

Anderson County Government

Request for Bids

100 North Main Street, Suite 214
Courthouse
Clinton, Tennessee 37716
(865) 457-6218 Office
(865) 457-6252 Fax

purchasing@andersoncountyttn.gov


Bid No.: 2410

Date Issued: October 13, 2023

**Bids will be received until
10:00 a.m. Eastern Time on November 9, 2023**

Sealed bids are subject to the General Terms and Conditions of this bid, and any other data attached or incorporated by reference. Bids will be received in the Anderson County Purchasing Office until the date and time specified above, and at that time publicly opened and read aloud.

ANDERSON COUNTY RESERVES THE RIGHT TO WAIVE ANY INFORMALITIES
IN OR TO REJECT ANY OR ALL BIDS AND TO ACCEPT THE BID DEEMED
FAVORABLE AND IN THE BEST INTEREST OF ANDERSON COUNTY.



Robert J. Holbrook, Director of Finance

BID DESCRIPTION

Bid for Water Line Extension for Buchanon Road, Savage Garden Road, Foust Lane, Hinds Creek Road and Judson Road.

Questions are to be emailed to purchasing@andersoncountyttn.gov and kajmeri@andersoncountyttn.gov .
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ANDERSON COUNTY, TENNESSEE

ANDERSON COUNTY WATER AUTHORITY

HALLSDALE-POWELL UTILITY DISTRICT

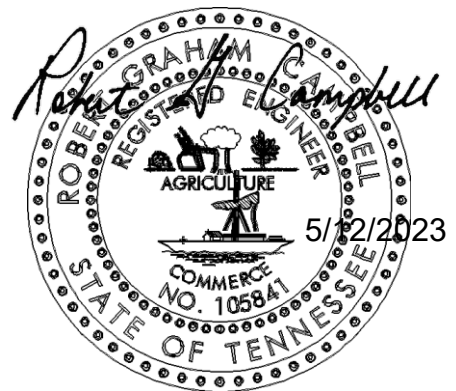
CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

2020 CDBG WATER LINE EXTENSION
BUCHANAN RD, SAVAGE GARDEN RD, FOUST LN,
HINDS CREEK RD, AND JUDSON RD

MAY 2023

EDISON ID NUMBER 14049
RGC PROJECT # 18706



Robert G. Campbell & Associates, L.P.
Consulting Engineers
7523 Taggart Lane
Knoxville, TN 37938
(865)947-5996

ANDERSON COUNTY, TENNESSEE
ANDERSON COUNTY WATER AUTHORITY
HALLSDALE-POWELL UTILITY DISTRICT

CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

**2020 CDBG WATER LINE EXTENSION
BUCHANAN RD, SAVAGE GARDEN RD, FOUST LN, HINDS
CREEK RD, AND JUDSON RD**

MAY 2023

**EDISON ID NUMBER 14049
RGC PROJECT #18706**

System Approval:


Anderson County Water Authority

System Approval:


Hallsdale-Powell Utility District

Robert G. Campbell & Associates, L.P.
Consulting Engineers
7523 Taggart Lane
Knoxville, TN 37938
(865)947-5996

ANDERSON COUNTY OFFICIALS

ANDERSON COUNTY MAYOR:

Terry Frank

ANDERSON COUNTY COMMISSION:

District 1 – Tyler Mayes

Tracy Wandell

District 2 – Michael Foster

Denise Palmer

District 3 – Joshua Anderson

Shelly Vandagriff

District 4 - Shane Vowell

Tim Isbel

District 5 – Robery McKamey

Jerry White

District 6 – Anthony Allen

Aaron Wells

District 7 – Sabra Beauchamp

Stephen Verran

District 8 – Phil Yager

Bob Smallridge

ANDERSON COUNTY WATER AUTHORITY GENERAL MANAGER:

Larry Clowers

ANDERSON COUNTY WATER AUTHORITY COMMISSIONERS:

Chairman Jack Shelton

Rickey Rose

George Horton

Ernie Bowles

Dusty Irwin

HALLSDALE-POWELL UTILITY DISTRICT OFFICIALS

HALLSDALE-POWELL UTILITY DISTRICT GENERAL MANAGER:

Darren Cardwell

BOARD OF COMMISSIONERS:

Chairman – Kevin Julian

Secretary – Todd Cook

Treasurer – Kelly Barger

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ADVERTISEMENT FOR BIDS

Project No. RGC Project No. 18706; Edison No. 14049

Anderson County Water Authority Hallsdale-Powell Utility District (Owner)

Separate sealed bids for 2020 CDBG Water Line Extension for
Buchanan Road, Savage Garden Road, Foust Lane, Hinds Creek Road, and Judson Road

will be received by Anderson County Purchasing Agent

at the office of Anderson County Courthouse, 100 N. Main St., Room 214, Clinton, TN 37716

until 10:00 o'clock A.M./E.S.T. November 9, 2023, 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: Governor's Office of Diversity, Electronic Only: GO.DBE@tn.gov
Robert G. Campbell & Assoc., L.P., 7523 Taggart Lane, Knoxville, TN 37938

Anderson County Water Authority, 1611 N. Charles Seivers Blvd., Clinton TN 37716

Knoxville Builders Exchange, 300 Clark St., Knoxville, TN 37921

Copies may be obtained at the office of Robert G. Campbell & Associates, L.P.
located at 7523 Taggart Lane, Knoxville, TN 37938 upon payment of \$ 100.00
for each set.

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.

INFORMATION FOR BIDDERS

1. Receipt and Opening of Bids

The Anderson County/Hallsdale-Powell Utility District (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 Anderson County Purchasing Agent until 10:00 o'clock A.M./~~P.M.~~, ~~C.S.T./~~E.S.T., November 9, 2023, and then at said office publicly opened and read aloud. The envelopes containing the bids must be sealed, addressed to Anderson County Purchasing Agent at Anderson County Courthouse 100 Main St., Room 214, Clinton, TN 37716 and designated as bid for 2020 CDBG Water Line Extension - Buchanan Rd., Savage Garden Rd., Foust Ln., Hinds Creek Rd., and Judson Road

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, Acknowledgment Regarding Bidder SAM Registration, 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):

Anderson County 2020 CDBG Water Line Extension for Buchanan Road, Savage Garden Road, Foust Lane, Hinds Creek Road, and Judson Road

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 180 consecutive calendar days thereafter. Bidder must agree also to pay as liquidated damages, the sum of \$ 500.00 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

Robert G. Campbell & Assoc., L.P via kajmeri@andersoncountyttn.gov 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.

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

BID FOR UNIT PRICE CONTRACTS

Place _____

Date _____

Project No. _____

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 Anderson County/Hallsdale-Powell Utility District (hereinafter called "Owner")

Gentlemen:

The Bidder, in compliance with your invitation for bids for the construction of water line extensions for Buchanan Road, Savage Garden Road, Foust Lane, Hinds Creek Road and Judson Road, 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 180 consecutive calendar days thereafter as stipulated in the specifications. Bidder further agrees to pay as liquidated damages the sum of \$ 500.00 for each consecutive calendar day thereafter as hereinafter provided in Paragraph 3.c. of the Supplemental General Conditions.

¹ _____
Insert corporation, partnership or individual as applicable.

Bidder acknowledges receipt of the following addendum:

Bidder agrees to perform all the water line extension work described in the specifications and shown on the plans, for the following unit prices:

See attached bid schedule

(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.

BID FORM
2020 WATER LINE EXTENSION
BUCHANAN RD., SAVAGE GARDEN RD., FOUST LN., HINDS CREEK RD., AND JUDSON RD.
ANDERSON COUNTY, TENNESSEE
RGC&A PROJ. #: 18706

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
1.	Install 6-Inch Class 250 PVC Water Line	16,348	LF	_____	_____
2.	Install 6-Inch Pressure Class 350 Ductile Iron Water Line	1,000	LF	_____	_____
3.	Install 4-Inch Class 250 PVC Water Line	2,268	LF	_____	_____
4.	Install 2-Inch Class 250 PVC Water Line	3,062	LF	_____	_____
5.	Free Bore Under Driveway with 6-inch Class 250 PVC Water Line	48	LF	_____	_____
6.	Bore and Jack 6-inch DIP Carrier in a 12-inch Steel Casing	130	LF	_____	_____
7.	Bore and Jack 4-inch DIP Carrier in an 8-inch Steel Casing	68	LF	_____	_____
8.	Bore and Jack 2-inch DIP Carrier in a 6-inch Steel Casing	24	LF	_____	_____
9.	Connect to Existing 6-inch Water Line	2	EA	_____	_____
10.	Install 3/4-inch Type K Copper Service Line	7,903	LF	_____	_____
11.	Install 1-inch Type K Copper Service Line	4,360	LF	_____	_____
12.	6-inch Gate Valve with Valve Box	4	EA	_____	_____
13.	4-inch Gate Valve with Valve Box	8	EA	_____	_____
14.	2-inch Gate Valve with Valve Box	2	EA	_____	_____
15.	3/4-inch Air Release Valve Assembly	13	EA	_____	_____
16.	Install Fire Hydrant Assembly	8	EA	_____	_____
17.	2-inch Blowoff Assembly	2	EA	_____	_____
18.	Pavement Replacement	250	LF	_____	_____
19.	LMI - Water Meter Assembly (Including Meter)	59	EA	_____	_____
20.	Non-LMI - Water Meter Assembly (Including Meter)	7	EA	_____	_____

BID (TOTAL)

 (IN WORDS)

 \$

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: _____
(Title)

(SEAL - if bid is by a corporation)

**ANDERSON COUNTY
CONTRACT
DOCUMENTS**

General Terms and Conditions

BID ENVELOPE SUBMISSION INSTRUCTIONS:

Bids are to be received in a sealed envelope/package with the bid number, company name and opening date clearly marked. Failure to comply may result in rejection of the entire bid. Anderson County will not be responsible for any lost or misdirected mail. Late bids, e-mailed bids and faxed bids will not be considered nor returned. It is the sole responsibility of the bidder to ensure their bid is delivered to the Purchasing Department.

Please note that Anderson County Government does not receive a guaranteed delivery time for express mail and/or packages. PLEASE MAIL ACCORDINGLY.

**ANDERSON COUNTY FINANCE DEPARTMENT
100 NORTH MAIN STREET, SUITES 214 AND 218
CLINTON, TN 37716**

Email: purchasing@andersoncountyttn.gov

Website: <http://andersontn.org/purchasing>

(865) 457-6218 Phone

(865) 457-6252 Fax

**Bid documents must be completed in ink or typed, signed in ink,
and free from alterations, erasures or mark-throughs.**

SECTION 1 - GENERAL TERMS AND CONDITIONS

1.1 ALTERATIONS OR AMENDMENTS: Alterations, amendments, changes, modifications or additions to this solicitation shall not be binding on Anderson County without prior written approval.

1.2 NO CONTACT POLICY: After vendor receives a copy of this bid, any contact initiated by any vendor with any Anderson County representative, other than the Purchasing Department, concerning this invitation for bid is prohibited and agreements made thereto will not be considered binding on Anderson County. Any such unauthorized contact may cause the disqualification of the bidder from this procurement transaction.

1.3 QUESTIONS: Pursuant to TCA §12-4-113, questions regarding the specifications or bid procedures must be received by the Purchasing Agent and/or designer no less than ninety-six (96) hours before the bid opening date. No addenda within less than forty-eight (48) hours of the bid opening date shall be permitted. Any questions concerning the bid document must be submitted to purchasing@andersontn.org no less than ninety-six (96) hours before bid opening date.

1.4 BID CLOCK: The bid/time clock in the Anderson County Purchasing office will be the time of record.

1.5 TAXES: Anderson County is not liable for Federal excise or State sales tax. Tax exemption certificates will be provided upon request.

1.6 CONFLICT OF INTEREST: If requested by the Purchasing Agent, vendors must complete and submit a "Conflict of Interest Affidavit Statement" prior to contract award, see T.C.A. 5-14-114 and T. C. A. 12-4-101.

1.7 NON-COLLUSION: Vendors, by submitting a signed bid, certify that the accompanying bid is not the result of, or affected by, any unlawful act of collusion with any other person or company engaged in the same line of business or commerce, or any other fraudulent act punishable under Tennessee or United States law.

1.8 NON-DISCRIMINATION: Contracted vendors will not discriminate against any employee or applicant for employment because of race, religion, sex, national origin or disability except where religion, sex, national origin or disability is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor.

1.9 SAME AS OR EQUIVALENT TO: Vendors are to bid as specified herein or propose an approved equal. Determination of equality is solely Anderson County's responsibility. Any designated brands are for reference purpose only, not a statement of preference. When an alternate manufacturer, brand, model or make is bid, Anderson County will determine if the item bid meets or exceeds the items as specified. If the bidder does not indicate that an alternate manufacturer, brand, model or make is being bid, it is understood that the item(s) bid are the same manufacturer, brand, model or make as requested in the Invitation to Bid. Comparable products of other manufacturers will be considered if proof of comparability is contained in the bid submission. It shall be the responsibility of the vendors, including vendors whose product is referenced to furnish upon request catalog pages, brochures or other data to provide an adequate basis for determining the quality and functional capabilities of the product offered. Failure to provide this data may be considered valid justification for rejection of bid.

1.10 MULTIPLE BIDS/AWARDS: Anderson County may consider multiple bid awards.

1.11 STATE OF TENNESSEE CONTRACTORS' LICENSE LAW (T.C.A. 62-6-119) b): Bids for which the total cost of the project is twenty-five thousand dollars (\$25,000) or more, the outside of the sealed bid envelope/package containing the bid provides the following information: the Company Name, the Contractor's license number, license classification, the date of the license expiration and that part of each license classification applying to the bid. In addition, each heating ventilation or air conditioning, plumbing and electrical subcontractor's license number, date of the license expiration and that part of each classification applying to the bid if the value of the work is \$25,000 or greater, must be notated. If the value of either the contractor or the subcontractor's work is less than \$25,000, the bid envelope/package containing the bid is to be notated with the phrase "Contractor or Subcontractor's Bid is Less than \$25,000" after each appropriate heading. In the case of joint ventures, each party submitting the bid must provide this information. If no subcontractors are being used, the outside of the envelope/package containing the bid must state, "No Subcontractors are being used on this project."

1.12 ACCEPTANCE: Vendors shall hold their price firm and subject to acceptance by Anderson County for a minimum period of sixty (60) working days from the date of the bid opening, unless otherwise indicated in their bid. Any or all bids may be rejected for good cause.

1.13 BID AWARDS: Bids will be awarded to the lowest and best bidder, taking into consideration the qualities of the articles to be supplied, their conformity with specifications and their suitability to the requirements of Anderson County and the delivery terms. Anderson County also reserves the right to not award this bid.

1.14 BIDDER'S MINIMUM QUALIFICATIONS: Bidders must have the resources and capability to provide the materials and services as described in the solicitation. Anderson County reserves the right to request additional information and/or material not specified as a bid requirement from any bidder to confirm qualifications.

1.15 DEBARMENT: By submitting a response to this solicitation, bidders are certifying that bidder is not currently debarred from doing business with any local or state Government or the Federal Government. Bidders shall provide documentation relating to any and all debarments that occurred within the last ten

years. The County will search the "System for Award Management" for federally excluded vendors before awarding a bid.

1.16 PROTEST: Any vendor wishing to protest the bid award shall notify in writing the Anderson County Purchasing Agent and the County Law Director, 101 S. Main Street, Suite 310, Clinton, TN 37716. No protest will be accepted, except those protests made in writing and received within (10) ten calendar days of the bid award. Protests must be in writing and envelopes/package containing protest must be clearly marked with bid number and words "BID PROTEST". The Purchasing Agent, in conjunction with the Purchasing Committee, and with the advice and counsel of the County Law Director, shall review and make a final decision as to any bid protest. Appeals shall be filed in the Circuit or Chancery Courts of Anderson County within sixty (60) days of the final decision.

VENDORS PLEASE NOTE: ANDERSON COUNTY WILL NOT STOP THE PURCHASE PROCESS. THE PURCHASE MAY BE COMPLETED OR THE PROJECT MAY BE RE-BID WHILE THE PROTEST PROCEDURE IS STILL IN OPERATION. IF A RE-BID IS MADE, THE PROTESTING VENDOR SHOULD SUBMIT A NEW BID. OTHERWISE, THEY WILL BE WITHOUT A BID ON THE RE-BID. FURTHER, THE RE-BIDDING WILL NOT END THE APPEALS PROCESS. IT WILL CONTINUE UNTIL A FINAL DECISION IS REACHED OR THE COMPLAINANT WITHDRAWS THE APPEAL.

1.17 DELIVERY: Bid pricing is to include complete supply and delivery to Anderson County, Tennessee. Vendors are to state the delivery time in the bid. Anderson County requires that vendors deliver all products "free on board" to final destination unless indicated otherwise in the bid requirements.

1.18 PROOF OF FINANCIAL AND BUSINESS CAPABILITY: Bidders must, upon the request of Anderson County, provide satisfactory evidence of their ability to furnish products or services in accordance with the terms and conditions of these specifications. Anderson County will make the final determination as to the bidder's ability.

1.19 VENDOR'S DEFAULT: Anderson County reserves the right, in case of vendor default, to procure the articles or services from other sources and hold the defaulting vendor responsible for any excess costs occasioned thereby.

1.20 DUPLICATE COPIES: Vendors are to submit one original and at least one exact copy of their bids, including brochures; unless additional copies are requested in bid specifications.

1.21 DRUG-FREE WORKPLACE: Under the provisions of Tennessee Code Annotated §50-9-113 enacted by the General Assembly effective 2001, all 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 and contractors should consult private legal counsel if legal questions arise under this section or any other provision of this document. All contractors with five (5) or more employees that will be providing construction services are to return the provided written affidavit signed by the principal officer of a covered employer acknowledging that the contracting entity is in compliance with the Drug Free Workplace laws of State of Tennessee.

1.22 COMPETITION INTENDED: It is the responsibility of the bidder to review the entire Invitation to Bid document and to notify the Purchasing Department if the Invitation to Bid is formulated in a manner that would unnecessarily restrict competition or if it is ambiguous in what is being requested. The Purchasing Agent must receive questions regarding the specifications or bid procedures no less than ninety-six (96) hours prior to the time set for the bid opening.

1.23 SCHOOL CAFETERIA BIDS: If this bid is for Anderson County School's Cafeteria Food Service Department, bidders must be in compliance with Section 104(d) of the William F. Goodling Child Nutrition Reauthorization Act of 1998 which requires school and institutions participating in the National School Lunch Program (NSLP) and School Breakfast Program (SBP) to "Buy American" to the maximum extent practicable.

1.24 TERMINATION: Anderson County reserves the right to terminate contracts in whole or in part with thirty (30) days written notification to the contractor. In the event of termination, the County shall not be liable for any costs other than the cost of services performed and materials delivered and accepted prior to termination date.

1.25 OSHA SAFETY: The Vendor is responsible for training their employees in Safety and Health Regulations for the job, assuring compliance with Tennessee Occupational Safety and Health regulations and any other Regulatory Agency.

1.26 PERFORMANCE BOND: A standard surety or performance bond or an irrevocable letter of credit in favor of Anderson County Government at a federally insured financial institution will be required to be submitted with bid, if indicated in section four, item six insurance requirement checklist.

1.27 BACKGROUND CHECKS: Contractors shall comply with Public Chapter 587 of 2007, as codified in Tennessee Code Annotated Section 49-5-413, which requires all contractors to facilitate a criminal history records check conducted by the Tennessee Bureau of Investigation and the Federal Bureau of Investigation for each employee prior to permitting the employee to have contact with students or enter school grounds when students are present.

1.28 AWARD RESULTS: As soon as practicable after proposal or bid evaluations, Anderson County shall post the award decision to Vendor Registry at www.vendorregistry.com. Individual notices are normally not mailed or e-mailed except to the successful vendor.

1.29 INDEMNIFICATION/HOLD HARMLESS: Vendor shall indemnify, defend, save and hold harmless Anderson County and, its officers, agents and employees from all suits, claims, actions or damages of any nature brought because of, arising out of, or due to breach of the agreement by Vendor, its subcontractors, suppliers, agents, or employees or due to any negligent act or occurrence or any omission or commission of Vendor, its subcontractors, suppliers, agents or employees.

1.30 DECLARATIVE STATEMENT: Any statement or words (i.e.: must, shall, will, etc.) are declarative statements and the proposer must comply with the condition. Failure to comply with any such condition may result in their bid being non-responsive and disqualified.

1.31 WAIVING OF INFORMALITIES: Anderson County reserves the right to waive minor informalities or technicalities when it is in the best interest of Anderson County.

1.32 APPROPRIATION: Funding for multi-year contracts are subject to budget appropriations. In the event no funds are appropriated by Anderson County for the goods or services in any fiscal year or insufficient funds exist to purchase the goods or services of a contract, then that contract shall expire upon the expenditure of previously appropriated funds or the end of the current fiscal year, whichever occurs first, with no further obligations owed to or by either party.

1.33 ASSIGNMENT: Vendor shall not assign or sub-contract any agreement, its obligations or rights hereunder to any party, company, partnership, incorporation or person without the prior written specific consent of Anderson County.

1.34 QUANTITIES: Anderson County does not guarantee quantities to be purchased off this bid.

1.35 UNIT PRICE: In case of discrepancy between any unit price and an extended price, the unit price will be presumed to be correct, subject, however, to correction to the same extent and in the same manner as any other mistake.

