mix seed and fertilizer more than 30 minutes before the application.

6.05 SURFACE ROUGHENING

If recent tillage operations have resulted in a loose surface, additional roughening may not be necessary, except to break up large clods. If rainfall caused the surface to become sealed or crusted, loosen it just prior to seeding by disk ing, raking, harrowing, or other suitable methods. Groove or furrow slopes steeper than 3:1 on the contour before seeding.

6.06 SEEDING

Select a non-invasive grass or grass-legume mixture suitable to the area and season of the year. Seed shall be applied uniformly by hand, cyclone seeder, drill, cultipacker seeder, or hydraulic seeder. Drill or cultipacker seeders should normally place seed ¼ to ½-inches
deep. Appropriate depth of planting is 10 times the seed diameter. Soil should be raked lightly to cover seed with soil if seeded by hand.

6.07 IRRIGATION

During times of drought, water shall be applied at a rate not causing runoff and erosion. The soil shall be thoroughly wetted to a depth that will ensure germination of the seed. Subsequent applications should be made as needed. Newly seeded areas require more water than more mature plants.

PART 7.00 MAINTENANCE AND INSPECTION POINTS

Reseed and mulch areas where seedling emergence is poor or where erosion occurs, as soon as possible. Do not mow.

PART 8.00 PERMANENT COVER

Establishment of a temporary cover does not fulfill the contract. A permanent grass cover is required.

END OF SECTION
PART 1.00 GENERAL

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all said documents.

PART 2.00 SCOPE OF WORK

This work shall consist of furnishing and placing seed, plant material, commercial fertilizer, agricultural limestone, and/or mulch material, and of caring for such areas to achieve final stabilization.

PART 3.00 SEED SELECTION

<table>
<thead>
<tr>
<th>Zone</th>
<th>Best</th>
<th>Marginal</th>
<th>Rate/Mix (lb/ac PLS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poorly drained soils</td>
<td>Feb 1 – Mar 20</td>
<td>Mar 20 – Apr 30</td>
<td>80 Pensacola bahiagrass</td>
</tr>
<tr>
<td></td>
<td>Sept 1 – Sept 30</td>
<td>Sept 30 – Oct 31</td>
<td>30 Bermudagrass (hulled)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20 Korean lespedeza**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 Kobe lespedeza**</td>
</tr>
<tr>
<td>Well drained soils</td>
<td>Apr 1 – July 15</td>
<td>50 Pensacola bahiagrass</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 Bermudagrass (hulled)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 Korean lespedeza**</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 Foxtail millet**</td>
<td></td>
</tr>
<tr>
<td>High maintenance</td>
<td>Apr 1 – July 15</td>
<td>40 Bermudagrass (hulled)</td>
<td></td>
</tr>
</tbody>
</table>

Temporary seed may be required when seeding outside of the preferred seeding dates. See specification entitled “Temporary Vegetation” for more information on temporary seeding.

PART 4.00 CONSTRUCTION REQUIREMENTS

4.01 Grading and Shaping

Grading and shaping may not be required where hydraulic seeding and fertilizing equipment is to be used. Vertical banks shall be sloped to enable plant establishment.

When conventional seeding and fertilizing are to be done, grade and shape the slope, where feasible and practical, so that equipment can be used safely and efficiently during seedbed preparation, seeding, mulching, and maintenance of vegetation.

Concentrations of water that could cause excessive soil erosion should be diverted to a safe outlet. Diversions and other treatment practices must conform to the appropriate standards and specifications.
4.02 Plant Selection

Only certified seed shall be used. Refer to Part 3.00 for species. Grass type should be selected on the basis of species characteristics; site and soil conditions; planned use and maintenance of the area; time of year of planting, method of planting; and the needs and desires of the land user.

Plant selection may also include annual companion crops. Annual companion crops should be used only when the perennial species are not planted during their optimum planting period. Care should be taken in selecting companion crop species and seeding rates because annual crops will compete with perennial species for water, nutrients, and growing space. A high seeding rate of the companion crop may prevent the establishment of perennial species.

4.03 Ryegrass

Ryegrass shall not be used in any seeding mixtures containing permanent, perennial species due to its ability to out-compete desired species chosen for permanent perennial cover. However, crimson, clover, oats and winter wheat can be planted any time of the year and are recommended as a cover crop with native perennial species.

4.04 Topsoil

Topsoil should be replaced on all areas to be seeded.

4.05 Seedbed Preparation

When conventional seeding is to be used, topsoil should be applied to any area where the disturbance results in subsoil at the final grade surface.