1.36 MODIFICATION OR WITHDRAWAL OF BIDS: When it is certain that a mistake has been made in the preparation of the bid, a request will be made to the bidder to confirm the bid. Provisions must be made so that mistakes can be taken care of and the ambiguity resolved satisfactorily. Bids may be modified or withdrawn by written notice received in the Purchasing Department prior to the time and date set for the bid

opening. The changes or withdrawal of the bids shall be in writing and signed by an official of the company. The envelope containing the modification should clearly state "modification to bid." Either the entire bid or a particular item may be withdrawn or modified in this manner.

1.37 PRE-BID CONFERENCES: Attendance at Pre-bid Conferences is strongly encouraged. When deemed necessary a Mandatory Pre-bid Conference will be held. A company representative **MUST** be in attendance and sign the Pre-bid sign-in sheet in order to be considered for bid award.

1.38 ADDENDUM: § T.C.A. 12-14-113 Anderson County Government reserves the right to amend this solicitation by addendum. Addenda will be posted to the vendor registry up to 48 hours in advance of the bid/proposals due date and time. It is the bidder's responsibility to check the website for addendum. If in the County's opinion revisions are of such a magnitude, the deadline for this solicitation may be extended in an addendum. Addenda may change specifications, reply sheets, and times and dates for pre-bid meetings as well as due dates/deadlines for questions and bids/proposals.

1.39 OWNERSHIP: All bids, once received, become property of Anderson County Government and will not be returned.

1.40 WEATHER AND COURTHOUSE CLOSINGS: In the event of a situation severe enough to necessitate the closing of Anderson County Government offices during a planned bid opening, vendors will receive notification of the new date and time upon re-opening of county government offices. No bids will be opened until the rescheduled date for bid opening and all bidders/proposers whose submissions meet the extended deadline will be given equal consideration at that time. Anderson County shall not be liable for any commercial carrier's decision regarding deliveries during inclement weather.

1.41 IRAN DIVESTMENT ACT OF 2014: Pursuant to the Iran Divestment Act of 2014, Tenn. Code Ann. § 12-12-106 requires the State of Tennessee Chief Procurement Officer to publish, using creditable information freely available to the public, a list of persons it determines engage in investment activities in Iran, as described in § 12-12-105. Inclusion on this list makes a person ineligible to contract with Anderson County; if a person ceases its engagement in investment activities in Iran, it may be removed from the list. The State of Tennessee list is available here: <http://tennessee.gov/generalservices/article/Public-Information-library>.

1.42 ANTI-BOYCOTT OF ISRAEL: By responding to this bid the Bidder certifies that it is not currently engaged in and agrees for the duration of this Agreement not to engage in, the boycott of Israel.

BID ENVELOPE COVER

Anderson County Government, 100 North Main St., Rooms 214, Clinton, TN 37716

BID # _____

NAME OF PROJECT: _____

BID OPENING DATE: _____

BIDDER/CONTRACTOR: _____

ADDRESS: _____

TENNESSEE CONTRACTOR'S LICENSE NUMBER: _____

LICENSE CLASSIFICATION: _____

DOLLAR LIMIT: _____

LICENSE EXPIRATION DATE: _____

SUBCONTRACTORS TO BE USED ON THIS PROJECT:

PLUMBING: _____ LICENSE #: _____

Address: _____

Classification: _____ Expiration Date: _____

HVAC: _____ LICENSE #: _____

Address: _____

Classification: _____ Expiration Date: _____

ELECTRICAL: _____ LICENSE #: _____

Address: _____

Classification: _____ Expiration Date: _____

MASONRY: _____ LICENSE #: _____

Address: _____

Classification: _____ Expiration Date: _____

GEOTHERMAL HEATING: _____ LICENSE #: _____

Address: _____

Classification: _____ Expiration Date: _____

INSURANCE REQUIREMENT CHECKLIST

Revised- 1/28/08

The bidder awarded this bid or contract will maintain, at their expense adequate insurance coverage to protect them from claims arising under the Worker's Compensation Act, any and all claims for bodily injury and property damage to the Bidder and to Anderson County Government while delivery and service are being done. A certificate of insurance must be on file in the Purchasing Department before work may begin and must be maintained until work is completed.

CONTRACT / BID TITLE: _____

Only the items marked with an "X" are applicable to this bid and or contract.

- 1. **Workers Compensation Employers Liability** Statutory limits
100,000/100,000/500,000
- 2. **Commercial General Liability** \$1,000,000 per occurrence
\$2,000,000 aggregate
 - Occurrence Form Only
 - Include Premises Liability
 - Include Contractual
 - Include XCU
 - Include Products and Completed Operations
 - Include Personal Injury
 - Include Independent Contractors
 - Include Vendors Liability
 - Include Professional or E&O Liability
- 3. **Business Auto** \$1,000,000
 - Include Garage Liability \$1,000,000
 - Include Garage Keepers Liability
 - Copy of Valid Drivers License
 - Copy of Current Motor Vehicle Record
 - Copy of Current Auto Liability Declarations Page
- 4. **Crime Coverages**
 - Employee Dishonesty
 - Employee Dishonesty Bond
- 5. **Property Coverages**
 - Builders Risk
 - Inland Marine
 - Transportation
- 6. Performance Bond and Payment Required - A One-Hundred Percent (100%) performance bond and payment bond or an irrevocable letter of credit in favor of Anderson County Government at a federally insured financial institution.

Certificate Holder Shall Be: Anderson County Government, Clinton, Tennessee, and shall show the bid number and title. Anderson County Government shall be named as an additional insured on all policies except worker's compensation and auto. Insurance carrier ratings shall have a Best's rating of A-VII or better, or its equivalent. Cancellation clause on certificate should strike out "endeavor to" and include a 30-day notice of cancellation where applicable. Any deviations from the above requirements must be disclosed to the Anderson County Purchasing Agent. Any liability deductibles or exclusions must also be disclosed. Exceptions can be granted if applicable. Vendor is not to begin services until Certificate of Insurance is on file with Purchasing Agent.

Bidders Statement and Certification

I understand the insurance requirements of these specifications and will comply in full within **21 (twenty-one) calendar days** of notification of intent to award of bid and or contract. Failure to comply will deem vendor non-responsive. I agree to furnish the county with proof of insurance for the entire term of the bid and or contract.

Vendor Name

Authorized Signature

Bid Representative Name (Please Print)

Date

STATE OF TENNESSEE CONTRACTORS' LICENSE LAW

62-6-119. Bid documents -- Penalties.

(a) Any person or entity preparing plans, specifications or any other documentation for inclusion in an invitation to bid or comparable bid document including any electronic bidding documents, shall reference this chapter in such documentation and a specific statement informing the invited bidder that it is necessary for such bidder to provide evidence of compliance with the applicable provisions of this chapter before such bid may be considered.

(b) The person or entity involved in the preparation of the invitation to bid or comparable bid documents including any electronic bid documents shall direct that the name, license number, expiration date thereof, and license classification of the contractors applying to bid for the prime contract and for the masonry contract where the total cost of the masonry portion of the construction project exceeds one hundred thousand dollars (\$100,000), materials and labor, electrical, plumbing, heating, ventilation, and air conditioning contracts, and for each vertical closed loop geothermal heating and cooling project, the company name, department of environment and conservation license number, classification (G, L or G,L) and the expiration date, appear on the outside of the envelope containing the bid or in the submission of an electronic bid except when the bid is in an amount less than twenty-five thousand dollars (\$25,000). Only one (1) contractor in such classification may be listed. Prime contractor bidders who are to perform the masonry portion of the construction project which exceeds one hundred thousand dollars (\$100,000), materials and labor, the electrical, plumbing, heating, ventilation and air conditioning or the geothermal heating and cooling must be so designated upon the outside of the envelope or in the electronic bid. Failure of any bidder to comply therewith shall void such bid and such bid shall not be considered. It is the duty and responsibility of the awarding person or entity who received the envelope containing the bid or the electronic bid to verify only the completeness of the required licensure information. Prior to the opening of the envelope or acceptance of an electronic bid, the names of all contractors listed thereon or therein shall be read aloud at the official bid opening and incorporated into the bid. Prior to awarding a contract, the awarding person or entity and its authorized representatives shall verify the accuracy, correctness and completeness of the information required hereby. The failure of any bidder to comply with all of the provisions hereof shall automatically disqualify such bid. However, bids administered by the Tennessee department of general services shall require that the information be furnished within the bid or bid document only. When the bid is less than twenty-five thousand dollars (\$25,000), the name of the contractor only may appear on the outside of the envelope containing the bid or in the electronic bid document, and upon opening the envelope or review of the electronic bid, if such bid is in excess of twenty-five thousand dollars (\$25,000), the same shall automatically be disqualified.

(c) No invitation to bid may require that:

(1) Any subcontractor be identified, listed or designated until the final bid submission by the prime contractor; and

(2) Any prime contractor accept the bid of any subcontractor until the final bid submission by the prime contractor.

(d) Any person or entity, public and private, failing to observe this section shall be penalized in the same manner as any person under § 62-6-120 who accepts a bid from a person who is not licensed in accordance with the provisions of this chapter.

(e) Notwithstanding the Uniform Administrative Procedures Act, compiled in title 4, chapter 5, relative to the amount of civil penalties that may be imposed, the board may impose a civil penalty not to exceed five thousand dollars (\$5,000) for any violation of this section.

**ANDERSON COUNTY GOVERNMENT
PURCHASING DEPARTMENT**

CONFLICT OF INTEREST STATEMENT

NOTE: PLEASE SIGN AND RETURN PAGE TWO IN YOUR BID PACKET.

T. C. A. 5-14-114. Conflicts of interest -- Illegal payments.

(a) Neither the county purchasing agent, nor members of the county purchasing commission, nor members of the county legislative body, nor other officials of the county, shall be financially interested, or have any personal beneficial interest, either directly or indirectly, in any contract or purchase order for any supplies, materials, equipment or contractual services used by or furnished to any department or agency of the county government.

(b) Nor shall any such persons accept or receive, directly or indirectly, from any person, firm or corporation to which any contract or purchase order may be awarded, by rebate, gift or otherwise, any money or anything of value whatsoever, or any promise, obligation or contract for future reward or compensation.

(c) A violation of this section is a Class D felony.

T. C. A. 12-4-101 Personal interest of officers prohibited.

(a) (1) It is unlawful for any officer, committee member, director, or other person whose duty it is to vote for, let out, overlook, or in any manner to superintend any work or any contract in which any municipal corporation, county, state, development district, utility district, human resource agency, or other political subdivision created by statute shall or may be interested, to be directly interested in any such contract. "Directly interested" means any contract with the official personally or with any business in which the official is the sole proprietor, a partner, or the person having the controlling interest. "Controlling interest" includes the individual with the ownership or control of the largest number of outstanding shares owned by any single individual or corporation. This subdivision (a)(1) shall not be construed to prohibit any officer, committee member, director, or any person, other than a member of a local governing body of a county or municipality, from voting on the budget, appropriation resolution, or tax rate resolution, or amendments thereto, unless the vote is on a specific amendment to the budget or a specific appropriation or resolution in which such person is directly interested.

(2) (A) Subdivision (a)(1) shall also apply to a member of the board of directors of any not-for-profit corporation authorized by the laws of Tennessee to act for the benefit or on behalf of any one (1) or more counties, cities, towns and local governments pursuant to title 7, chapter 54 or 58.

(B) Subdivision (a)(2)(A) does not apply to any county with a metropolitan form of government and having a population of four hundred thousand (400,000) or more, according to the 1980 federal census or any subsequent federal census.

(b) It is unlawful for any officer, committee member, director, or other person whose duty it is to vote for, let out, overlook, or in any manner to superintend any work or any contract in which any municipal corporation, county, state, development district, utility district, human resource agency, or other political subdivision created by statute shall or may be interested, to be indirectly interested in any such contract unless the officer publicly acknowledges such officer's interest. "Indirectly interested" means any contract in which the officer is interested but not directly so, but includes contracts where the officer is directly interested but is the sole supplier of goods or services in a municipality or county.

(c) (1) Any member of a local governing body of a county or a municipality who is also an employee

**ANDERSON COUNTY GOVERNMENT
PURCHASING DEPARTMENT**

CONFLICT OF INTEREST STATEMENT

of such county or municipality and whose employment predates the member's initial election or appointment to the governing body of the county or municipality may vote on matters in which the member has a conflict of interest if the member informs the governing body immediately prior to the vote as follows: "Because I am an employee of (name of governmental unit), I have a conflict of interest in the proposal about to be voted. However, I declare that my argument and my vote answer only to my conscience and to my obligation to my constituents and the citizens this body represents." The vote of any such member having a conflict of interest who does not so inform the governing body of such conflict shall be void if challenged in a timely manner. As used in this subdivision (c)(1), "timely manner" means during the same meeting at which the vote was cast and prior to the transaction of any further business by the body.

(2) Any member of a local governing body of a county or a municipality who is also an employee of such county or municipality and whose employment began on or after the date on which the member was initially elected or appointed to serve on the governing body of the county or municipality shall not vote on matters in which the member has a conflict of interest.

(3) (A) In the event a member of a local governing body of a county or a municipality has a conflict of interest in a matter to be voted upon by the body, such member may abstain for cause by announcing such to the presiding officer.

(B) (i) Any member of a local governing body of a municipality who abstains from voting for cause on any issue coming to a vote before the body shall not be counted for the purpose of determining a majority vote.

(ii) This subdivision (c)(3)(B) shall in no way be construed to apply to any county having a metropolitan form of government and having a population in excess of five hundred thousand (500,000), according to the 1990 federal census or any subsequent federal census.

(d) This section shall apply to a member of the board of directors or officer of any nonprofit corporation required under § 8-44-102(b)(1)(E) to conduct all meetings of its governing body as open meetings.

I have read and understand both T.C. A. 5-14-114 and T. C. A. 12-4-101, and will comply.

NOTE: PLEASE SIGN AND RETURN PAGE TWO IN YOUR BID PACKET.

Contractor or Company Owner (signature)

Date

Contractor or Company Name (print)

DRUG-FREE WORKPLACE AFFIDAVIT

STATE OF _____

COUNTY OF _____

The undersigned, principal officer of _____, an employer of five (5) or more employees contracting with _____ County 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*.
3. The Company is compliance with T.C.A. 50-9-113

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 purpose therein contained.

Witness my hand and seal office this _____ day of _____, 20__.

Notary Public

My commission expires: _____, 20__.

Non-Collusion Affidavit

- This Non-Collusion Affidavit is material to any contract awarded pursuant to this bid.
 - This Non-Collusion Affidavit must be executed by the member, officer, or employee of the bidder who makes the final decision on prices and the amount quoted in the bid.
 - Bid rigging and other efforts to restrain competition and the making of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the affidavit should examine it carefully before signing and assure himself or herself that such statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval, or submission of the bid.
 - In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an affidavit must be submitted separately on behalf of each party.
 - The term "complementary bid" as used in the affidavit has the meaning commonly associated with that term in the bidding process and includes the knowing submission of bids higher than the bid of another firm, an intentionally high or noncompetitive bid, and any other form of bid submitted for the purpose of giving a false appearance of competition.
 - Failure to file an affidavit in compliance with these instructions may result in disqualification of the bid.
-

Non-Collusion Affidavit

STATE OF _____

COUNTY OF _____

I state that I am (Title) _____ of (Name of My Firm) _____ and that I am authorized to make this affidavit on behalf of my firm and its owners, directors, and officers. I am the person responsible in my firm to the price(s) and the amount of this bid.

I STATE THAT:

- The price(s) and amount of this bid have been arrived at independently and without consultation, communication, or agreement with any other contractor, bidder, or potential bidder.
- Neither the price(s) nor the amount of this bid and neither the approximate price(s) nor approximate amount of this bid, have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before bid opening.
- No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive bid or other form of complementary bid.
- The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive bid.
- (Name of My Firm) _____, its affiliates, subsidiaries, officers, directors, and employees are not currently under investigation by any governmental agency and have not in the last three years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction involving conspiracy or collusion with respect to bidding on any public contract, except as follows:

I state that (Name of My Firm) _____ understands and acknowledges that the above representation are material and important and will be relied on by Anderson County in awarding the contract(s) for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from Anderson County of the true facts relating to submission of bids for this contract.

Representative's Signature

Title

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

Notary Public

My commission expires: _____



DIVERSITY BUSINESS INFORMATION

Definitions for Determining Minority, Women And Small-Owned Firms

The guidelines for determining minority, women and small-owned firms are defined as follows:

- “MINORITY”** means a person who is a citizen or lawful permanent resident of the United States and who is:
- o Black (a person having origins in any of the black racial groups of Africa);
 - o Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
 - o Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or
 - o American Indian and Alaskan Native (a person having origins in any of the original peoples of North America).

“MINORITY BUSINESS ENTERPRISE” shall mean a minority business:

A continuing, independent, for profit business which performs a commercially useful function, and is at least 51 percent owned and controlled by one or more minority individuals; or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned and controlled by one or more minorities. Whose management and daily business operations are controlled by one or more of minority individuals. “Control” as used in the above clause, means exercising the power to make policy decision. “Operate,” as used in the above clause, means being actively involved in the day-to-day management of the business.

“WOMEN BUSINESS ENTERPRISE” shall mean women business:

A continuing, independent, for profit business which performs a commercially useful function, and which is at least 51 percent owned and controlled by one or more women; or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned and controlled by one or more women. Whose management and daily business operations are controlled by one or more of such individuals. “Control” as used in the above clause, means exercising the power to make policy decision. “Operate,” as used in the above clause, means being actively involved in the day-to-day management of the business.

**DIVERSITY BUSINESS INFORMATION
ANDERSON COUNTY GOVERNMENT**

NOTE: This form is to be submitted only by those who qualify. Bidders do not have to be a minority business to be considered.

IMPORTANT! NOTARY AND COPY OF CERTIFICATION REQUIRED

SECTION 6 – DIVERSITY INFORMATION

VENDOR/CONTRACTOR NAME: _____

Type of Company: (Check One)

() Corporation () Partnership () Limited Liability () Sole Proprietor

Is your company 51% Owned or Operated by a Minority Group? Yes ___ No___

If yes, check the ethnic category and indicate % of ownership:

- American Indian/Alaskan Native ____%
- African American ____%
- Hispanic ____%
- Asian/Pacific Islander ____%
- Other ____% _____(please indicate)

Please name the entity of certification: _____

Please provide copy of certification letter or certificate

I, HEREBY CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Signature: _____ **OFFICER OF THE COMPANY**

Name: _____ **Title:** _____

NOTARY ACKNOWLEDGEMENT:

STATE OF _____)

COUNTY OF _____)

ON _____, 20____, BEFORE ME, _____,

PERSONALLY APPEARED _____, PERSONALLY KNOWN TO ME (OR PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE) TO BE THE PERSON(S) WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE/SHE/ THEY EXECUTED THE SAME IN HIS/HER/THEIR AUTHORIZED CAPACITY(IES), AND THAT BY HIS/HER/THEIR SIGNATURE(S) ON THE INSTRUMENT THE PERSON(S), OR THE ENTITY UPON BEHALF OF WHICH THE PERSON (S) ACTED, EXECUTED THE INSTRUMENT.

WITNESS MY HAND AND OFFICIAL SEAL.

SIGNATURE OF NOTARY: _____

PRINTED FULL NAME OF NOTARY: _____

MY COMMISION EXPIRES: _____

ACKNOWLEDGEMENT REGARDING BIDDER SAM REGISTRATION

Pursuant to 2 CFR Parts 183 and 215 and the requirement of the U.S. Department of Housing and Urban Development (HUD), contractors procured directly by grantees, sub-grantees, and/or sub-recipients of HUD funds, including CDBG are required to have an active registration in the System of Award Management (SAM). This document shall be completed and submitted as part of the bid proposal.

1. By submitting this proposal, the prospective bidder certifies that it has an active registration in SAM that is not set to expire within the next 90 days.
2. By submitting this proposal, the prospective bidder certifies 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.
3. 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.
4. Further, the prospective bidder 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.
5. By submitting this proposal, it is agreed that should the proposed covered transaction be entered into, the prospective bidder 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.
6. It is further agreed that by submitting this proposal, the prospective bidder will include Certification of Subcontractor Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion without modification, in all lower-tier covered transactions and in all solicitations for lower-tier covered transactions.

Provide the following information as detailed in the prospective bidder's SAM registration:

Entity Name: _____

Address: _____

City: _____ State: _____ Zip: _____

SAM Entity ID: _____ Expiration Date: _____

Active Exclusions: Yes No

CERTIFICATION OF BIDDER REGARDING EQUAL EMPLOYMENT OPPORTUNITY

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

Bidder/Firm: _____

Address: _____

City: _____ State _____ Zip _____

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

Bidder Name: _____

Title: _____

Signature: _____

Date: _____

CERTIFICATION OF BIDDER REGARDING USE OF FEMALE/MINORITY SUBCONTRACTORS
--

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

Bidder/Firm: _____

Address: _____

City: _____ State _____ Zip _____

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

Bidder Name: _____

Title: _____

Signature: _____

Date: _____

CERTIFICATION OF SUBCONTRACTOR REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND EXCLUSION

Pursuant to 2 CFR Parts 183, 215, and 2424, and the requirement of the U.S. Department of Housing and Urban Development (HUD), subcontractors for projects that are funded in whole or in part by HUD funds must provide information concerning the entity’s debarment, suspension, ineligibility or exclusion status. This document shall be completed and provided to the prime contractor.

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 erroneously by reason of changed circumstances.
4. By submitting this document, 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.

The subcontracting entity may satisfy the requirement of this document via one of the two options below:

Option 1: SAM.gov Active Registration

Entity Name: _____

Address: _____

City: _____ State: _____ Zip: _____

SAM Entity ID: _____ Expiration Date: _____

Active Exclusions: Yes No

Option 2: Signed Certification

Entity Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Entity Representative: _____ Title: _____

Signature: _____

<p>CERTIFICATION OF BIDDER REGARDING SECTION 3 AND SEGREGATED FACILITIES</p>

NAME OF PRIME CONTRACTOR: _____

PROJECT NUMBER: _____

The undersigned hereby certifies that

- Section 3 provisions are included in the Contract.
- If contract equals or exceeds \$200,000, the contractor will comply with all Section 3 requirements detailed in the CDBG Manual, including:
 - reporting total labor hours worked,
 - reporting total labor hours worked by Section 3 workers,
 - reporting total labor hours worked by Targeted Section 3 workers,
 - Providing documentation of Section 3 worker status as required for all workers for the project under the covered contract.
- 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

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.
3. The Company is in compliance with T.C.A. § 50-9-113.

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**

NAME OF PRIME CONTRACTOR: _____

PROJECT NUMBER: _____

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

Subcontractor Name: _____

Address: _____

City: _____ State _____ Zip _____

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

Name: _____

Title: _____

Signature: _____

Date: _____

**CERTIFICATION OF PROPOSED SUBCONTRACTOR
REGARDING SECTION 3 AND SEGREGATED FACILITIES**

NAME OF SUBCONTRACTOR: _____

PROJECT NUMBER: _____

The undersigned hereby certifies that

- Section 3 provisions are included in the Contract.
- If contract equals or exceeds 200,000, the contractor will comply with all Section 3 requirements detailed in the CDBG Manual, including:
 - reporting total labor hours worked,
 - reporting total labor hours worked by Section 3 workers,
 - reporting total labor hours worked by Targeted Section 3 workers,
 - Providing documentation of Section 3 worker status as required for all workers for the project under the covered contract.
- 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 IMMIGRANT**

EACH CONTRACTOR BIDDING SHALL FILL IN AND SIGN THE FOLLOWING

Bidder Name: _____

Address: _____

City: _____ State _____ Zip _____

This is to certify that _____ have fully complied with all the requirements of T.C.A. § 12-3-309, stating:

- (1) No state governmental entity shall contract to acquire goods or services from any person who knowingly utilizes the services of illegal immigrants in the performance of a contract for goods or services entered into with a state governmental entity;
- (2) No person may contract to supply goods or services to a state governmental entity if that person knowingly utilizes the services of illegal immigrants in the performance of a contract to supply goods or services entered into with the state or a state entity.

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 T.C.A. § 12-3-309.

Name: _____

Title: _____

Signature: _____

Date: _____

CERTIFICATION OF NON-BOYCOTT OF ISRAEL

The Bidder certifies that it is not currently engaged in, and will not for the duration of the contract engage in, a boycott of Israel as defined by Tenn. Code Ann. § 12-4-119. This provision shall not apply to contracts with a total value of less than two hundred fifty thousand dollars (\$250,000) or to contractors with less than ten (10) employees.

According to the law, a boycott of Israel means engaging in refusals to deal, terminating business activities, or other commercial actions that are intended to limit commercial relations with Israel, or companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel to do business, or persons or entities doing business in Israel, when such actions are taken:

- 1) In compliance with, or adherence to, calls for a boycott of Israel, or
- 2) In a manner that discriminates on the basis of nationality, national origin, religion, or other unreasonable basis, and is not based on a valid business reason. Tenn. Code Ann. § 12-4-119.

I certify this statement to be true and correct.

Bidder Name Printed

Date

Signature of Bidder

Company

**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 **County of Anderson** 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 **County of Anderson** makes a determination that the goods or services are necessary for the **County of Anderson** 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.



Department of
General Services

Central
Procurement Office

NOTICE

Tenn. Code Ann. § 12-12-106 requires the chief procurement officer to publish, using credible information freely available to the public, a list of persons it determines engage in investment activities in Iran, as described in § 12-12-105.

For these purposes, the State intends to use the attached list of “Entities determined to be non-responsive bidders/offerers pursuant to the New York State Iran Divestment Act of 2012.”

While inclusion on this list would make a person ineligible to contract with the state of Tennessee, if a person ceases its engagement in investment activities in Iran, it may be removed from the list.

If you feel as though you have been erroneously included on this list please contact the Central Procurement Office at CPO.Website@tn.gov.

Tennessee Tower, 3rd Floor • 312 Rosa L. Parks Avenue • Nashville, TN 37243
615-741-1035 • Fax: 615-741-0684 • tn.gov/generalservices

List Date: May 4, 2022

Source: <https://www.ogs.ny.gov/iran-divestment-act-2012>

1. Ak Makina, Ltd.
2. Amona
3. Bank Markazi Iran (Central Bank of Iran)
4. Bank Mellat
5. Bank Melli Iran
6. Bank Saderat Iran
7. Bank Sepah
8. Bank Tejarat
9. China Precision Machinery Import- Export Corporation (CPMIEC)
10. ChinaOil (China National United Oil Corporation)
11. China National Offshore Oil Corporation (CNOOC)
12. China National Petroleum Corporation (CNPC)
13. Indian Oil Corporation
14. Kingdream PLC
15. Naftiran Intertrade Co. (NICO)
16. National Iranian Tanker Co. (NITC)
17. Oil and Natural Gas Corporation (ONGC)
18. Oil India, Ltd.
19. Persia International Bank
20. Petroleos de Venezuela (PDVSA Petróleo, SA)
21. PetroChina Co., Ltd.
22. Petronet LNG, Ltd.
23. Sameh Afzar Tajak Co. (SATCO)
24. Shandong FIN CNC Machine Co., Ltd.
25. Sinohydro Co., Ltd.
26. Sinopec Corp. (China Petroleum & Chemical Corporation)
27. SKS Ventures
28. SK Energy Co., Ltd.
29. Som Petrol AS
30. Unipec (China International United Petroleum & Chemicals Co., Ltd.)
31. Zhuhai Zhenrong Co.

"General Decision Number: TN20230141 01/06/2023

Superseded General Decision Number: TN20220141

State: Tennessee

Construction Type: Heavy
Including Water and Sewer Line Construction

Counties: Anderson, Blount and Loudon Counties in Tennessee.

HEAVY CONSTRUCTION PROJECTS (including sewer/water construction).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least \$16.20 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 2023.
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If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.
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The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the

Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number Publication Date
 0 01/06/2023

ELEC0760-010 06/01/2020

	Rates	Fringes
ELECTRICIAN.....	\$ 26.87	12.05

 ENGI0917-026 05/01/2017

	Rates	Fringes
Operating Engineers: Backhoe, Excavator, Trackhoe, Bulldozer, and Crane.....	\$ 28.26	10.10
Forklift.....	\$ 25.97	10.10

 LABO0818-003 05/01/2017

	Rates	Fringes
LABORER: Common or General.....	\$ 19.77	6.53

 SUTN2009-140 12/02/2009

	Rates	Fringes
LABORER: Flagger.....	\$ 8.73 **	0.00
LABORER: Pipelayer.....	\$ 11.75 **	0.00
OPERATOR: Loader.....	\$ 13.50 **	0.00
TRUCK DRIVER: Dump Truck.....	\$ 10.76 **	0.00

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

 ** Workers in this classification may be entitled to a higher

minimum wage under Executive Order 14026 (\$16.20) or 13658 (\$12.15). Please see the Note at the top of the wage determination for more information.

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 <https://www.dol.gov/agencies/whd/government-contracts>.

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

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

Union Rate Identifiers

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

most current negotiated rate, which in this example is July 1, 2014.

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

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

WAGE DETERMINATION APPEALS PROCESS

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

* an existing published wage determination

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

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

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

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

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

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

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

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

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

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

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END OF GENERAL DECISIO"

"General Decision Number: TN20230129 01/06/2023

Superseded General Decision Number: TN20220129

State: Tennessee

Construction Type: Heavy
Including Water and Sewer Line Construction

County: Knox County in Tennessee.

HEAVY CONSTRUCTION PROJECTS (including sewer/water construction).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least \$16.20 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 2023.
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If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.
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The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for

performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number Publication Date
0 01/06/2023

ELEC0760-010 06/01/2020

	Rates	Fringes
ELECTRICIAN.....	\$ 26.87	12.05

ENGI0917-022 05/01/2017

	Rates	Fringes
Operating Engineers:		
Bulldozer and Crane.....	\$ 28.26	10.10
Forklift.....	\$ 25.97	10.10

LABO0818-003 05/01/2017

	Rates	Fringes
LABORER: Common or General.....	\$ 19.77	6.53

SUTN2009-128 12/02/2009

	Rates	Fringes
LABORER: Flagger.....	\$ 8.73 **	0.00
LABORER: Pipelayer.....	\$ 11.75 **	0.00
OPERATOR:		
Backhoe/Excavator/Trackhoe.....	\$ 18.45	0.00
OPERATOR: Loader.....	\$ 13.50 **	0.00
TRUCK DRIVER: Dump Truck.....	\$ 10.76 **	0.00

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

=====

** Workers in this classification may be entitled to a higher

minimum wage under Executive Order 14026 (\$16.20) or 13658 (\$12.15). Please see the Note at the top of the wage determination for more information.

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 <https://www.dol.gov/agencies/whd/government-contracts>.

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

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

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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 National Office because National Office has 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 DECISIO"

AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 20____, by and between _____, herein called "Owner", acting herein through its _____, and _____,

STRIKE OUT (a corporation) (a partnership)
INAPPLICABLE (an individual doing business as _____)
TERMS
of _____, County of _____, and State
of _____, hereinafter called "Contractor".

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:

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 Robert G. Campbell & Associates, L.P., 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 180 consecutive calendar days thereafter. The Contractor further agrees to pay, as liquidated damages, the sum of \$ 500.00 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 six (6) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

(Seal)
ATTEST: _____
(Owner)

(Secretary) By: _____

(Witness) _____
(Title)

(Seal)

(Contractor)

(Secretary) By: _____

(Witness) _____
(Title)

(Address and Zip Code)

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 _____ 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: _____

**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 Work, or an adjustment 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 moneys 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.

1.24. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

1.25. *Notice of Award*--The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

1.26. *Notice to Proceed*--A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligations under the Contract Documents.

1.27. *OWNER*--The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

1.28. *Partial Utilization*--Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

1.29. *PCBs*--Polychlorinated biphenyls.

1.30. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

1.31. *Project*--The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.32. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

1.33. *Resident Project Representative*--The authorized representative of ENGINEER who may be assigned to the site or any part thereof.

1.34. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

1.35. *Shop Drawings*--All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

1.36. *Specifications*--Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

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

1.38. *Substantial Completion*--The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if no such certificate is issued, when the Work is complete and ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

1.39. *Supplementary Conditions*--The part of the Contract Documents which amends or supplements these General Conditions.

1.40. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

1.41. *Underground Facilities*--All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

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

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

1.44. *Work Change Directive*--A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.23. A Work Change Directive will not change the Contract Price or the Contract Times, but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times as provided in paragraph 10.2.

1.45. *Written Amendment*--A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

ARTICLE 2--PRELIMINARY MATTERS

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 are 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 impose 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 3--CONTRACT DOCUMENT: INTENT,
AMENDING, REUSE

Intent:

3.1. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with 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, CONTRACTOR shall not proceed with 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 paragraph 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).

Reuse 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 adaption 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 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 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 an 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

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 there from, and (ii) nothing in this subparagraph 4.5.4 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 Laws 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 so 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 so 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 evidence 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 canceled 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 any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

5.10. 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 rights 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 so 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 accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications 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 incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. 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 submittal 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 (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER accepts a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute item.

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 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 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 such 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 moneys 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 identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.11. All Work performed for CONTRACTOR by a Subcontractor 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 to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. 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 incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents.

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 there from; 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, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for 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 all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

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 2.9). 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 2.9. 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 submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of submission as required by paragraph 6.25.3 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 2.9, 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 there from, 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, regardless of whether or not caused in part by any negligence or omission of a person or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such person or entity.

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 each 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 paragraphs 5.5 through 5.10.

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

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 thereof will be as 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 to the Agreement promptly (but in no event later than 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, bonuses, sick leave, vacation and holiday pay applicable thereto. 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, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1. or specifically covered by paragraph 11.4.4--all of which are to be considered administrative costs covered by the CONTRACTOR's 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 as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

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 or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.4. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay. In no event shall OWNER be liable to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of CONTRACTOR, or (ii) delays beyond the control of both parties including but not limited to fires, floods,

epidemics, abnormal weather conditions, acts of God or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

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, testing, replacement and 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 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. 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 tentative 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 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 and 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 retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Waiver of Claims:

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

14.15.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to

paragraph 14.11, 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

OWNER will be reviewed by ENGINEER as to their reasonableness and when so approved by ENGINEER incorporated in a Change Order, provided that when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

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

15.4. Upon seven day's written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Agreement. In such case, CONTRACTOR shall be paid (without duplication of any items);

15.4.1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

15.4.2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

15.4.3. for all claims, costs, losses and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and

15.4.4. for reasonable expenses directly attributable to termination.

CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

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 day's 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.

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.

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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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.	<u>1 - 23</u>	_____
Heating and Ventilating:	"		_____
Plumbing:	"		_____
Electrical:	"		_____
_____	"		_____
_____	"		_____

SPECIFICATIONS:

General Construction	Page	<u>134</u>	to	<u>26</u>	,	incl.
	Page	_____	to	_____	,	incl.
Heating and Ventilating:	Page	_____	to	_____	,	incl.
Plumbing:	Page	_____	to	_____	,	incl.
Electrical:	Page	_____	to	_____	,	incl.
_____	Page	_____	to	_____	,	incl.
_____	Page	_____	to	_____	,	incl.

ADDENDA:

No.	_____	Date	_____	No.	_____	Date	_____
No.	_____	Date	_____	No.	_____	Date	_____

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 _____ (Page _____ of Specifications) \$ _____
- (b) For _____ (Page _____ of Specifications) \$ _____
- (c) For _____ (Page _____ of Specifications) \$ _____
- (d) For _____ (Page _____ of Specifications) \$ _____
- (e) For _____ (Page _____ of Specifications) \$ _____
- (f) For _____ (Page _____ of Specifications) \$ _____

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, workers, 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 there from, 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 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 journeyman under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements.

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

6. Subcontracts.

The contractor or subcontractor will insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as HUD or its designee may by appropriate 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.

9. Disputes concerning labor standards.

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

10. 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 \$ 1,000,000 for injuries, including accidental death, to any one person, and subject to the same limit for each person, in an amount not less than \$ 1,000,000 on account of one accident, and Contractor's Property Damage Insurance in an amount not less than \$ 1,000,000.

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.I of the Supplemental General Conditions, the Contractor will furnish photographs in the number, type, and stage as enumerated below:

8. SCHEDULE OF OCCUPATIONAL CLASSIFICATIONS AND MINIMUM HOURLY WAGE RATES AS REQUIRED UNDER PARAGRAPH 4.B OF THE SUPPLEMENTAL GENERAL CONDITIONS

Given on Pages 46 - 55 _____

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:

- a. 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.
- b. 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.
- c. 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.
- d. 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.
- e. 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.
- f. 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.

2. Notice of Requirement for Affirmative Action to ensure Equal Employment Opportunity (Executive Order 11246).
(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:

Goals for minority participation	Goals for female participation
Insert Goals	Insert Goals
6.6%	6.9%

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 Anderson County.

3. Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

- 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

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

Governor Bill Lee
Department of Economic and Community Development Commissioner Mitch Loomis
CDBG Grant \$523,729.00

SPECIFICATIONS

2020 CDBG Water Line Extension Project
Anderson County/Hallsdale-Powell Utility District
Buchanan Road, Savage Garden Road, Foust Lane,
Hinds Creek Road and Judson Road

Contract No.

RGC Project No. 18706

Edison ID No. 14049

Robert G. Campbell & Associates, L.P.
7523 Taggart Lane
Knoxville, TN 37938
Phone No. 865-947-5996

**ANDERSON COUNTY
TECHNICAL SPECIFICATIONS**

**SECTION 01010
SUMMARY OF WORK**

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this contract consists of furnishing, installing and testing water line and various appurtenances, as shown on the project plans. This work is being performed to the standards of **the Anderson County Water Authority**.

1.02 QUALITY ASSURANCE

- A. Contractor shall comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on the performance of the work.

1.03 JOB CONDITIONS

- A. Except as specifically noted, Contractor shall provide and pay for:
 - 1. Materials, labor, tools and equipment.
 - 2. Concrete, bedding stone, tie rods, and incidentals.
 - 3. Water, heat and utilities required for construction.
 - 4. Other facilities and services necessary for proper execution and completion of the work.
- B. Contractor shall secure and pay for, as necessary for proper execution and completion of work, and as applicable at time of receipt of bids, all temporary:
 - 1. Permits
 - 2. Government Fees
 - 3. Licenses
- C. Contractor shall give notices to Owners of adjacent property and utilities when prosecution of the work may affect them. Utilities and other concerned agencies shall be contacted at least 24 hours prior to cutting or closing streets or other traffic areas or excavating near underground utilities or pole lines.
- D. The rights-of-way for the water line and project limits will be provided by Owner. Contractor shall confine his construction operations within the limits indicated on the drawings, and shall use due care in placing construction tools, equipment, excavated

materials, and pipeline materials and supplies, so as to cause the least possible damage to property and interference with traffic.

- E. There shall be continuous clean-up on the job.
- F. Final restoration of all owner's property shall be performed to as good or better condition than before construction.

1.04 WORK SEQUENCE

- A. During performance of this project the Contractor shall:
 - 1. Coordinate the construction schedule and operations with the Owner and the Local County Highway Department. Traffic control is critical. The contractor shall be responsible for repairing all damage caused by his construction to all roads.
 - 2. Construct the new water line within the limits of private easements and county right-of-way with minimum interference or interruption of existing utilities. Provided permission from the Owner is obtained in advance, service may be interrupted for short periods during periods of low demand. Work shall proceed continuously (around the clock) if necessary to complete operations in the minimum time. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of **the Anderson County Water Authority**.
 - 3. Contact Owner prior to any blasting work. Contractor shall be responsible for any damage caused as a result of blasting.
 - 4. Survey all road crossings and critical depth installations in the presence of and to the satisfaction of the Owner and Engineer.
- B. Construct the Work in stages to provide for public convenience. Do not close off public use of roads or facilities until completion of one stage of construction will provide alternative access.
- C. Construct the Work to the following sequence unless prior written consent of the OWNER is obtained:
 - 1. Videotape the entire project area indicating all yards, culverts, mailboxes and other important features. Provide three copies for the approval of the engineer before construction shall be allowed to commence.
 - 2. **INSTALLATION OF NEW WATER LINES AND WATER SERVICES:** Installation to include water line and all associated appurtenances.

- D. Coordinate all work with all the local utility companies regarding overhead and underground utilities. The Contractor shall be responsible for any and all damage caused to the existing utilities resulting from the construction of the water line.

1.05 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit his use of the premises for work and for storage, and shall allow for:
 - 1. Owner's access.
 - 2. Public use.
 - 3. Other construction and utility contractors.
- B. Coordinate use of premises and utilities under direction of Owner's representative.
- C. Assume full responsibility for the protection and safekeeping of materials under this Contract, stored on or near the site.
- D. Move any stored products, under Contractor's control, which may interfere with operations of the Owner or separate Contractor.
- E. Construct temporary fence as necessary in all areas that involve school children to keep them away from construction activities during the period of construction.

1.06 BENEFICIAL USE BY OWNER

- A. Contractor shall cooperate with Owner's representative in all construction operations to minimize conflict, and to facilitate Owner usage. Owner must maintain uninterrupted service in the existing water line and other utilities in the project area.
- B. Contractor shall at all times conduct his operations as to ensure the least inconvenience to the general public.
 - 1. Coordinate work with Anderson County and the Anderson County Water Authority.
 - 2. Coordinate work with local telephone and power companies.

1.07 UNFAVORABLE CONSTRUCTION CONDITIONS

- A. During unfavorable weather, wet ground, or other unsuitable construction conditions, the Contractor shall confine his operations to work which will not be affected adversely by such conditions. No portion of the Work shall be constructed under conditions which would affect adversely the quality or efficiency thereof, unless special means or

precautions are taken by Contractor to perform the work in a proper and satisfactory manner.

1.08 CUTTING AND PATCHING

- A. Contractor shall perform all cutting and patching required for the Work, and as may be necessary in connection with uncovering Work for inspection or for the correction of defective Work.

PART 2 - SALVAGED MATERIALS

- A. In the absence of special provisions to the Contract, salvaged materials, equipment or supplies that occur are the property of the Owner and shall be cleaned and stored in a workmanship like manner. Surplus excavated materials remain the property of the Owner and shall be spoiled in a workmanship like manner. All existing meter boxes shall be left in place as applicable.