4.06 Fertilizer

Grasses: 800-1200 lb/acre of 10-10-10 (or the equivalent)
Grass-legume mixtures: 800-1200 lb/acre of 5-10-10 (or the equivalent)

4.07 Broadcast Seeding

Seedbed preparation may not be required where hydraulic seeding equipment is to be used.

Tillage, at a minimum, shall adequately loosen the soil to a depth of 4 to 6-inches; alleviate compaction; incorporate topsoil, lime, and fertilizer; smooth and firm the soil; allow for the proper placement of seed, sprigs, or plants; and allow for the anchoring of straw or hay mulch if a crimper is to be used.

Tillage may be done with any suitable equipment.

Tillage should be done parallel to the contour where feasible.
On slopes too steep for the safe operation of tillage equipment, the soil surface shall be pitted or trenched across the slope with appropriate hand tools to provide consecutive beds, 6 to 8-inches apart, in which seed may lodge and germinate. Hydraulic seeding may also be used.

4.08 Inoculants

Native legume seeds do not need to be inoculated. All non-native legume seed shall be inoculated with appropriate nitrogen fixing bacteria. The inoculants shall be pure culture prepared specifically for the seed species and used within the dates on the container. A mixing medium recommended by the manufacturer shall be used to bond the inoculants to the seed. For conventional seeding, use twice the amount of inoculants recommended by the manufacturer.

4.09 No-Till Seeding

No-till seeding is permissible into annual cover crops when planting is done following maturity of the cover crop or if the temporary cover stand is sparse enough to allow adequate growth of the permanent (perennial) species. No-till seeding shall be done with appropriate no-till seeding equipment. The seed must be uniformly distributed and planted at the proper depth. Native grasses respond very well to drill seeding at a depth of one-fourth-inch.

4.10 Mulch

Straw mulch is required for all permanent vegetation applications and must be applied immediately after the application of seed. The application rate for mulch is 2 tons per acre with overall uniform soil coverage of 70%. All mulch must be anchored.

PART 5.00 MAINTENANCE AND INSPECTION POINTS

5.01 Any areas that have washed out due to high stormwater flows, areas that have been disturbed by blowing wind, and areas that do not show good germination should be retreated.

5.02 Inspect seeded areas for failure and make necessary repairs and reseedings within the same season, if possible.

5.03 Reseeding

If a stand has inadequate cover, re-evaluate choice of plant materials and quantities of lime and fertilizer. Re-establish the stand after seedbed preparation or over-seed the stand. Consider seeding temporary, annual species if the time of year is not appropriate for permanent seeding.

END OF SECTION
SECTION 02906.1
MULCHING

PART 1.00 GENERAL

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all said documents.

PART 2.00 SCOPE OF WORK

Mulching is needed to protect the soil surface from the forces of raindrop impact and overland flow. Mulch seeded areas immediately.

PART 3.00 MATERIAL

3.01 All mulch material shall be air dried and virtually free of noxious weeds and weed seeds or other materials detrimental to plant growth on the work site or on adjacent agricultural lands. Hay shall be stalks of approved grasses, sedges, or legumes seasoned before bailing or loading. Straw shall be stalks of rye, oats, wheat, or other approved grain crops. Both hay and straw shall be suitable for spreading with standard mulch blower equipment. Biodegradable fabric may be used as an alternate to mulch material at the Contractor's option.

3.02 If hay is used, the type of hay along with a sample of the material shall be named and submitted for approval in time for expert review before work is to begin.

PART 4.00 CONSTRUCTION REQUIREMENTS

4.01 When seeding with mulch, the mulch material shall be spread evenly over the seeded areas at an approximate rate of 75 pounds per 1,000 square feet immediately following the seeding operations. This rate may be varied by the Engineer, depending on the texture and condition of the mulch material and the characteristics of the area seeded. All portions of the seeded areas shall be covered with a uniform layer of mulch, so that approximately 25 percent (25%) of the ground is visible.

4.02 The mulch shall be held in place by the use of an approved mulch binder. Cutback asphalt, Grade SS-1 or emulsified asphalt shall be applied at the approximate rate of 10 gallons per 1,000 square feet or more as required to hold the mulch in place. Mulch in medians and other areas affected by traffic shall be held in place by applying asphalt binder at the approximate rate of 7 gallons per MSF.

4.03 The Contractor shall cover exposed structures, guardrails, signs, and appurtenances if the mulch binder is applied in such a way that it would come in contact with or discolor the structures. All mulching shall be done by machine, except in small areas where machine usage is impractical. No materials shall be sprayed on or allowed to drift on walls and/or walks.

END OF SECTION