PART 3 - MAINTAINING TRAFFIC

- A. Traffic shall be maintained on all roads and streets which must be crossed by the components of the project.

END OF SECTION

**SECTION 01031
SPECIAL PROJECT PROCEDURES**

1. GENERAL

1.1 ACCESS TO PROJECT

- A. The project shall be accessible at all times to representatives of the Tennessee Department of Environment and Conservation, Anderson County Highway Department, Anderson County Water Authority, and any other state, local, or federal regulatory agencies.

1.2 MANUFACTURERS' QUALIFICATIONS

- A. The manufacturers of all materials and equipment used must be reputable and regularly engaged in the manufacture of the particular material or equipment for the use and service to which it will be subjected.

1.3 CONTRACTOR SHALL PAY FOR ALL LABORATORY INSPECTION SERVICE

- A. All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the Contractor and approved by the Owner. Pay for all laboratory inspection services as a part of the Contract. Submit all material test reports to the Owner in triplicate.

1.4 COMPLIANCE WITH STATE AND LOCAL LAWS

- A. Comply with all applicable requirements of state and local laws and ordinances to the extent that such requirements do not conflict with federal laws or regulations.
- B. The Contractor will secure any and all permits.

1.5 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

- A. Take special care in working areas to protect public and private property. The Contractor shall replace or repair at his own expense any damaged water pipes, power and communication lines, or other public utilities, roads, curbs, gutters, sidewalks, drain pipes, sewer drainage ditches, and all plantings, including grass or sod on the site of the work. Leave the site in original or better condition after all cleanup work has been done.

1.6 MARKERS

- A. Preserve all USGS, TVA, State of Tennessee, and private markers; do not remove or disturb any such markers without prior approval from the Owner. Any removal and replacement of such markers shall be at the expense of the Contractor.

1.7 PAVEMENT REPAIR AND/OR REPLACEMENT

- A. Repair and/or replace asphalt and concrete driveways, walks, parking areas, shoulders, crushed stone or gravel streets and roads, etc. damaged and/or disturbed during construction.
- B. Whenever pipe trenches are cut across or along existing pavement or shoulders, backfill same and restore traffic over the cuts as quickly as possible by constructing a temporary six-inch (6") surface of crushed stone. Add material and otherwise maintain such surface until the permanent pavement is restored or until the entire project is accepted.

1.8 APPROVED CHEMICALS

- A. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, must show approval of either EPA or USDA. The use of all such chemicals and the disposal of residues shall be in strict conformance with instructions.

1.9 DRAWINGS OF RECORD

- A. Provide and keep up-to-date a complete record set of record drawing prints, which shall be corrected daily to show every change, and the approved shop drawings. Keep this set of prints at the job site, and use only as a record set. This shall not be construed as authorization for the Contractor to make changes in the approved layout without definite instructions in each case. Turn the set over to the Owner upon completion of the project.

1.10 PRESERVATION OF EXISTING VEGETATION

- A. Take reasonable care during construction to avoid damage to vegetation. Where the area to be excavated is occupied by trees, brush, or other uncultivated vegetable growth, clear such growth from the area, and dispose of it in a satisfactory manner. Leave undisturbed any trees, cultivated shrubs, flowers, etc., situated within public rights-of-way and/or easements through private property but not located directly within excavation limits. Transplant small ornamental trees, cultivated shrubs, flowers, etc., located directly within

excavation limits so they may be replaced during property restoration operations. Do not remove or disturb any tree larger than 6 inches in diameter without the permission of the Owner. Take special precautions (including the provision of barricades and the temporary tying back of shrubbery and tree branches) for the protection and preservation of such objects throughout all stages of construction; the Contractor will be held liable for any damage that may result to said objects from excavation or construction operations. Trim any limbs or branches of trees broken during construction operations with a clean cut, and paint with an approved tree pruning compound. Treat tree trunks receiving damage from equipment with a tree dressing.

1.11 UTILITIES

- A. The Contractor is to contact the Owner of all underground utilities before beginning construction in the area. Carefully protect from damage all utilities in the vicinity of the work at all times. If it is necessary to repair, remove, and/or replace any such utility in order to complete the work properly, do so in compliance with the rules and regulations of the particular utility involved. Any such work shall be considered incidental to the construction or repairs of utility lines, and no additional payment will be allowed.

1.12 CATALOG DATA FOR OWNERS

- A. Provide duplicate complete, bound sets of a compilation of catalog data of each manufactured item of mechanical and electrical equipment used in the work, and present this compilation to the Design Engineer for transmittal to the Owner before payment of more than ninety-five percent (95%) is made. Include descriptive data and printed installation, operating, and maintenance instructions (including a parts list for each item of equipment). Provide a complete double index as follows.
- B. Listing the products alphabetically by name.
- C. Listing alphabetically the names of manufacturers whose products have been incorporated in the work, together with their addresses and the names and addresses of the local sales representative.

1.13 PRECONSTRUCTION SURVEY

- A. The Contractor shall video tape existing site prior to construction. Document existing damage to structures and slopes located along project route. Preconstruction survey shall be considered incidental to the project, and no additional payment will be allowed.

1.14 PROTECTION OF LIVES AND HEALTH

- A. In accordance with generally accepted construction practices, the Contractor will be solely and completely responsible for conditions at the job site, including the safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours.
- B. The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54). The duty of the Design Engineer to conduct construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the construction site, nor to relieve the Contractor of his obligation to conduct comprehensive inspection of the work sufficient to ensure conformance with the intent of the contract documents.
- C. Working hours should be limited to 7:30 am to 7:30 pm for noise abatement.

1.15 SAFETY AND CONVENIENCE

- A. The Contractor shall do all work necessary to protect the general public from hazards, including but not limited to surface irregularities or un-ramped grade changes in pedestrian sidewalks and trenches or excavations in roadway. Barricades with warning lights, lanterns, and proper signs shall be furnished in sufficient amount to safeguard the public and the Work. All barricades and signs shall be clean and serviceable.
- B. During construction, the Contractor shall construct, and at all times maintain satisfactory and substantial temporary safety fencing, chain link fencing, solid fencing, railing barricades and/or steel plates as applicable at all excavations, obstructions or other hazards in streets, sidewalks, and walkways. All such barricades shall have adequate painted or flagged markings and warning lights as necessary or required for safety.
- C. The Contractor shall provide flagmen or other personnel who shall be responsible for supporting safety and local resident convenience issues.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

**SECTION 01050
FIELD ENGINEERING**

1. GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Contractor shall provide field engineering services and establish grades, lines, and levels, by use of recognized engineering survey practices.
- B. Control datum for survey is established by Contractor.

2. PRODUCTS

NOT USED

3. EXECUTION

3.1 INSPECTION

- A. Verify locations of survey control points prior to starting work. Promptly notify Owner of any discrepancies discovered.

3.2 SURVEY REFERENCE POINTS

- A. Protect survey control points prior to starting site work; preserve permanent reference points during construction. Make no changes without prior written notice to Owner.
- B. Promptly report to Owner the loss or destruction of any reference point or relocation required because of changes in grades or other reasons. Replace dislocated survey control points based on original survey control.
- C. The Contractor shall preserve all USGS, TVA, State of Tennessee, and private markers; do not remove or disturb any such markers without prior approval from the Owner. Any removal and replacement of such markers shall be at the expense of the Contractor. The re-establishment of these markers shall be performed by a surveyor licensed by the State of Tennessee, with a letter indicating the completion of work.

3.3 STAKING

- A. The Contractor shall be responsible for staking the project and preparing cut sheets as needed.

END OF SECTION

**SECTION 01090
STANDARDS**

1. GENERAL

1.1 Meet the requirements and recommendations of all Standards, Institutes, Associations, etc., referred to throughout these documents and specifications as if they were fully reproduced herein. Unless otherwise noted, the latest editions shall apply.

1.2 ABBREVIATIONS

AAMA	Architectural Aluminum Manufacturers' Association
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Boiler Manufacturers' Association
ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturers' Association
AGA	American Gas Association
AGC	Association of General Contractors
AGMA	American Gear Manufacturers' Association
AIA	American Institute of Architects
AIEE	American Institute of Electrical Engineers
AIMA	Acoustical and Insulating Materials Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
ARI	Air Conditioning and Refrigeration Institute
ASA	American Standards Association
ASAE	American Society of Automotive Engineers
ASC	Association of Specialty Contractors
ASCII	American Standard Code for Information Interchange
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWPB	American Wood Preservers Bureau
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BIA	Brick Institute of America
CMAA	Crane Manufacturer's Association of America
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards

CSI	Construction Specifications Institute
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FGMA	Flat Glass Marketing Association
FM	Associated Factory Mutual Laboratories
FS	Federal Specifications
IEEE	Institute of Electrical and Electronic Engineers
IRI	Industrial Risk Insurers
ISA	Instrument Society of America
JIC	Joint Industrial Council
MBMA	Metal Building Manufacturers' Association
MMA	Monorail Manufacturers' Association
NAAMM	National Association of Architectural Metal Manufacturers
NBS	National Bureau of Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturers' Association
NFPA	National Fire Protection Association or National Forest Products Association
NKCA	National Kitchen Cabinet Association
NPT	National Pipe Thread
NRCA	National Roofing Contractors' Association
NSF	National Sanitation Foundation
NSWMA	National Solid Waste Manufacturers' Association
NWMA	National Woodwork Manufacturing Association
OSHA	Occupational Safety and Health Administration
PPI	Plastics Pipe Institute
RIS	Redwood Inspection Service
SAE	Society of Automotive Engineers
SBCC	Standard Building Code Congress
SDI	Steel Deck Institute
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SPII	Southern Pine Inspection Institute
SSBC	Southern Standard Building Code
SSPC	Steel Structures Painting Council
TCA	Tile Council of America
TDOT	Tennessee Department of Transportation
TIMA	Thermal Insulation Manufacturers' Association
UL	Underwriters' Laboratories
USG	United States Gypsum
WCLIB	West Coast Lumber Inspection Bureau
WWPA	Western Wood Products Association

- 2. PRODUCTS
NOT USED
- 3. EXECUTION
NOT USED

END OF SECTION

**SECTION 01150
MEASUREMENT AND PAYMENT**

PART 1 – WATER MAIN ITEMS

1.1 GENERAL

- A. For the information and guidance of bidders, the following explanation of the bid form items is made. The omission of reference to any items in this description shall not, however, alter the intent of the bid form or relieve the Contractor of the necessity of furnishing such items as part of the contract. The quantities set forth in the bid form are approximate and are given to establish a uniform basis for the comparison of bids. The Owner reserves the right to increase or decrease the quantity of any class or portion of the work during the progress of construction in accordance with the terms of the contract. Unit prices are used as a means of computing the final figures for bid and contract purposes, for periodic payments for work performed, for determining value of additions or deletions and wherever else as is reasonable.

- B. The basis of payment for work and materials shall be the actual amount of work completed, including but not limited to, the furnishing of all necessary labor, materials, equipment, transportation, clean up, and all other appurtenances to complete the construction and installation of the work to the configuration and extent as shown on the drawings and as described in the specifications.

1.2 WATER MAINS

Payment for furnishing and installing water mains will be made at the contract unit price per linear foot for the type and size of pipe in place and shall include all necessary labor and materials for the furnishing and laying of the pipe; dewatering if required; special restrained joints as required; clamps, harnessing, adapters, and all ductile iron fittings, megalug restraint, concrete encasement, concrete thrust blocks and anchors; tracer tape and copper wire in trench for pvc pipe and ductile iron pipe; excavation of all material encountered including rock bedding; backfill; trench stabilization; replacement of grass, sod, asphalt and concrete paving; and other surface materials not specifically designated in the Bid Proposal; road crossings; clean up; restoration of fencing, mailboxes, shrubbery, sidewalks, paved and gravel driveways and roads, and road shoulder stone; ductile iron pipe required for creek or ditch crossings; repair of existing utilities and private water lines damaged during construction; sterilization and testing. No separate payment will be made for thrust blocks; ductile iron fittings including a solid sleeve to connect to an existing water line; yard restoration; tracer tape and copper wire; mechanical joint restraint including all megalug type restraint; concrete encasement over a ductile iron line across a stream; rip rap; erosion control and other items included in the Storm Water Pollution Prevention Plan for this project, videotaping of the property and crushed stone for bedding, backfill, trench stabilization, and in gravel driveway and shoulder areas. Measurement of the pipe will be to the nearest foot along the centerline including the lengths of valves and fittings. Ductile iron fittings shall not be paid separately and will be considered as a part of the unit price per linear foot of water line.

1.3 BORE AND/OR JACK CROSSINGS

Payment for installing a water line by bore and/or jack under creeks, railroads, or roadways shall be made at the contract unit price per linear foot. The installation shall include bore pits, restrained joint Class 350 ductile iron pipe, casing, casing spacers, end seals, and all excavation and backfill.

1.4 GATE VALVES

Payment for furnishing and installing gate valves shall be made at the contract unit price for each valve in place. Payment shall include compensation for the valve, box, concrete slab around the valve cover, valve marker, megalug mechanical joint restraint, and all necessary labor, material, and equipment for the complete installation. There shall be no difference in the price for valves cut into the existing lines and those placed in new lines. No payment will be made for removing and salvaging existing gate valves and boxes.

1.5 UNCASSED BORE CROSSINGS BY DIRECTIONAL BORE

Where required by the agency having jurisdiction, or where directed by the Owner, driveway and road crossings shall be directional bored. Payment for these crossings shall be made at the contract unit price per linear foot. Price shall include furnishing all labor, materials and equipment required to bore under the roadway or driveway including the HDPE pipe, excavation of bore pits, and all other requirements.

1.6 AIR RELEASE VALVES

Payment for furnishing and installing air release valves shall be made at the contract unit price and shall include, but not be limited to, tapping of the water line; all excavation; crushed stone; backfill; furnishing and installing a corporation stop; fittings; a ball valve; labor; materials; valve boxes, air release valves; and expendables necessary to install each air release valve shown on the drawings as a complete and operational unit.

1.7 PAVEMENT REPLACEMENT

Payment for this item shall be for furnishing all labor, materials and equipment to properly cut pavement and replace the road, driveway, and pavement as specifically detailed in the specifications or as shown on the plans; which in all cases shall be equal to or better than the pavement being replaced. Payment shall also include crushed stone required for temporary maintenance. Payment for pavement replacement will be made at the contract unit price per linear foot of pipeline in trench under pavement, regardless of width.

1.8 MECHANICAL JOINT DUCTILE IRON FITTINGS

Payment for this item shall be for furnishing all labor, materials and equipment to properly install mechanical joint ductile iron fittings as specifically detailed in the specifications or as shown on the plans. Payment shall also include thrust blocks for all fittings. Payment for ductile iron fittings will be made as a part of the contract price per linear foot of water line. Megalug restraint shall be placed at all fittings.

1.9 MISCELLANEOUS CONCRETE

Concrete for encasement of pipe, fittings and under valves will be measured for payment as a part of water line installation. Payment for miscellaneous concrete SHALL NOT be made under a separate proposed item from the cost of furnishing and installing water main, footings, thrust blocks, and under valves.

1.10 MECHANICAL JOINT RESTRAINT

Payment for mechanical joint restraint SHALL NOT be made under a separate proposal item as the cost for furnishing and installing the aforementioned fittings and SHALL BE INCLUDED in the contract unit price per linear foot for water main construction.

1.11 DETECTABLE TAPE AND LOCATER WIRE

Payment for furnishing detectable tape and locater wire on all pipe will be made at the contract unit price per linear foot of water line as measured along the centerline of pipe, complete in place as shown on the plans, which price shall include all materials and labor for a complete installation.

1.12 VIDEOTAPING OF WORK AREA

Payment for videotaping of work area will be made at the Contract Unit price per linear foot of water line including three (3) complete videotapes of each work area prior to beginning any construction. The audio portion of each video shall indicate the line being shown and the location along the line with addresses. The video shall show conditions of all adjacent properties including yards, culverts, mailboxes, etc. prior to construction work beginning. One copy shall be viewed by the Engineer and approved prior to distribution to the Owner, Engineer and Contractor.

1.13 CONNECTION TO EXISTING WATER MAINS (Dry Tap)

Payment for connection to existing water mains will be made as a part of the contract unit price per each, which price shall include compensation for required sleeves, fittings, MJ restraint, cutting existing mains, removing existing caps, plugs or fittings, closing valves to isolate connection, hauling, excavating (including rock), labor, backfilling, and all other installation requirements for connection to existing mains. Tie or connection to an existing water line shall receive restraint as per the direction of the Water Authority.

1.14 DIRECTIONAL BORE CROSSINGS WITH CASING

Where required by the agency having jurisdiction, or where directed by the Owner, highway and road crossings shall be directional bored. Payment for directional highway crossings shall be made at the contract unit price per linear foot of HDPE casing with HDPE carrier. Price shall include furnishing all labor, materials and equipment required to bore under the highway including a HDPE casing pipe, HDPE carrier pipe, excavation of bore pits, casing spacers and seals, and all other highway requirements.

1.15 CUT AND CAP OR PLUG EXISTING WATER LINE

Payment for cutting an existing water line and installing a cap or plug will be made at the contract unit price per each and shall include all necessary labor and materials for the furnishing and installing the cap or plug.

1.16 MECHANICAL JOINT RESTRAINT

Payment for mechanical joint restraint SHALL NOT be made under a separate proposal item as the cost for furnishing and installing the aforementioned fittings and SHALL BE INCLUDED in the contract unit price per linear foot for water main construction.

1.17 TAPPING SLEEVE OR SADDLE AND VALVE

Payment for furnishing and installing tapping sleeves or saddles and valves shall be made at the contract unit price for each in place. Payment shall include compensation for the tapping sleeves, saddles, tapping the main, tapping gate valve, valve box, concrete slab around the valve cover, valve marker, mechanical joint restraint, and all necessary labor, material, and equipment for the complete installation. A 2" tap will be by a saddle and resilient seated gate valve as approved by the Anderson County Water Authority.

1.18 RELOCATION – WATER METER ASSEMBLY

Payment for furnishing and installing a water meter relocation shall be made at the contract unit price for each size meter assembly in place at the locations directed by the Owner. Payment for a relocation for a water meter assembly shall include compensation for tapping the water main; installing the service saddle and corporation stop for a ¾" or 1" service, a new meter setter or yoke; a new meter box and lid; clean up; and all necessary labor, materials, and equipment for the complete installation. All meter assembly components shall be the same as used by the Anderson County Water Authority. The existing AMR meter shall be transferred over and included with each new service relocation for the Anderson County Water Authority. Excluded shall be payment for furnishing and installing the service line, which shall be made under a separate Bid Item. A new meter box and top shall be used at each location while the new service line shall connect to a new meter setter or yoke and tail piece and the existing service line. All appropriate gaskets or spacers to complete the relocation of the meter assembly shall be included with the item for payment. A relocation shall include tying a new water service line from the water meter box to the existing service line to the customer.

1.19 CONNECTION TO EXISTING WATER LINE

Payment for installing a connection to an existing water line shall be paid per each at the contract unit price. The installation shall include removing the fitting at the end of the existing water line and all necessary fittings to make the connection to the existing water line including gravel or other bedding material and mechanical joint restraint.

1.20 BLOWOFF ASSEMBLY

Payment for this item shall be for furnishing all labor, materials and equipment to properly install a blowoff assembly to include a reducer to 2", a 2" gate valve with valve box, a Class 250 PVC water line to a 45° bend and Class 250 PVC pipe to just above grade level with a screw on cap. Payment shall also include crushed stone and concrete around the 45° bend. Payment for a blowoff assembly will be made at the contract unit price per each according to the size of blowoff required.

1.21 SERVICE LINE

Payment for furnishing and installing service line to the meter box of 3/4" or 1" Orburg SDR 9 CTS PE3408 WTR TBG 500 Service Line or approved equal, shall be made at the contract unit price per linear foot for the line in place. Payment shall include compensation for furnishing and laying the line; excavation of all materials encountered including rock; highway borings or jacks in a PVC casing as required; backfill including borrow dirt for suitable material if required; replacement of grass, sod, or asphalt paving for roads, shoulders, and driveways as required; clean up; all other necessary labor, materials and equipment for the complete installation. The quantity of service line to be paid shall be the length of completed service line measured along its centerline. Service piping for all households shall extend to the connection to the existing service line to the household. The amount of service line for highway borings or jacks in a PVC casing shall be paid only for that amount of service line in the casing and not for the service line leading to or from the casing. No holehogging of service lines is allowed.

END OF SECTION

**SECTION 01302
SUBMITTALS AND SUBSTITUTIONS**

1. GENERAL

1.1 SUMMARY

A. Work Included

1. Wherever possible throughout the contract documents, the minimum acceptable quality of workmanship and materials has been defined by a manufacturer's name and catalogue number, reference to recognized industry and government standards, or description of required attributes and performance.
2. To ensure that the specified products are furnished and installed in accordance with the design intent, procedures have been established for advance submittal of design data and for their review by the Owner.
3. Make all submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements.

B. Related Work Described Elsewhere

1. Individual requirements for submittals are described in other pertinent sections of these specifications.

1.2 SUBMITTALS

A. Identification of Submittals

1. General: Consecutively number all submittals.
2. Internal Identification: On at least the first page of each copy of each submittal, clearly indicate the submittal number in which the item was included.
3. Resubmittals: When material is resubmitted for any reason, transmit under a new letter of transmittal utilizing the original submittal number followed by an A, B, C, etc., depending on the number of resubmittals of the original submittal required.

B. Shop Drawings and Coordination of Drawings

1. Deliver or mail all submittals to:
Anderson County Water Authority
1611 N. Charles Seivers Blvd.
Clinton, TN 37716

Attention: Larry Clowers, General Manager
Telephone: (865) 457-3033

2. Make submittals in strict accordance with the provisions of this section.

1.1 QUALITY ASSURANCE

A. Coordination of Submittals

1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted, and verify that each item and the submittal for it conforms in all respects with the requirements of the bidding instruments.
2. Shop drawings and submittals shall bear the stamp of approval of the Contractor as evidence that this coordination has been performed.

1.4 SUBMITTAL SCHEDULE

A. Timing of Submittals

1. General:
 - a. Make all submittals far enough in advance of scheduled dates for installation to provide all time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.
 - b. Submit shop drawings in accordance with the approved schedule of shop drawing submittals.
2. Owner's Review Time: In scheduling, allow at least 20 calendar days for review by the Owner following his receipt of the submittal.
3. Delays: Delays caused by tardiness in receipt of submittals will not be an acceptable basis for extension of the contract completion date.

1.5 SUBSTITUTIONS

A. Approval Required

1. The contract is based on the standards of quality established in the contract documents.
2. All products proposed for use, including those specified by required attributes and performance shall require approval by the Owner before being incorporated into the work.
3. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved for this work by the Owner.

B. "Or Equal"

1. Where the phrase "or equal" or "or approved equal" occurs in the contract documents do not assume that materials, equipment, or methods will be approved as equal unless the item has been specifically approved for this work by the Owner.
2. The decision of the Owner shall be final.
3. See pertinent portions of the contract documents for additional information relating to substitutions.

2. PRODUCTS

NOT USED

3. EXECUTION

NOT USED

END OF SECTION

**SECTION 01400
QUALITY CONTROL**

1. GENERAL

1.1 REQUIREMENTS INCLUDED

A. General Quality Control

1. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship; to produce work of specified quality.

B. Workmanship

1. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
2. Perform work by persons qualified to produce workmanship of specified quality.
3. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

C. Manufacturers' Instructions

1. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with contract documents, request clarification from Owner before proceeding.

D. Manufacturers' Certificates

1. When required by individual specifications section, submit manufacturers' certificate, in duplicate, that products meet or exceed specified requirements.

E. Manufacturers' Field Services

1. When specified in respective specification sections, require supplier or manufacturer to provide qualified personnel to observe field conditions; conditions of surfaces and installation; quality of workmanship; start-up of equipment; test, adjust, and balance of equipment; and as applicable, to make appropriate recommendations.
2. A representative shall submit a written report to Owner listing observations and recommendations.

F. Testing Laboratory Services

1. Contractor shall employ and pay for services of an Independent Testing Laboratory to perform inspections, tests, and other services required by individual specification sections.
2. Services will be performed in accordance with requirements of governing authorities and with specified standards.
3. Reports will be submitted to Owner in duplicate giving observations and results of tests, indicating compliance or non-compliance with specified standards and with contract documents.
4. Contractor shall cooperate with testing laboratory personnel, furnish tools, samples of materials, design mix, equipment, storage, and assistance as requested.
 - a. Notify Owner and testing laboratory 24 hours prior to expected time for operations requiring testing services.
 - b. Make arrangements with testing laboratory and pay for additional samples and tests for Contractors' convenience.

2. PRODUCTS

NOT USED

3. EXECUTION

NOT USED

END OF SECTION

**SECTION 01568
EROSION CONTROL**

1. GENERAL

1.1 DESCRIPTION

- A. This work shall consist of erosion control on all cut and fill operations, excavation, backfill, or other construction activities within the limits of the construction site, within any temporary or permanent easements, and within any borrow site used during the period of construction. The protection of these sites shall continue throughout the construction period. During flood seasons, protect the sites by sandbagging, pumping water, and any other means appropriate to restrain flooding of neighboring streets and properties. During dry weather, sprinkle the sites with water and/or other means as necessary to provide dust control.

- B. The temporary pollution control provisions contained herein shall be coordinated with the permanent erosion control features, to ensure economical, effective, and continuous erosion control throughout the construction and post-construction period.

- C. It is the intent of this section for the contractor to ensure that PL 100-4, Section 319, TCA 69-3-101, et. Seg., Subsection 69-3-108 and Subsection 69-3-114, and Division of Construction Grants and Loans General Permit for Utility Line Crossings, Chapter 1200-4-7.09 are met. Since the Contractor is responsible for the construction means and methods which in turn are responsible for ensuring that construction does not harm the Waters of Tennessee, the Contractor is solely responsible for ensuring that the above-mentioned laws and regulations are met. **It shall be the CONTRACTOR'S sole responsibility for payment of any fines or penalties the Anderson County Water Authority may receive as a result of Tennessee Department of Environment and Conservation (TDEC) enforcement due to a notice of noncompliance.**

2. PRODUCTS

2.1 TEMPORARY BERMS

- A. These berms are used temporarily at the top or base of newly constructed slopes to prevent excessive erosion until permanent controls are installed or slopes stabilized.

2.2 TEMPORARY SLOPE DRAINS

- A. A temporary slope drain is a facility consisting of stone gutters, fiber mats, plastic sheets, concrete or asphalt gutters, half round pipe, metal pipe, plastic pipe, sod, or other material that may be used to carry water down slopes to reduce erosion.

2.3 SEDIMENT STRUCTURES

- A. Sediment basins, ponds, and traps are prepared storage areas constructed to trap and store sediment from erodible areas in order to protect properties and stream channels below the construction areas from excessive siltation.

2.4 CHECK DAMS

- A. Check dams are barriers composed of large stones, sand bags, or other noncorrodible materials placed across or partially crossing a natural or constructed drain way.

2.5 CHECK DAM (ALTERNATE): ENVIROBERM SYNTHETIC POROUS SEDIMENT CONTROL STRUCTURES

- A. EnviroBerm Synthetic Porous Sediment Control Structures are barriers composed of synthetic porous material placed across or partially crossing a natural or constructed drain way.

2.6 TEMPORARY SEEDING AND MULCHING

- A. Temporary seeding and mulching are measures consisting of seeding, mulching, fertilizing, and matting utilized to reduce siltation and erosion. All cut and fill slopes including waste sites and borrow pits shall be seeded when and where necessary to eliminate erosion.

2.7 BALED HAY

- A. Baled hay is a temporary measure to control erosion and prevent siltation. Bales shall be either hay or straw containing 5 cubic feet or more of material. Bales shall be staked.

2.8 TEMPORARY SILT FENCES

- A. Silt fences are temporary sediment barriers consisting of a filter fabric stretched across and attached to supporting posts and entrenched. The silt fence is constructed of synthetic filter fabric, posts, and depending upon the strength of the fabric used, wire fence for support. The filter barrier is constructed of stakes and burlap or synthetic filter fabric.

2.9 TEMPORARY CONSTRUCTION ENTRANCE

- A. A temporary construction entrance consisting of crushed stone with a geotextile filter fabric underlining is utilized to reduce or eliminate tracking of material by construction vehicles onto public streets.

2.10 TEMPORARY INLET PROTECTION

- A. Temporary inlet protection consisting of temporary sediment tubes, washed stone, filter fabric, wire mesh, and concrete blocks is utilized to prevent sediment from entering the storm drainage system, prior to temporary or permanent stabilization of the construction area.

2.11 RIP-RAP APRON

- A. A rip-rap apron consisting of large, loose, angular stone with a geotextile filter fabric underlining is utilized to reduce stormwater velocity and dissipate the energy of flow leaving a storm drain before it empties into receiving channels, and to armor erodible materials.

2.12 PERMANENT SEEDING AND MULCHING

- A. Permanent seeding and mulching are measures consisting of seeding, mulching, fertilizing, hydroseeding, and matting utilized to reduce siltation and erosion. All disturbed areas shall be stabilized upon completion of construction operations.

3. EXECUTION

3.1 PROJECT REVIEW

- A. It is the responsibility of the Contractor to develop additional erosion controls as necessary that are acceptable to the Owner and to applicable regulatory agencies. If at any time the Owner deems it necessary, the Contractor shall provide additional erosion devices. The site shall be provided with maximum protection from erosion at all times.
- B. If the Contractor desires to stockpile construction materials, stone, earth, etc., the location of same and the protection thereof shall be defined and incorporated into the SWPPP.

3.2 CONSTRUCTION REQUIREMENTS

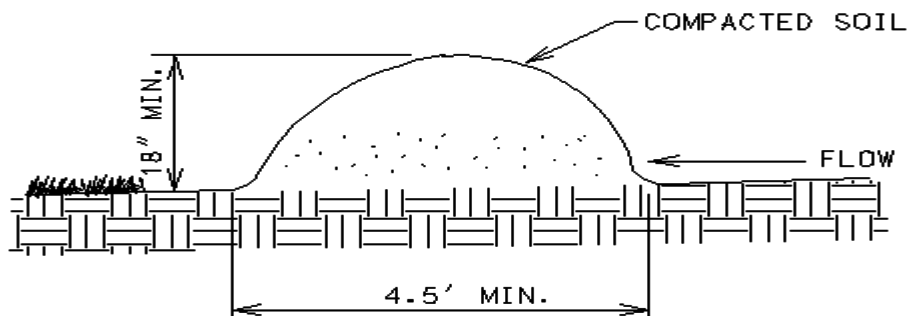
- A. In the event of conflict between these requirements and pollution control laws, rules or regulations, or other Federal, State, or Local agencies, the more restrictive laws, rules, or regulations shall apply.
- B. In streets and other paved areas, remove excavated material from the site as construction progresses to prevent any erosion of this material.
- C. In other areas, place the excavated material so as not to block any drainage areas. Replace excavated material in the trench immediately after work has been completed and approved by the Owner.

- D. Retain natural vegetation whenever feasible.
- E. Restore and cover exposed areas subject to erosion as quickly as possible by means of seeding and mulching. Use diversion ditches or other methods as appropriate to prevent storm water from running over the exposed area until seeding is established as specified. Erosion control matting may be necessary as required by the Owner.
- F. Take particular care along drainage ditches so that fallen trees, debris, and excavated material will not adversely affect the stream flow. Exercise care to minimize the destruction of drainage ditches. Wherever the drainage ditches are affected by construction, the contractor must repair the drainage ditches to provide a suitable condition for vegetative protection. Minimize land exposure in terms of area and time.
- G. Take care during the placing of pavement, hauling of materials, etc., to keep vehicles from creating a severe erosion problem. Proper scheduling of operations and prompt repair of ruts created during this operation is necessary from this source.

3.3 CONSTRUCTION OF STRUCTURES

A. Temporary Berm (See Figure 1)

1. The maximum allowable drainage area is 5 acres.
2. The minimum allowable height measured from the upslope side of the berm is 18 inches.
3. Side slopes should be 1.5:1 or flatter. (Minimum base width of 4.5 feet).
4. The channel behind the berm shall have a positive grade to a stabilized outlet. If the channel slope is less than or equal to 2 percent, the channel shall be stabilized.



NOTE:

1. SIDE SLOPES SHALL BE 1.5:1 OR FLATTER.

Figure 1 (Temporary Berm)

B. Temporary Slope Drains

1. Temporary slope drains shall consist of stone gutters, fiber mats, plastic sheets, concrete or asphalt gutters, half round pipe, metal pipe, plastic pipe, flexible

rubber, or other materials which can be used as temporary measures to carry water accumulating in the cuts and on the fills down the slopes prior to installation of permanent facilities or growth of adequate ground cover on the slopes.

2. Plastic sheeting shall not be used on slopes steeper than 4:1 except for short distances of 20 feet or less.
3. All temporary slope drains shall be adequately anchored to the slope to prevent disruption by the force of the water flowing in the drains. The base for temporary slope drains shall be compacted and concavely formed to channel the water or hold the slope drain in place. The inlet end shall be properly constructed to channel water into the temporary slope drain. Energy dissipaters, sediment basins, or other approved devices shall be constructed at the outlet end of the slope drains to reduce erosion downstream. An ideal dissipater would be dumped rock or a small sediment basin which would slow the water as well as pick up some sediment. All temporary slope drains shall be removed when no longer necessary.

C. Sediment Structures (See Figure 2)

1. The area under the embankment shall be cleared, grubbed, and stripped of any vegetation and root mat. To facilitate cleanout the pool area should be cleared.
2. Fill material for the embankment shall be free of roots or other woody vegetation, organic material, large stones, and other objectionable material. The embankment should be compacted in 8-inch layers by traversing with construction equipment.
3. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.
4. The structure shall be removed and the area stabilized when the upslope drainage has been stabilized.
5. All cut and fill slopes shall be 2:1 or flatter.

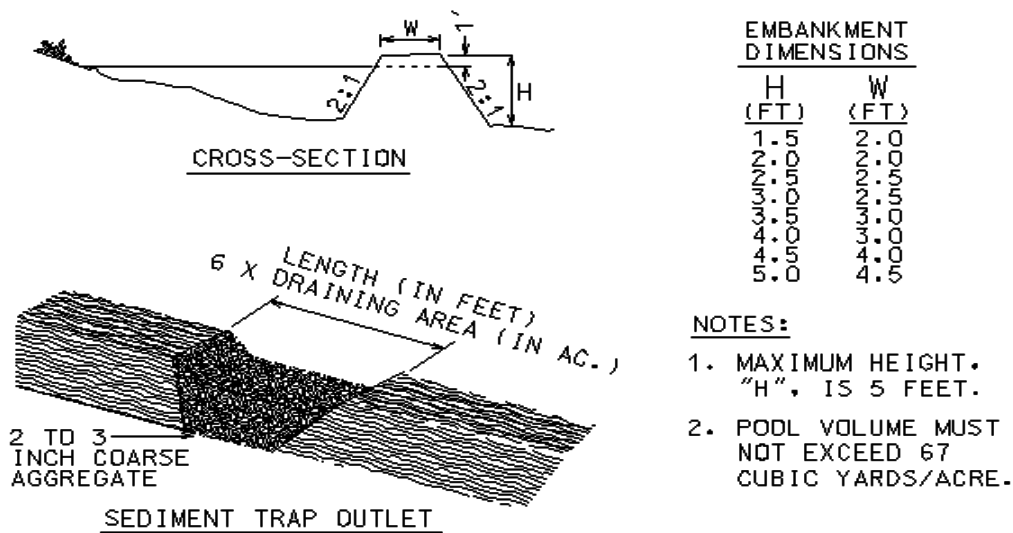


Figure 2 (Sediment Structure)

D. Check Dams

1. Check dams shall be utilized to retard stream flow or restrict stream flow within the channel. Check dams can be constructed of stone.
 - a. All check dams shall be keyed into the sides and bottom of the channel. The contractor shall see the design plans for further information regarding installation and placement.

E. Check Dam (Alternate): EnviroBerm Synthetic Porous Sediment Control Structures

1. All materials to be used in the construction of synthetic porous sediment control structures shall meet the following specifications:

Synthetic Porous Sediment Control Structures:

Polymer:	UV Resistant High Density Polyethylene	
Size:	10 in high x 43 in long with a 2 in lip	
Single Rib Thickness:	Top: 5/32 in	Bottom: 5/32 in
Distance Between Ribs:	Top: 1/2 in	Bottom: 1/2 in
Apparent Opening Size (AOS):	US Sieve No.4 (Average Value)	
Percent Open Area:	30% (Average Value)	
Weight:	3.70 lb/yd ²	
Tensile Strength:	MD = 1800 lb/ft	TD = 500lb/ft
Tensile Strength Method:	ASTM D4595	
Velocity Reductions: *	10% to 74%	
Kinetic Energy Reduction: *	40% to 85%	

* Based on test results with various velocities and volumes:

T. Blench Hydraulics Laboratory, University of Alberta, Department of Civil and Environmental Engineering

<u>"M" Pins:</u>	<u>Regular:</u>	<u>Heavy Duty:</u>
Size:	3 in x 27 in	3 in x 21 in
Product:	Deformed D 3.5 Rod	Deformed D 4.5 Rod
Diameter:	.211 in	.240 in
Tensile Strength:	80000 psi	80000 psi
Grade:	C1008	C1008

Erosion Matting:

(AS SPECIFIED ON PLANS)

2. The Contractor shall construct synthetic porous sediment control structures at the locations and spacings as shown on the Plans. When required, additional structures shall be constructed as directed by the Owner.
3. Synthetic Porous Sediment Control Structures shall be of the type specified, constructed to the specifications shown on the drawings and as directed by the Owner. The Control Structures shall be placed perpendicular to the direction of water flow.
4. Porous Sediment Control Structures shall be constructed of two panels of high density, extruded UV resistant polyethylene pinned down with "M" pins in a single row complete with a biodegradable or permanent erosion control matting on the underside.
5. Each synthetic porous sediment control structure shall comprise a central portion forming a horizontal porous weir and two inclined portions which extend from the weir up the embankment and the backslope as shown on the drawing. The structures shall have the capability to shape to the contour of the channel bottom and side slopes to ensure firm contact between the entire bottoms of the structures and the soil. No breach shall occur along the integrity of the structure.
6. The anchoring system shall be able to endure minimum flow rates as set by the Owner. To validate specified flow rates; the Contractor shall supply a certificate from the supplier of actual field test results. The performance of the Porous Sediment Control Structures integrity shall endure freeze thaw cycles without failure; as per specified geographical areas.
7. Installation (See Figure 3)
 1. Panel Spacing: As specified on plans
 2. Starting at the top of the channel, mark each sediment control structure site with a stake.

3. Seed the soil area where structures are to be placed. Lay an erosion mat strip across ditch at each sediment structure site. The mat should extend up the sideslope and backslope the length of the panel.
4. Trench in the upstream edge of the mat about 4 inches deep. Staple the mat in the trench with 8 inch staples, placed about 12 inches apart. Manually backfill and compact the trench.
5. Staple the other edge of the mat to the ground with 8 inch staples, approx. 12 inches apart.
6. Starting at either the toe of the backslope or sideslope, place the porous panel strips on the bottom of the ditch along the center of the erosion mat. Place the spacing guide along the ground between the panels. The bottom panel lips should face outward.
7. Put an M pin in the installation tool, place the pin over the panels about half way down the strips, (in the middle), so a pin leg is against the outside of each panel, and drive the pin through the panel lips into the ground. The panels should be wedged into the M pins at the top and ensure firm contact between the entire bottoms of the Porous Sediment Control Structure and the soil. Pull the installation tool off the installed pin.
8. From the installed panel, extend a second pair of panels, overlapping the first panels at the toe a minimum of 2 inches up the side or backslope. Place the next 'M' pin over both sets of panels at the toe, and drive the pin into the ground with the installation tool and ensure firm contact between the entire bottoms of the Porous Sediment Control Structure and the soil.
9. Install the next pins in the middle and at the upper end of the second set of panels, again using both the spacing strip and the driving tool. Third panel set is placed, extending across the ditch from the first installed panels, overlapped a minimum of 2 inches and the next pin placed at the overlap.
10. This sequence is continued until the sediment structure is installed and firm contact between the entire bottoms of the Porous Sediment Control Structure and the soil are established. The last panel installed is the one extending up the opposite slope from the starting panels. No breach shall occur along the integrity of the structure.
11. This sequence is continued until the sediment structure is installed and firm contact between the entire bottoms of the Porous Sediment Control Structure and the soil are established. The last panel installed is the one extending up the opposite slope from the starting panels. No breach shall occur along the integrity of the structure.

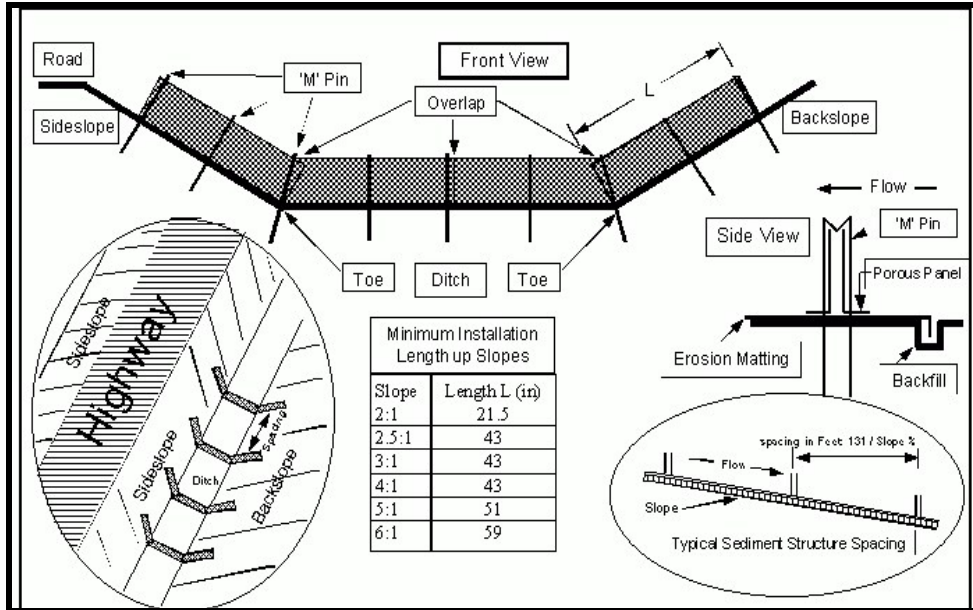


Figure 3 (EnviroBerm Porous Sediment Control Structure)

Maintenance:

Silt deposited in front of the sediment control structures shall be removed regularly and at no time shall it be allowed to build up to a height exceeding half the height of the structure.

- F. Temporary Seeding and Mulching: Seeding and mulching shall be performed in accordance with section 02485, Seeding.
- G. Baled Hay: Hay or straw bales shall be embedded in the ground 4 to 6 inches to prevent water flowing under them. The bales shall also be anchored securely to the ground by at least two wooden stakes driven through each bale into the ground. Bales can remain in place until they rot, or be removed after they have served their purpose, as determined by the Owner. The Contractor shall keep the bales in good condition by replacing broken or damaged bales immediately after damage occurs. Normal debris cleanout will be considered maintenance.
- H. Temporary Silt Fences
 - 1. Temporary silt fences shall be placed on the natural ground, at the bottom of fill slopes, in ditches, or other areas where siltation is a problem.
 - 2. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, and polyester or ethylene yarn and shall be certified by the manufacturer or supplier.
 - 3. Burlap shall be 10-ounce per square yard fabric.

4. Posts for silt fences shall be either 2-inch by 2-inch diameter wood or 1.33 pounds per linear foot steel with a minimum length of 4 feet. Steel posts shall have projections for fastening wire to them.
5. Stakes for filter barriers shall be 1" x 2" wood (preferred) or equivalent metal with minimum length of 3 feet.
6. Wire fence reinforcement for silt fences using standard strength filter cloth shall be a minimum of 42 inches in height, a minimum of 14 gauge and shall have a maximum mesh spacing of 6 inches.
7. The height of a filter barrier shall be a minimum of 24 inches and shall not exceed 26 inches.
8. The stakes shall be spaced a maximum of 3 feet apart at the barrier location and driven securely into the ground (minimum of 8 inches).
9. A trench shall be excavated approximately 4 inches wide and 4 inches deep along the line of stakes and upslope from the barrier.
10. The filter material shall be stapled to the wooden stakes, and 8 inches of the fabric shall be extended into the trench. Heavy duty wire staples at least ½ inch long shall be used. Filter material shall not be stapled to existing trees.
11. The trench shall be backfilled and the soil compacted over the filter material.
12. The Contractor shall be required to maintain the silt fence in a satisfactory condition for the duration of the project or until its removal is requested by the Owner. The silt accumulation at the fence may be left in place and seeded, removed, etc., as directed by the Owner. The silt fence becomes the property of the Contractor whenever the fence is removed.

I. Temporary Construction Entrance

1. Crushed stone shall be 2" to 3" (TDOT #1 or #2) with a minimum pad thickness of 6".
2. The width of the temporary construction entrance shall be 20 ft. for one-way traffic and 30 ft. for two-way traffic.
3. The geotextile filter fabric underlining must be placed the full length and width of the crushed stone pad.
4. If the action of the vehicle traveling over the crushed stone pad does not sufficiently remove the material, the tires shall be washed before entering onto public streets. A wash rack shall be incorporated into the crushed stone pad and be in compliance with all TDEC standards.

J. Temporary Inlet Protection

1. Crushed stone shall be ¾" to 3" (TDOT #3, #357, or #5) up to 2" below top of concrete block.
2. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so that the open ends face outward, not upward.

- K. Rip-Rap Apron: Rip-rap aprons shall be utilized to reduce stormwater velocity and dissipate the energy of flow leaving a storm drain before it empties into receiving channels, and to armor erodible materials
 - a. The contractor shall see the design plans for further information regarding installation and placement.
- L. Permanent Seeding and Mulching: Seeding and mulching shall be performed in accordance with section 02485, Seeding.

3.4 MAINTENANCE

- A. The temporary erosion control features installed by the Contractor shall be acceptably maintained by the Contractor until no longer needed or permanent erosion control methods are installed. The temporary erosion control materials shall be moved and become the property of the Contractor.
- B. The Contractor shall inspect the erosion control measures weekly and as required due to upcoming rain events and after recent rain events. The Contractor shall maintain all records of inspections and improvements as required.

3.5 EROSION CONTROL OUTSIDE PROJECT AREA

- A. Temporary pollution control shall include construction work outside the project area where such work is necessary as a result of construction such as borrow pit operations, haul roads, and equipment storage sites.

END OF SECTION

**SECTION 01570
WORK ZONE TRAFFIC CONTROL**

1. GENERAL

- 1.1 The Work to be performed shall consist of providing, installing, maintaining, relocating, and removing temporary traffic control devices and services as ordered by the traffic control plan (TCP) and as required for the control and protection of public traffic through the Project work zone.
- 1.2 Notification of the Work commence date and application for permission from the governing body having jurisdiction over the right-of-way is the responsibility of the Contractor.
- 1.3 The Work to be performed under this Section will conform to Part VI of the Manual on Uniform Traffic Control Devices (MUTCD) and shall be subject to local codes, policies, and regulations of the agency having jurisdiction over the area where the Work is performed.

2. PRODUCTS

- 2.1 All signage, channeling devices, arrow displays, lighting devices, and other traffic control devices shall conform to the design requirements contained in the MUTCD which specifically govern such features as size, contrast, colors, shape, composition, use of symbols, etc. Use of "homemade" or contractor-fabricated devices are prohibited.

3. EXECUTION

3.1 TRAFFIC CONTROL PLAN (TCP)

- A. The Contractor shall submit the TCP along with a request for approval noting the date of proposed construction and the duration to the agency having jurisdiction.
- B. The Contractor shall obtain any and all necessary permits required for performance and execution of the TCP in coordination with the appropriate agencies.
- C. The Contractor shall install and maintain temporary traffic control devices adjacent to and within the Project work zone in accordance with the approved TCP and the MUTCD. Installation of the traffic control devices shall proceed in accordance with MUTCD phasing and shall be performed prior to the start of construction operations.

3.2 TRAFFIC CONTROL DEVICES (TCD)

- A. Furnish and place Traffic Control Devices before the start of construction operations.
- B. Install only those Traffic Control Devices needed for each stage or phase of construction as required by the TCP and the MUTCD.
- C. Relocate temporary or permanent Traffic Control Devices as required by the phasing of the Work. Remove devices that no longer apply to the Work in progress. Temporarily cover signs when they are not applicable to current conditions.
- D. Immediately clean, service, or replace any Traffic Control Device that is defaced, damaged, or when its retro reflectivity is reduced by 50% due to fading, dirt, etc. Keep all temporary Traffic Control Devices clean and serviceable.
- E. If required by the work in progress, maintain Traffic Control Devices 24 hours a day with adequate barricades, lights, arrows, etc. to protect the public from traffic hazards and accidents.
- F. Use flares and/or lights during times of low visibility to delineate traffic lanes and to guide traffic.
- G. Remove all temporary Traffic Control Devices upon completion of the Work and repair all damage caused by their installation.

3.3 CONSTRUCTION PARKING CONTROL

- A. Control parking of construction personnel's vehicles and construction equipment to prevent interference with public traffic and public access to private drives, parking areas, sidewalks, residences, etc.
- B. Prevent parking on or adjacent to side streets or in non-designated areas. The Contractor at his expense will repair vehicle damage caused by the Contractor or his personnel to residential or private property.
- C. Schedule and coordinate delivery and off-loading of materials so as to not interfere with traffic outside of the Contractor's designated work zone or storage yard.

3.4 FLAGMEN

- A. When the TCP requires, provide flagmen or traffic control officers who are trained and equipped in accordance with the requirements of Part VI of the MUTCD.

- B. Flaggers shall use Type III or Type IV retro reflective Stop/Slow paddles. Use of flags is prohibited unless it is an emergency situation in low-speed, low-volume locations which can best be controlled by a single flagger.
- C. The flagger or traffic control officer shall wear a retro reflective vest at all times during traffic control operations.
- D. Flaggers shall maintain sight visibility of each other at all times during traffic control operations or shall communicate utilizing radio devices.

END OF SECTION

**SECTION 01600
MATERIAL AND EQUIPMENT**

1. GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Products.
- B. Transportation and Handling.
- C. Storage and Protection.
- D. Product Options.
- E. Products List.
- F. Substitutions.
- G. Systems Demonstration.

1.2 QUALITY ASSURANCE

A. Approval Required

- 1. The contract is based on the standards of quality established in the contract documents.
- 2. All products proposed for use, including those specified by required attributes and performance, shall require approval by the Owner before being incorporated into the work.
- 3. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved for this work by the Owner.

B. "Or Equal"

- 1. Where the phrase "or equal" or "or approved equal" occurs in the contract documents do not assume that materials, equipment, or methods will be approved as equal unless the item has been specifically approved for this work by the Owner.
- 2. The decision of the Owner shall be final.
- 3. See pertinent portions of the contract documents for additional information relating to substitutions.

1.3 PRODUCTS

- A. Products include material, equipment, and systems.
- B. Comply with specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a specification section shall be the same, and shall be interchangeable.

1.4 TRANSPORTATION AND HANDLING

- A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- C. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

1.5 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.
- B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- C. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.

1.6 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named.

- C. Products Specified by Naming Several Manufacturers: Products of named manufacturers meeting specifications: No options, no substitutions allowed.
- D. Products Specified by Naming Only One Manufacturer: No options, no substitutions allowed.

1.7 PRODUCTS LIST

- A. Submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

1.8 SUBSTITUTIONS

- A. Concurrent with submission of product list, the Owner will consider requests from Contractor for substitutions. Subsequently, substitutions will be considered only when a product becomes unavailable due to no fault of Contractor. Confirmation of unavailable products must be in writing and certified by the manufacturer that the product is no longer available.
- B. Submit separate request for each substitution. Document each request with complete data substantiating compliance of proposed substitution with contract documents.
- C. Request for substitution constitutes a representation that Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds, in all respects, specified product.
 - 2. Will provide the same warranty for substitution as for specified product.
 - 3. Will coordinate installation and make other changes which may be required for work to be complete in all respects.
 - 4. Waives claims for additional costs which may subsequently become apparent.
- D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals. Separate written request must be submitted for any proposed substitutions or deviation from the contract documents.
- E. Owner will determine acceptability of proposed substitution, and will notify Contractor of acceptance or rejection in writing within a reasonable time.
- F. Substitute products shall not be ordered or installed without written acceptance.
- G. Only one request for substitution will be considered for each product. When substitution is not accepted, provide specified product.
- H. Owner will determine acceptability of substitutions.

1.9 SUBMITTAL PROCEDURES

- A. Owner will review Contractor's requests for substitutions with reasonable promptness.
- B. Upon proper submission, Owner will notify Contractor, in writing, of decision to accept or reject requested substitution within 15 days.
- C. For accepted products, submit shop drawings, product data, and samples under provisions of Section 01302 - Submittals and Substitutions.

2. PRODUCTS

NOT USED

3. EXECUTION

NOT USED

END OF SECTION

**SECTION 01710
CLEANING**

1. GENERAL

1.1 DESCRIPTION

- A. Work Included: Throughout the construction period, maintain the site in a standard of cleanliness as described in this section.
- B. Related Work Described Elsewhere: In addition to standards described in this section, comply with all requirements for cleaning up as described in various other sections of these specifications.

1.2 QUALITY ASSURANCE

- A. Inspection: Conduct inspection daily, and more often if necessary, to verify that requirements for cleanliness are being met.
- B. Codes and Standards: In addition to the standards described in this section, comply with all pertinent requirements of government agencies having jurisdiction.

2. PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT

- A. Provide all required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

3. EXECUTION

3.1 PROGRESS CLEANING

- A. General:
 - 1. Retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials.
 - 2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for the construction of this work.
 - 3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
 - 4. Provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the ecology.

- B. Site:
 - 1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
 - 2. Weekly, and more often if necessary, inspect all arrangements of materials stored on the site. Restack, tidy, or otherwise service all arrangements to meet the requirements of paragraph 3.1.A.1, above.
 - 3. Maintain the site in a neat and orderly condition at all times.

3.2 FINAL CLEANING

- A. Definition: Except as otherwise specifically provided, "clean" (for the purpose of all paragraphs under paragraph 3.2 shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.
- B. General: Prior to the completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described under paragraph 3.1, above.
- C. Site: Unless otherwise specifically directed by the Owner, broom clean all paved areas on the site and all public paved areas directly adjacent to the site. Completely remove all resultant debris.
- D. Timing: Schedule final cleaning as approved by the Owner to accept a completely clean project.

END OF SECTION

**SECTION 01720
PROJECT RECORD DOCUMENTS**

1. GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Maintenance of Record Documents and Samples.
- B. Submittal of Record Documents and Samples.

1.2 RELATED REQUIREMENTS

- A. Section 01302 - Submittals and Substitutions: Shop drawings, product data, and samples.
- B. Individual Specifications Sections: Manufacturer's certificates and certificates of inspection.

1.3 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Maintain at the site for Owner one record copy of:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Reviewed shop drawings, product data, and samples.
 - 4. Field test records.
 - 5. Inspection certificates.
 - 6. Manufacturer's certificates.
- B. Maintain Record Documents in a clean, dry, and legible condition. Do not use Record Documents for construction purposes.
- C. Keep Record Documents and samples available for inspection by Owner.

1.4 RECORDING

- A. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- B. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction, including:
 - 1. The Contractor shall submit to the Superintendent for review five copies of shop drawings on all products to be supplied for the project.
 - 2. Two reviewed copies shall be retained by the Owner, and three shall be returned to the Contractor.

3. Resubmittals of shop drawings shall be required until the drawings are approved by the utility.
 4. Submittals shall include, but are not limited to, pipe, valves, fittings, meters, boxes, and hydrants.
 5. Any purchasing of materials prior to receiving approved shop drawings shall be at the Contractor's own risk.
 6. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 7. Field changes of dimension and detail.
 8. Changes made by modifications.
 9. Details not on original contract drawings.
 10. References to related shop drawings and modifications.
- C. Specifications: Legibly mark each item to record actual construction, including:
1. Manufacturer, trade name, and catalog number of each product actually installed, particularly optional items and substitute items.
 2. Changes made by addenda and modifications.

1.5 SUBMITTALS

- A. At Contract closeout, deliver Record Documents and samples to Owner. Record documents shall be in accordance with the requirements presented in the Developers Agreement.
- B. Transmit with cover letter in duplicate, listing:
1. Date.
 2. Project title and number.
 3. Contractor's name, address, and telephone number.
 4. Number and title of each Record Document.
 5. Signature of Contractor or authorized representative.

2. PRODUCTS

NOT USED

3. EXECUTION

NOT USED

END OF SECTION

**SECTION 02110
CLEARING AND GRUBBING**

1. GENERAL

- 1.1 This work consists of clearing, grubbing, removing, and disposing of all debris and of all vegetation, buildings, and foundations not removed by others that are within the designated construction areas. The work shall also include preserving and protecting from injury or defacement all vegetation and objects designated to remain.
- 1.2 The contractor shall work only in the areas designated on the plans. No vegetation shall be destroyed outside the limits of the work.

2. PRODUCTS

NOT USED

3. EXECUTION

- 3.1 The Contractor is solely responsible for the removal, hauling, and disposal of waste material. Completely dispose of all materials resulting from clearing and grubbing off the site, all at the Contractor's expense. The Owner shall not be liable for the improper disposal of waste material.
- 3.2 Secure in writing any approval from a property Owner desiring disposal of debris on their private property.

END OF SECTION

**SECTION 02201
EARTHWORK**

PART 1: GENERAL

1.01 DESCRIPTION OF WORK

- A. The extent of earthwork is shown on the drawings.
 - 1. Included is preparation of the subgrade for the water storage tank and fine grading the water tank site to the limits shown to the finished grade for the tank.
- B. Related Work Specified Elsewhere:
 - 1. Section 02110 - Clearing
 - 2. Section 02210 - Site Grading
 - 3. Section 02221 - Trenching, Backfilling and Compacting
 - 4. Section 02260 - Finish Grading

1.02 QUALITY ASSURANCE

- A. Codes and Standards: Perform earthwork in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Testing and Inspection Service: The Contractor will engage a testing and inspection service, to include testing soil materials proposed for use in the work and field facilities for quality control testing during earthwork operations.
 - 1. Soil survey for satisfactory soil materials and samples of soil materials shall be furnished to the testing service by the Contractor.
 - 2. All test reports must be signed by a licensed engineer.

1.03 JOB CONDITIONS

- A. Site Information: Any data indicating subsurface conditions is not intended as representations or warranties of the accuracy or continuity between soil borings. It is expressly understood that the Owner will not be responsible for interpretations or conclusions drawn therefrom by the Contractor.
 - 1. Test borings and other exploratory operations as necessary shall be made by the Contractor at no cost to the Owner.

- B. Existing Utilities: Locate existing underground utilities in the areas of work before starting earthwork operations. Where utilities are to remain in place, provide adequate means of protection during earthwork operations.
 - 1. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the utility owner immediately for directions. Cooperate with the Owner, and public and private utility companies in keeping their respective services and facilities in operation. Repair damaged utilities to the satisfaction of the utility owner.
 - 2. Do not interrupt existing utilities serving facilities occupied and used by the Owner or others, except when permitted in writing by the Engineer and then only after acceptable temporary utility services have been provided.
 - 3. Demolish and completely remove from the site underground utilities indicated to be removed. Coordinate with local utility companies for shut-off of services if lines are active.
- C. Use of Explosives: The use of explosives is permitted. Care should be taken to minimize neighborhood interruption.
- D. Temporary Protection: Barricade open excavations made as a part of earthwork operations and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction.
 - 1. Protect structures, utilities, pavements and other facilities from damages caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

PART 2: PRODUCTS

2.01 SOIL MATERIALS

- A. Backfill and Fill Materials: Soil materials for use as backfill and fill shall be free of rock or gravel larger than 2-inches in any dimension, and any debris, waste, vegetable and other deleterious matter.
- B. Subbase Material: Properly graded mixture of natural and crushed gravel, crushed stone, crushed slag, natural or processed sand that will readily compact to the required density.
 - 1. Use excavated or borrow material that has been sampled, tested and certified as satisfactory soil material.
- C. Borrow: The contractor will provide suitable borrow for fills as required, at his expense.

PART 3: EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which earthwork is to be performed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

3.01 EXCAVATION

- A. Excavation consists of the cut, fill, borrow and the removal of disposal of materials encountered when establishing the required grade elevations.
 - 1. Where it is necessary to cut roots projecting into an excavation or to trim branches for equipment clearance, all severed root ends or cuts to branches over ½-inch diameter shall be treated with an asphalt base pruning paint. Backfill over exposed roots as soon as possible.
- B. Excavation Classifications: The following classifications of excavation will be made when unanticipated rock excavation is encountered in the work.
 - 1. No separate payment item will be made for rock excavation.
 - 2. Earth excavation includes the removal and disposal of pavements and other obstructions visible on the ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in data on subsurface conditions, and all other materials encountered.
- C. Unauthorized excavation consists of removal of materials beyond indicated elevations without the specific direction of the Engineer. Replace unauthorized excavation by backfilling and compacting as specified for authorized excavations of the same classification, unless otherwise directed by the Engineer.
- D. Additional Excavation: When excavation has reached required subgrade elevations, notify the Engineer who will make an inspection of conditions.
 - 1. If unsuitable materials are encountered at the required subgrade elevations, carry excavations deeper and replace the excavated material as directed by the Engineer.
 - 2. Removal of unsuitable material and its replacement as directed will not receive additional payment but will be a part of the Lump Sum price for the entire Contract.
- E. Dewatering: Prevent surface water and subsurface or groundwater from flowing into excavations and flooding the project site and surrounding area.

1. Do not allow water to accumulate in excavations. Remove water from excavations to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey the water away from the site.
 2. Convey water removed from excavations and rainwater to collecting or run-off areas. Do not use trench excavations for site utilities as temporary drainage ditches.
- F. Material Storage: Stockpile excavated materials classified as satisfactory soil material where directed, until required for fill. Place, grade, and shape stockpiles for proper drainage.
1. Dispose of excess unsatisfactory soil material, trash and debris, as specified.
- G. Excavation for Access Road and the Water Tank: Cut the site to comply with elevations and grades as shown.
- H. Excavation for Trenches: Dig trenches to the uniform width required for the particular item to be installed, sufficiently wide to provide ample working room. Excavate trenches to the depth indicated or required. Carry the depth of trenches for piping to establish the indicated flow lines and invert elevations.
1. Where rock is encountered, carry the excavation 6-inches below the required elevation and backfill with a 6-inch layer of crushed stone or gravel prior to installing pipe.
 2. Grade bottoms of trenches as indicated, notching under pipe bells to allow solid bedding for the entire body of the pipe.
 3. Do not backfill trenches until tests and inspections have been made and backfilling is authorized by the Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.

3.03 BACKFILL AND FILL

- A. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break-up sloped surfaces steeper than one vertical to four horizontal so that fill material will bond with existing surface.
1. When the existing ground surface has a density less than that specified under "Compaction" for the particular area classification, break-up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to

the required depth and percentage of maximum density.

- B. Placement and Compaction: Place backfill and borrow materials in layers not more than 8-inches in loose depth for material compacted by heavy compaction equipment, and not more than 4-inches loose depth for material compacted by hand-operated equipment.
 - 1. Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content of the soil material. Compact each layer to the required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
 - a. Backfill excavations as promptly as the work permits, but not until completion of inspection, testing, approval, and recording location of underground utilities, as required.

3.04 COMPACTION

- A. General: Control soil compaction during construction, providing the minimum percentage of density specified for each area classification.
 - 1. Percentage of Maximum Density Requirements:
 - a. Tank Access Road, Slabs, Buildings and Water Tank Area: Compact top 12-inches of subgrade and each layer of backfill or fill material at 98% maximum density (optimum moisture). The water tank area shall be the tank foundation area and out 18 feet from the edge of the tank foundation.
 - b. Grass/Lawn Areas: Compact each layer of backfill or fill material at 85% maximum density (optimum moisture). The grass/lawn areas will be anywhere disturbed during construction outside that mentioned in 1.a above.
- B. Moisture Control: Where the subgrade or layer of soil materials must be moisture conditioned before compaction, uniformly apply water to the surface of subgrade, or layer of soil material, to prevent free water appearing on the surface during or subsequent to compaction operations. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
 - 1. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing, until the moisture content is reduced to a satisfactory value.

3.05 FIELD QUALITY CONTROL

- A. Quality Control Testing During Construction: Testing service must inspect and approve subgrades and fill layers before further construction work is performed thereon.
 - 1. Secure representative samples of the fill material and determine the Standard Density and required moisture content to be maintained by the Moisture-Density Relation Test ASTM D-1557-78.
 - 2. Make in-place soil density tests during compaction operations in accordance with ASTM D-1556-64 (1974).
 - a. Make at least one field density test of the subgrade for every 2,000 sq. ft. of area, but in no case less than three tests.
 - b. In each compacted fill layer, make one field density test for every 2,000 sq. ft. of area, but in no case less than three tests.
 - 3. If, in the opinion of the Engineer/Architect, based on reports of the testing service and inspection, the subgrade or fills which have been placed are below the specified density, additional compaction and testing will be required until satisfactory results are obtained.
 - a. The results of density tests of soil-in-place will be considered satisfactory if the average of any four consecutive density tests which may be selected are in each instance equal to or greater than the specified density, and if not more than one density test out of five has a value more than 2% below the required density.

3.06 MAINTENANCE

- A. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, re-shape, and compact to the required density prior to further construction.

3.07 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Remove excess excavated material, trash, debris and waste materials, and dispose of it off the Owner's property.

PART 4: MEASUREMENT AND PAYMENT

- 4.01 Measurement and payment will be made for this item under the lump sum price for a water storage tank and earthwork, site grading and finish grading or a water booster station.

END OF SECTION

**SECTION 02221
UNCLASSIFIED EXCAVATION FOR UTILITIES**

1. GENERAL

- 1.1 The work called for by this section shall consist of clearing and grubbing, loosening, loading, removing, and disposing of, in the specified manner, all wet and dry materials (including rock) encountered that must be removed for construction purposes; furnishing, placing, and maintaining all sheeting, shoring, bracing, and timbering necessary for the proper protection and safety of the work, the workmen, the public, and adjacent property and improvements; the dewatering of trenches and other excavations; the preparation of satisfactory pipe beds; the backfilling and tamping of trenches, foundations, and other structures; the preparation of fills and embankments; the removal of unsuitable material from outside the normal limits of excavation and, where ordered by the Owner, their replacement with suitable materials; and all other grading or excavation work incidental to or necessary for the work. This work shall be performed as specified below.

2. PRODUCTS

NOT USED

3. EXECUTION

3.1 PREPARATION OF THE SITE

- A. Before starting construction, remove from the work site all vegetable growth (except as hereinafter excluded), debris, and/or other objectionable matter as well as any buildings and/or other structures that the drawings and/or the Owner specifically indicate are to be removed. Dispose of this refuse material in a manner acceptable to the Owner.
- B. In certain areas it may be desirable for existing trees, shrubs, or other vegetation on the site to be preserved for the permanent landscape. Such vegetation may be shown on the drawings, specifically listed in the specifications, marked on the site, or identified by the Owner. In no case damage or remove such growth without written permission from the Owner.
- C. If the area to be excavated is occupied by trees, brush, or other vegetable growth, clear such growth and grub the excavated area, and remove all large roots to a depth of not less than 2 feet below the bottom of the proposed construction. Dispose of the growth removed in a manner satisfactory to the Owner. Fill all holes or cavities created during this work that extend below the subgrade elevation with suitable material and compact to the same density as the surrounding material.

- D. Trees, cultivated shrubs, etc., that are situated within public rights-of-way and/or construction easements through private property but not directly within the excavation area shall remain undisturbed unless it is necessary to remove them so that the work can be performed safely and unless their removal is specifically ordered by the Owner. Take special precautions to protect and preserve such growth throughout all stages of the construction.
- E. Preparation of the site shall be considered an integral part of the excavation and one for which no separate payment shall be allowed.

3.2 UNSUITABLE MATERIALS

- A. Wherever muck, quicksand, soft clay, swampy ground, or other material unsuitable for foundations, subgrade, or backfilling is encountered, remove it and continue excavation until suitable material is encountered. The material removed shall be disposed of in the manner described below. Then refill the areas excavated for this reason with 1- to 2-inches crushed stone up to the level of the lines, grades, and/or cross sections shown on the drawings. The top 6 inches of this refill shall be Class A, Grade D aggregate crushed stone for bedding.

3.3 ROCKS AND BOULDERS

- A. Should rock be encountered in the excavation, remove it by blasting or otherwise. Where blasts are made, cover the excavation with enough excavation material and/or timber or steel matting to prevent danger to life and property. The Contractor shall secure, at his own expense, all permits required by law for blasting operations and the additional hazard insurance required. Observe all applicable laws and ordinances pertaining to blasting operations.
- B. Excavate rock over the horizontal limits of excavation and to a depth of not less than 6 inches below the outside bottom of pipe up to 30 inches in diameter and not less than 12 inches below the outside bottom of larger pipes if rock extends to such depth. Then backfill the space below grade with Class A, Grade D aggregate or other approved material, tamp to the proper grade, and make ready for construction. For monolithic concrete sewers or culverts and for structures, excavate rock to the outside bottom of the structure or sewer.

3.4 DISPOSAL OF MATERIALS

- A. Whenever practicable, all materials removed by excavation that are suitable for backfilling pipe trenches or for other purposes shown on the drawings or directed by the Owner shall be used for these purposes. Any materials not so used shall be considered waste materials and disposed of at the Contractor's expense.

- B. Waste materials may be deposited in spoil areas at locations approved by the Owner. Do not leave in unsightly piles but instead spread in uniform layers, neatly level, and shape to drain. Seed as specified in Section 02485 - Seeding.
- C. Once any part of the work is completed, properly dispose of all surplus or unused materials (including waste materials) left within the construction limits of that work. Leave the surface of the work in a neat, workmanlike condition, as described below.
- D. The disposal of waste materials shall be considered an integral part of the excavation work and one for which no separate payment shall be allowed.

3.5 EXCAVATION FOR TRENCHES, MANHOLES, AND STRUCTURES

- A. Unclassified excavation for pipelines shall consist of the excavation necessary for the construction of water, sewer, and other pipes and their appurtenances (including manholes, inlets, outlets, headwalls, collars, concrete saddles, and pipe protection) that are called for by the drawings. It shall include clearing and grubbing where necessary, backfilling and tamping pipe trenches and around structures, and disposing of waste materials; all of which shall conform to the applicable provisions set forth elsewhere in these specifications.
- B. The Contractor may, if he chooses, use a motor powered trenching machine. If he does; however, he shall be fully responsible for the preservation or repair of existing utilities.
- C. Unless the construction of lines by tunneling, jacking, or boring is called for by the drawings or specifically authorized by the Owner, make excavation for pipelines in open cut and true to the lines and grades shown on the drawings or established by the Owner on the ground. Cut the banks of trenches between vertical parallel planes equidistant from the pipe centerline. The horizontal distance between the vertical planes (or, if sheeting is used, between the inside faces of that sheeting) shall vary with the size of the pipe to be installed, but shall not be more than the distance determined by the following formula: $\frac{4}{3}d + 15$ inches, where "d" represents the internal diameter of the pipe in inches. When approved in writing by the Owner, the banks of trenches from the ground surface down to a depth not closer than 1 foot above the top of the pipe may be excavated to nonvertical and nonparallel planes, provided the excavation below that depth is made with vertical and parallel sides equidistant from the pipe centerline in accordance with the formula given above. Any cut made in excess of the formula $\frac{4}{3}d + 15$ inches shall be at the expense of the Contractor and may be cause for the Owner to require that stronger pipe and/or a higher class of bedding be used at no cost to the Owner.
- D. Shape the bottom of all trenches to provide uniform bearing for the bottom of the pipe barrel.

- E. Excavate bell holes for bell and spigot pipe at proper intervals so that the barrel of the pipe will rest for its entire length upon the bottom of the trench. Bell holes shall be large enough to permit proper jointing of the pipe. Do not excavate bell holes more than two joints ahead of pipe laying.
- F. Excavation for manholes, inlets, and other incidental structures shall not be greater in horizontal area than that required to allow a 2-foot clearance between the outer surface of the structure and the walls of the adjacent excavation or of the sheeting used to protect it. The bottom of the excavation shall be true to the required shape and elevation shown on the drawings. No earth backfilling will be permitted under manholes, inlets, headwalls, or similar structures. Should the Contractor excavate below the elevations shown or specified, he shall, at his own expense, fill the void with either concrete or granular material approved by the Owner.
- G. Do not excavate pipe trenches more than 200 feet ahead of the pipe laying. Perform all work so as to cause the least possible inconvenience to the public. Construct temporary bridges or crossings when and where the Owner deems necessary to maintain vehicular or pedestrian traffic.
- H. In all cases where materials are deposited along open trenches, place them so that in the event of rain or surcharge loading from such deposits no damage will result to the work and/or to adjacent property.
- I. Excavation for manholes and other structures may be performed with nonvertical banks except beneath pavements or adjoining existing improvements. Do not permit the horizontal area of the excavation to exceed that required to allow a 2-foot clearance between the outer surface of the structure and the banks of the excavation or the sheeting used to protect the embankments. The bottom of the excavation shall be true to the required shape and elevation shown on the drawings.
- J. The Contractor shall be responsible for all safety issues relating to the trenching operations including those concerning the public and passerby. All excavation shall be performed in accordance with any and all applicable safety laws and regulations. The Utility and Owner assume NO responsibility of any sort for acts of the Contractor.
- K. The requirements of the local governing body and the Tennessee State Highway Department shall apply regarding the length of open trench of water line that may be left open overnight along streets and roads.

3.6 DEWATERING OF EXCAVATION

- A. Provide and keep in operation enough suitable pumping equipment whenever necessary or whenever directed to do so by the Owner. Give special attention to excavations for those structures that, prior to proper backfilling, are subject to flotation from hydrostatic uplift.
- B. All water pumped or drained from the work shall be disposed of in a manner satisfactory to the Owner without damage to adjacent property or other areas.
- C. If necessary, due to the volume of water containing sediment, or due to the location of pumping activities, construct a sediment trap (structure) to pump ground water into until sediment is no longer being removed with the water. Sediment shall not be discharged to the waters of the State. The pump shall remain on the job site at all times during construction.

3.7 BORROW EXCAVATION

- A. Whenever the backfill of excavated areas or the placement of embankments requires more material than is available from authorized excavations or whenever the backfill material from such excavations is unsuitable, then obtain additional material from other sources. This may require the opening of borrow pits at points accessible to the work. In such cases, make suitable arrangements with the property owner and pay all incidental costs, including any royalties, for the use of the borrowed material. Before a borrow pit is opened, the quality and suitability of its material shall be approved by the Owner. All state and local regulation concerning borrow pits, drainage, and erosion control shall be strictly followed.
- B. Excavate borrow pits in such a way that the remaining surfaces and slopes are reasonably smooth and that adequate drainage is provided over the entire area. Construct drainage ditches wherever necessary to provide outlets for water to the nearest natural channel, thus preventing the formation of pools in the pit area. Leave the sides of borrow pit cuts at a maximum slope of 2:1 unless otherwise directed by the Owner.
- C. Properly clear and grub borrow pits. Remove all objectionable matter from the borrow pit material before placing it in the backfill.
- D. The taking of materials from borrow pits for use in the construction of backfill, fills, or embankments shall be considered an incidental part of the work. No separate payment shall be made for this.

3.8 BACKFILLING

- A. Begin backfilling after the line construction is completed and then inspected and approved by the Owner. On each side of the line, from the bottom of barrel to 1 foot above the top of the pipe, the backfill material shall consist either of fine, loose earth like sandy soil or loam or of granular material that is free from clods, vegetable matter, debris, stone, and/or other objectionable materials and that has a size of no more than 2 inches. Place this backfill simultaneously on either side of the pipe in even layers that before compaction are no more than 6-inches deep. Thoroughly and completely tamp each layer into place before placing additional layers. When shown on the drawings, this backfill shall, at locations beneath concrete and asphalt driveways, roadways, sidewalks, parking areas, etc. or closely adjacent to pavement, consist of Class A, Grade D aggregate. Use of aggregate backfill shall be at the direction of the Owner.
- B. From 1 foot above the pipe upward, the backfill material may contain broken stones that make up approximately 1/2 of the backfill's total volume. However, if this type of backfill is used, there must be enough spalls and earth materials to fill all voids completely. The maximum dimension of individual stones in such backfill shall not exceed 6 inches, and the backfill material shall be placed and spread in even layers not more than 12 inches deep. At locations beneath or closely adjacent to pavement or at locations of improvements subject to damage by displacement, tamp and thoroughly compact the backfill in layers that, before compaction, are 6 inches deep. In other areas, the backfill for the upper portion of the trenches may be placed without tamping but shall be compacted to a density equivalent to that of adjacent earth material as determined by laboratory tests. Use special care to prevent the operation of backfilling equipment from causing any damage to the pipe.
- C. If earth material for backfill is, in the opinion of the Owner, too dry to allow thorough compaction, then add enough water so that the backfill can be properly compacted. Do not place earth material that the Owner considers too wet or otherwise unsuitable.
- D. Wherever excavation has been made within easements across private property, the top 1 foot of backfill material shall consist of fine loose earth free from large clods, vegetable matter, debris, stone, and/or other objectionable materials. Top soil shall be placed a minimum of 6 inches on top of this backfill material to final contours.
- E. Wherever trenches have been cut across or along existing pavement, temporarily pave the backfill of such trenches by placing Class A, Grade D crushed stone as the top 12 inches of the backfill. Maintain this temporary pavement either until the permanent pavement is restored or until the project is accepted by the Owner. On heavy-traveled roadways or as directed by the Owner, cold mix or

leveling course binder 3 inches thick shall be installed and maintained until permanent pavement is installed.

- F. Conduct backfilling around manholes, inlets, outfalls, and/or structures in the same manner as specified above for pipelines except that even greater care is necessary to prevent damage to the utility structure.
- G. Wherever pipes have diameters of 12 inches or less, do not use power-operated tampers to tamp that portion of the backfill around the pipe within 1 foot above the pipe.
- H. Perform backfilling so as not to disturb or injure any pipe and/or structure against which the backfill is being placed. If any pipe or structure is damaged and/or displaced during backfilling, open up the backfill and make whatever repairs are necessary, whenever directed to do so by the Owner.
- I. Backfilling and clean-up operations shall closely follow pipe laying. Failure to comply with this provision will result in the Owner's requiring that the Contractor's other activities be suspended until backfilling and clean-up operations catch up with pipe laying.
- J. Compaction Requirements: Under buildings and two times the depth of pipe beyond, and under roads and two times the depth beyond the shoulder, compact to 95-percent maximum density in accordance with ASTM D698. In all other locations, compact to 90-percent maximum density.
- K. Before final acceptance, the Contractor shall be required to level off all trenches where backfill material has been piled up, or to bring the trench up to the level of the surrounding street, roadway, or terrain. The Contractor will be required to remove from the streets, roadways, and private property all excess earth or other materials.

3.9 MAINTENANCE

- A. Seed and maintain in good condition all excavated areas, trenches, fills, embankments, and channels until final acceptance by the Owner.
- B. Maintain trench backfill at the approximate level of the original ground surface by periodically adding backfill material wherever necessary and whenever directed to do so by the Owner. Continue such maintenance until final acceptance of the project or until the Owner issues a written release.

3.10 SLOPES

- A. Neatly trim all open cut slopes and finish to conform either with the slope lines shown on the drawings or the directions of the Owner. Leave the finished surfaces of bottom and sides in reasonably smooth and uniform planes like those normally obtainable with hand tools, though the Contractor will not be required to use hand methods if he is able to obtain the required degree of evenness with mechanical equipment. Conduct grading operations so that material is not removed or loosened beyond the required slope.

3.11 SHORING, SHEETING, AND BRACING OF EXCAVATION

- A. Where unstable materials are encountered or as required by law or Government regulations, such as OSHA, the sides of the trench or excavation shall be supported by substantial sheeting, bracing, and shoring, or the sides sloped to the angle of repose. Adequate and proper shoring of all excavation shall be the entire responsibility of the Contractor.
- B. Foundations, adjacent to where the excavation is to be made below the depth of the foundation, shall be supported by shoring, bracing, or underpinning of a temporary or a permanent nature as may be required to assure the integrity of the structure. The Contractor will be held strictly responsible for any damage to adjoining foundations or structures.
- C. No timber sheeting less than two inches in thickness and timber bracing cross bracing of struts less than six inches in thickness will be acceptable.
- D. Solid sheeting will be required for wet or unstable material. It shall consist of continuous vertical sheet piling of timber two inches thick or of steel with suitable shores and braces. All sheeting to be left in place shall be two inch thick timber.
- E. Care shall be taken to avoid excessive backfill loads on the completed pipelines and the requirements that the width of the ditch at the level of the crown of the pipe not exceed that specified herein.
- F. Trench sheeting shall not be removed until sufficient backfill has been placed to protect the pipe.
- G. All sheeting, planking, timbering, bracing, and bridging shall be placed, renewed, and maintained as long as necessary.

END OF SECTION

**SECTION 02223
ROCK EXCAVATION FOR UTILITIES**

1. GENERAL

1.1 This work covered by this section shall consist of the removal of all rock materials (as defined herein) that must be removed from their original beds so that construction can be performed as indicated by the drawings or by these specifications. It shall include the drilling and blasting incidental to excavation and the disposal of the excavated materials as specified below.

1.2 Refer to other sections for work related to that discussed in this section.

1.3 DESCRIPTION OF ROCK EXCAVATION

A. Rock excavation shall consist of the removal of all sound, solid rock which is in its original position in ledges, bedded deposits, or unstratified masses and which is of such hardness and texture that, in the opinion of the Owner, it cannot be loosed or broken down and removed without drilling and blasting.

B. In addition, if any boulders, stones, or pieces of masonry with a volume of ½ cubic yard or more are encountered within the limits of excavation, their removal shall be considered as rock excavation, but shall be paid as a part of lump sum construction for the project.

C. The removal of all other materials, however, shall be classified as common excavation and subject to the provisions set forth in Section 02221, Unclassified Excavation for Utilities. For instance, hard pan, small boulders with a volume of less than ½ cubic yard, chert, clay, soft shale, soft and disintegrated rock, and similar material shall not be considered as rock, although the Contractor may elect to excavate them by drilling and blasting.

2. PRODUCTS

NOT USED

3. EXECUTION

3.1 Excavate rock in trenches over the horizontal limits of excavation and to a depth of not less than 6 inches below where the bottom of pipelines will be. Where pipelines are to be constructed on concrete cradles, excavate rock to the bottom of the cradles, then backfill the space below grade for pipelines with fine earth or other approved material, and tamp to the proper grade and make ready for construction. For structures, excavate rock to the outside bottom of the structure.

3.2 Conduct drilling and blasting with due respect for the safety of persons and property in the vicinity and in strict conformance with all ordinances and regulations governing blasting and use of explosives. Conduct rock excavation near existing pipe or other structures with the utmost care

so as to avoid damage. Damage to other structures and properties shall be promptly repaired by the Contractor at his own expense. Rock excavation shall be subject to all applicable provisions specified in Section 02221, Unclassified Excavation for Utilities, including those concerning site preparation; the disposal of materials; slopes; compacting and tamping; sheeting, shoring, and bracing; and pipeline excavation.

3.3 At the location of tees or laterals, blast a minimum of 6 linear feet of ditch line beyond the end of the lateral and in the direction and to the appropriate grade of the future lateral as indicated by the Owner, but do not excavate the material.

3.4 DISPOSAL OF MATERIALS

- A. Whenever practicable, use all suitable material removed by excavation to backfill pipe trenches (i.e., material whose maximum size meets the requirements for backfilling specified in Section 02221, Unclassified Excavation for Utilities), or use it for other purposes shown on the drawings or as directed by the Owner. Any material not used shall be considered waste material and disposed of by the Contractor as specified below.
- B. Waste material may be deposited in spoil areas at locations approved by the Owner or removed from the site when no suitable areas are available. Do not leave waste materials in unsightly piles, but instead spread in reasonably uniform layers.
- C. Once any part of the work is completed, properly dispose of all surplus or unused materials (including waste materials) left within the construction limits of the work. Leave the surface of the work in a neat and workmanlike condition.

END OF SECTION

**SECTION 02235
BORE AND/OR JACK AND OPEN CUT AND CASE CROSSINGS**

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Work under this section includes the installation of the casing and carrier pipe where indicated as special highway crossing, stream or railroad crossings on the drawings.

1.02 RELATED WORK

- A. Section 02221 - Trenching, Backfilling and Compacting.
- B. Section 02713 - Water Lines

1.03 PERMITS

- A. The Owner shall obtain the crossing permits required by the Tennessee Department of Transportation for construction of the crossing.
- B. All work within the highway right-of-way shall be in accordance with the agency's requirements, including construction materials and methods, clean-up, and all additional bonds and insurance coverage required.

1.04 REFERENCES

- A. ASTM A 53 - Pipe, Steel, Black and Hot dipped, Zinc Coated Welded and Seamless.
- B. ASTM A 139 - Welded Steel Pipe

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Casing Pipe: HDPE DR 11 IPS PE 3408/4710 or ASTM A 252 Grade 2 or equal, welded, steel and minimum yield strength of 35,000 psi. Pipe shall not be used or reject pipe.

1. Size & Thickness

Carrier Pipe Size Nominal I.D. <u>Inches</u>	Minimum Casing Pipe Size Nominal I.D. <u>Inches</u>	Minimum Casing Wall Th. <u>Inches</u>
4	10	0.250
6	14	0.312
8	16	0.375
10	20	0.375
12	22	0.406
14	24	0.406

16	30	0.469
20	36	0.500
24	36	0.500
30	36	0.500
36	42	0.500

Larger size casing shall be used if needed by Contractor to facilitate construction.

- B. Carrier Pipe: Ductile iron (Restrained Joint) or HDPE (DR 11) as noted.
- C. Carrier Pipe Bracing: Skids shall either extend the full length of pipe less the bell and spigot portion or have three or more sets equally spaced. Skids shall be manufactured integral band and spacers. Manufactured units shall be comprised of stainless-steel spacers. For both types, the number of spacers/skids that are equally spaced around the carrier pipe shall be 4 for up to 12 inches in dia. and 6 or more for greater than 12 inches in dia. All bolts, nuts, washers, straps and any other fastener shall be T-304 stainless steel. Spacers shall be Advance Products Model SSI with Model AC end seals or spacers and end seals approved by the Engineer.

PART 3 - EXECUTION

3.01 PERFORMANCE

- A. Construct crossings within rights-of-ways as required by permits and these specifications. Open pits and trenches shall conform to Section 02221 from the initial opening to placing backfill and cleanup.
- B. The pipe may be installed by open cutting a pipe as a casing and inserting a carrier pipe. Approval in writing by the Engineer shall be obtained in advance of starting the work. The casing pipe shall be carefully inspected to ensure that the carrier pipe can be properly placed.
- C. The assembled and joined pipe shall be placed only by such method that will keep the joint in compression. Any method that could cause the joined pipe to separate while being placed will not be permitted. Skids shall be provided for the carrier pipe during installation into the casing pipe. Skids shall be of sufficient thickness to allow for clearance between the bells of the carrier pipe and the casing bottom.
- D. Seals shall be provided at the ends of the casing pipe subsequent to completion of the carrier pipe testing. Seals shall be watertight and composed of non-shrink grout or sealed neoprene rubber sheets with 1/2-inch-wide stainless steel bands.

END OF SECTION

**SECTION 02240
DEWATERING**

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Water control plan.
2. Well permits.
3. Discharge permits.
4. Water Level Elevations Observed in Observation Wells: Submit same day measured.
5. Settlement Benchmark Elevations: Submit weekly record.
6. Inflow Measurements: Submit weekly record.

1.02 WATER CONTROL PLAN

A. As a minimum, include:

1. Descriptions of proposed groundwater and surface water control facilities including, but not limited to, equipment; methods; standby equipment and power supply, **means of measuring inflow to excavations**, pollution control facilities, discharge locations to be utilized, and provisions for immediate temporary water supply as required by this section.
2. Drawings showing locations, dimensions, and relationships of elements of each system.
3. Design calculations demonstrating adequacy of proposed dewatering systems and components.

- B. If system is modified during installation or operation revise or amend and resubmit Water Control Plan.

PART 2 PRODUCTS

- A. Not Applicable

PART 3 EXECUTION

3.01 GENERAL

- A. Continuously control water during course of construction, including weekends and holidays and during periods of work stoppages, and provide adequate backup systems to maintain control of water.

3.02 SURFACE WATER CONTROL

- A. See Section 01500, Construction Facilities and Temporary Controls, Article Temporary Controls.
- B. Remove surface runoff controls when no longer needed.

3.03 DEWATERING SYSTEMS

- A. Provide, operate, and maintain dewatering systems of sufficient size and capacity to permit excavation and subsequent construction in dry and to lower and maintain groundwater level a minimum of **two** feet below the lowest point of excavation. Continuously maintain excavations free of water, regardless of source, and until backfilled to final grade.
- B. For **construction**, dewatering systems shall include wells or well points, and other equipment and appurtenances installed outside **limits of excavations** and sufficiently below lowest point of excavation, or to maintain specified groundwater elevation.
- C. Design and Operate Dewatering Systems:
 - 1. To prevent loss of ground as water is removed.
 - 2. To avoid inducing settlement or damage to existing facilities, completed Work, or adjacent property.
 - 3. To relieve artesian pressures and resultant uplift of excavation bottom.
- D. Provide sufficient redundancy in each system to keep excavation free of water in event of component failure.
- E. Provide 100 percent emergency power backup with automatic startup and switchover in event of electrical power failure.
- F. Provide supplemental ditches and sumps only as necessary to collect water from local seeps. Do not use ditches and sumps as primary means of dewatering.

3.04 MONITORING WELLS

- A. Monitoring Groundwater Levels: Install and monitor observation wells at locations **selected by Owner** Measure water levels observed in each observation well at **frequency stated in Contractor's Dewatering Plan** and whenever system or component failures are discovered **and whenever any event, including but not limited to flood, storms, changes in water surface elevation of nearby water bodies, may have caused a change in the groundwater elevation.**
- B. After groundwater level observation wells are no longer needed for monitoring groundwater levels, abandon observation wells, as **required by regulations.**

3.05 SETTLEMENT

- A. Monitoring Dewatering-Induced Settlement: Establish monuments for monitoring settlement at **selected by Engineer**. Monitor vertical movement of each settlement monument, relative to remote benchmark selected by Engineer, at **frequency stated in Contractor's Dewatering Plan**.

3.06 MONITORING FLOWS

- A. Monitor volume of water pumped per calendar day from excavations, as Work progresses. Also monitor volume of water introduced each day into excavations for performance of Work. Monitor flows using measuring devices acceptable to Engineer.

3.07 DISPOSAL OF WATER

- A. Obtain discharge permit for water disposal from authorities having jurisdiction.
- B. Treat water collected by dewatering operations, as required by regulatory agencies, prior to discharge.
- C. Discharge water as required by discharge permit and in manner that will not cause erosion or flooding, or otherwise damage existing facilities, completed Work, or adjacent property.
- D. Remove solids from treatment facilities and perform other maintenance of treatment facilities as necessary to maintain their efficiency.

3.08 PROTECTION OF PROPERTY

- A. Make assessment of potential for dewatering induced settlement. Provide and operate devices or systems, including but not limited to reinjection wells, infiltration trenches and cutoff walls, necessary to prevent damage to existing facilities, completed Work, and adjacent property.
- B. Securely support existing facilities, completed Work, and adjacent property vulnerable to settlement due to dewatering operations. Support shall include, but not be limited to, bracing, underpinning, or compaction grouting.

3.09 REMEDIATION OF GROUNDWATER DEPLETION

- A. If dewatering reduces quantity or quality of water produced by existing wells, temporarily supply water to affected well owners from other sources. Furnish water of a quality and quantity equal to or exceeding the quality and quantity available to well owner prior to beginning the Work or as satisfactory to each well owner.

END OF SECTION

**SECTION 02271
RIP-RAP**

1. GENERAL

1.1 This item consists of furnishing and placing riprap slope/ditch protection.

2. PRODUCTS

2.1 Riprap

The riprap material shall be durable and of hard natural stone, free from cracks, seams, or other defects that would tend to cause increased deterioration because of freezing and thawing or other natural causes. Riprap material shall be reasonably well graded from the minimum size stone. At least 90% of the riprap stone shall be not less than 8 inches wide by 12 inches long by 12 inches deep and shall be approximately rectangular in shape. Fragments or spalls shall be used to fill the voids between the larger rocks. The inclusion of appreciable quantities of dirt, sand, clay, or rock fines will not be accepted. All materials considered for use as riprap shall be approved by the Owner.

3. EXECUTION

3.1 Earth surface on which riprap is to be placed shall be trimmed and graded so as to provide for the thickness of riprap shown on the drawings. Surfaces that are below grade shall be brought to grade by fillings with well compacted materials similar to the adjacent materials. Prior to placement of riprap, the prepared earth foundation will be inspected and no materials shall be placed thereon until approved by the Owner.

3.2 Place riprap to the full course thickness at one operation and in such a manner as to avoid serious displacement of the underlying materials. Deliver and spread the material so that the mass of pieces in place shall be reasonably well graded, with the larger pieces uniformly distributed and the smaller pieces and spalls filling the voids between the larger pieces. The finished riprap shall be free from objectionable concentration of large or small pieces.

3.3 A tolerance of +12 inches or -6 inches from slope lines and grades shown on the drawings will be permitted on the finished surface of the riprap, except that the extreme negative tolerance shall not be continuous over an area exceeding 200 square feet.

END OF SECTION

**SECTION 02320
TRENCH BACKFILL**

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. American Public Works Association (APWA): Uniform Color Code for Temporary Marking of Underground Utility Locations.
 2. ASTM International (ASTM):
 - a. C33, Standard Specification for Concrete Aggregates.
 - b. C94/C94M, Standard Specification for Ready-Mixed Concrete.
 - c. C117, Standard Test Method for Materials Finer than 75 Micrometer (No. 200) Sieve in Mineral Aggregates by Washing.
 - d. C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - e. C150, Standard Specification for Portland Cement.
 - f. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
 - g. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³))
 - h. D1140, Standard Test Method for Amount of Material in Soils Finer than the No. 200 (75 micrometer) Sieve.
 - i. D1557, Standard Test Method for Laboratory Compaction Characteristics of Soil using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - j. D3776, Standard Test Methods for Mass Per Unit Area (Weight) of Fabric.
 - k. D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.
 - l. D4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
 - m. D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 - n. D4533, Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
 - o. D4832, Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.
 - p. D4991, Standard Test Method for Leakage Testing of Empty Rigid Containers by Vacuum Method.
 - q. D5034, Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test).

3. National Electrical Manufacturers Association (NEMA): Z535.1, Safety Color Code.

1.02 DEFINITIONS

- A. Base Rock: Granular material upon which manhole bases and other structures are placed.
- B. Bedding Material: Granular material upon which pipes, conduits, cables, or duct banks are placed.
- C. Imported Material: Material obtained by Contractor from source(s) offsite.
- D. Lift: Loose (uncompacted) layer of material.
- E. Pipe Zone: Backfill zone that includes full trench width and extends from prepared trench bottom to an upper limit above top outside surface of pipe, conduit, cable or duct bank.
- F. Prepared Trench Bottom: Graded trench bottom after excavation and installation of stabilization material, if required, but before installation of bedding material.
- G. Relative Compaction: The ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by ASTM D698. Corrections for oversize material may be applied to either as-compacted field dry density or maximum dry density, as determined by Engineer.
- H. Relative Density: As defined by ASTM D4253 and ASTM D4254.
- I. Selected Backfill Material: Material available onsite that Engineer determines to be suitable for a specific use.
- J. Well-Graded: A mixture of particle sizes that has no specific concentration or lack thereof of one or more sizes producing a material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids. Well-graded does not define any numerical value that must be placed on the coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.

1.03 SUBMITTALS

- A. Action Submittals:
 1. Shop Drawings: Manufacturer's descriptive literature for marking tapes.
 2. Samples:
 - a. Trench stabilization material
 - b. Bedding and pipe zone material
 - c. Granular drain

- d. Granular backfill
- e. Earth backfill
- f. Sand(s)
- g. Geotextile

B. Informational Submittals:

- 1. Catalog and manufacturer’s data sheets for compaction equipment.
- 2. Certified Gradation Analysis: Submit not less than 30 days prior to delivery for imported materials or anticipated use for excavated materials, except for trench stabilization material that will be submitted prior to material delivery to Site.
- 3. Controlled Low Strength Material: Certified mix design and test results. Include material types and weight per cubic yard for each component of mix.

PART 2 PRODUCTS

2.01 MARKING TAPE

A. Nondetectable:

- 1. Inert polyethylene, impervious to known alkalis, acids, chemical reagents, and solvents likely to be encountered in soil.
- 2. Thickness: Minimum 5 mils.
- 3. Width: **3** inches.
- 4. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.
- 5. Manufacturers and Products:
 - a Reef Industries; Terra Tape
 - b Mutual Industries; Non-detectable Tape
 - c Presco; Non-detectable Tape

B. Detectable:

- 1. Solid aluminum foil, visible on unprinted side, encased in protective high visibility, inert polyethylene plastic jacket.
- 2. Foil Thickness: Minimum 0.35 mils.
- 3. Laminate Thickness: Minimum 5 mils.
- 4. Width: **3** inches.
- 5. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.
- 6. Joining Clips: Tin or nickel-coated furnished by tape manufacturer.
- 7. Manufacturers and Products:
 - a Reef Industries; Terra Tape, Sentry Line Detectable
 - b Mutual Industries; Detectable Tape
 - c Presco; Detectable Tape

- C. Color: In accordance with APWA Uniform Color Code for Temporary Marking of Underground Facilities.

Color*	Facility
Red	Electric power lines, cables, conduit, and lightning cables
Orange	Communicating alarm or signal lines, cables, or conduit
Yellow	Gas, oil, steam, petroleum, or gaseous materials
Green	Sewers and drain lines
Blue	Potable water
Purple	Reclaimed water, irrigation, and slurry lines
*As specified in NEMA Z535.1, Safety Color Code.	

- D. Locating Wire: No. 12 AWG copper wire shall be laid in full length of all nonmetallic lines.

2.02 TRENCH STABILIZATION MATERIAL

A. Base Rock

1. Clean, hard, durable 3-inch minus crushed rock or gravel, or pit run, free from clay balls, other organic materials, or debris.
2. Uniformly graded from coarse to fine, less than 8 percent by weight passing the 1/4-inch sieve.

B. Granular Backfill:

1. Clean gravel or crushed rock, reasonably well-graded from coarse to fine.
2. Maximum Particle Size: 1-inch

2.03 BEDDING MATERIAL AND PIPE ZONE MATERIAL

A. Unfrozen, friable, and no clay balls, roots, or other organic material.

B. Clean or gravelly sand with less than 5 percent passing No. 200 sieve, as determined in accordance with ASTM D1140, or gravel or crushed rock within maximum particle size and other requirements as follows unless otherwise specified.

1. Duct Banks: 3/4-inch maximum particle size.
2. PVC Irrigation System Piping and Ductile Iron Pipe with Polyethylene Wrap: 3/8-inch maximum particle size.
3. Pipe Under 18-Inch Diameter: 3/4-inch maximum particle size, except 1/4 inch for stainless steel pipe, copper pipe, tubing, and plastic pipe under 3-inch diameter.

4. Pipe Greater than 18-Inch Diameter: 1-1/2-inch maximum particle size for ductile iron pipe, concrete pipe, welded steel pipe, and pretensioned or prestressed concrete cylinder pipe.
5. Perforated Pipe: Granular drain material.
6. Conduit and Direct-Buried Cable:
 - a. Sand, clean or clean to silty, less than 12 percent passing No. 200 sieve.
 - b. Individual Particles: Free of sharp edges.
 - c. Maximum Size Particle: Pass a No. 4 sieve.
 - d. If more than 5 percent passes No. 200 sieve, the fraction that passes No. 40 sieve shall be nonplastic as determined in accordance with ASTM D4318.

2.04 EARTH BACKFILL

- A. Soil, loam, or other excavated material suitable for use as backfill.
- B. Free from roots or organic matter, refuse, boulders and material larger than 1/2 cubic foot, or other deleterious materials.

2.05 PROCESSED EARTH BACKFILL

- A. Class A Backfill: Earth backfill, meeting the following additional requirement.
 1. Free of boulders and cobbles that would be retained on a 3-inch sieve.

2.06 FLOWABLE FILL

- A. Select and proportion ingredients to obtain compressive strength between 50 and 150 psi at 28 days in accordance with ASTM D4832.
- B. Materials:
 1. Cement: ASTM C150, Type I or Type II
 2. Aggregate: ASTM C33, Size 7
 3. Fly Ash (if used): ASTM C618, Class C
 4. Water: Clean, potable, containing less than 500 ppm of chlorides

2.07 CONCRETE BACKFILL

- A. Provide as specified in Section 03300, Cast-in-Place Concrete.
- B. Mix: ASTM C94/C94M, Option A.
 1. Cement: ASTM C150, Type I or Type II
 2. Coarse Aggregate Size: 3/4 inch(es)
 3. Design for Minimum Compressive Strength at 28 Days: 3,000 psi.

2.08 SOURCE QUALITY CONTROL

- A. Perform gradation analysis in accordance with ASTM C136 for:
 - 1. Earth backfill, including specified class
 - 2. Trench stabilization material
 - 3. Bedding and pipe zone material
- B. Certify Laboratory Performance of Mix Designs:
 - 1. Controlled low strength fill
 - 2. Concrete

PART 3 EXECUTION

3.01 TRENCH PREPARATION

- A. Water Control:
 - 1. Promptly remove and dispose of water entering trench as necessary to grade trench bottom and to compact backfill and install manholes, pipe, conduit, direct-buried cable, or duct bank. Do not place concrete, lay pipe, conduit, direct-buried cable, or duct bank in water as specified in Section 02240, Dewatering.
 - 2. Remove water in a manner that minimizes soil erosion from trench sides and bottom.
 - 3. Provide continuous water control until trench backfill is complete.
- B. Remove foreign material and backfill contaminated with foreign material that falls into trench.

3.02 TRENCH BOTTOM

- A. Firm Subgrade: Grade with hand tools, remove loose and disturbed material, and trim off high areas and ridges left by excavating bucket teeth. Allow space for bedding material if shown or specified.
- B. Soft Subgrade: If subgrade is encountered that may require removal to prevent pipe settlement, notify Engineer. Engineer will determine depth of over excavation, if any required.

3.03 TRENCH STABILIZATION MATERIAL INSTALLATION

- A. Rebuild trench bottom with trench stabilization material.

- B. Place material over full width of trench in 6-inch lifts to required grade, providing allowance for bedding thickness.
- C. Compact each lift so as to provide a firm, unyielding support for the bedding material prior to placing succeeding lifts.

3.04 BEDDING

- A. Furnish imported bedding material where, in the opinion of Engineer, excavated material is unsuitable for bedding or insufficient in quantity.
- B. Place over the full width of the prepared trench bottom in two equal lifts when the required depth exceeds 8 inches.
- C. Hand grade and compact each lift to provide a firm, unyielding surface.
- D. Minimum Thickness as follows:
 - 1. Pipe 15 Inches and Smaller: 4 inches
 - 2. Pipe 18 Inches to 36 Inches: 6 inches
 - 3. Pipe 42 Inches and Larger: 8 inches
- E. Check grade and correct irregularities in bedding material. Loosen top 1 inch to 2 inches of compacted bedding material with a rake or by other means to provide a cushion before laying each section of pipe, conduit, direct-buried cable, or duct bank.
- F. Install to form continuous and uniform support except at bell holes, if applicable, or minor disturbances resulting from removal of lifting tackle.
- G. Bell or Coupling Holes: Excavate in bedding at each joint to permit proper assembly and inspection of joint and to provide uniform bearing along barrel of pipe or conduit.

3.05 BACKFILL PIPE ZONE

- A. Upper limit of pipe zone shall not be less than following:
 - 1. Pipe: 12 inches, unless shown otherwise
- B. Restrain pipe, conduit, cables, and duct banks as necessary to prevent their movement during backfill operations.
- C. Place material simultaneously in lifts on both sides of pipe and, if applicable, between pipes, conduit, cables, and duct banks installed in same trench.

1. Pipe 10-Inch and Smaller Diameter: First lift less than or equal to 1/2 pipe diameter.
 2. Pipe Over 10-Inch Diameter: Maximum 6-inch lifts.
- D. Thoroughly tamp each lift, including area under haunches, with handheld tamping bars supplemented by “walking in” and slicing material under haunches with a shovel to ensure that voids are completely filled before placing each succeeding lift.
- E. After the full depth of the pipe zone material has been placed as specified, compact the material by a minimum of three passes with a vibratory plate compactor only over the area between the sides of the pipe and the trench walls.
- F. Do not use power-driven impact compactors to compact pipe zone material.

3.06 MARKING TAPE INSTALLATION

- A. Continuously install marking tape along centerline of all buried piping, on top of last lift of pipe zone material. Coordinate with piping installation drawings.
1. Detectable Marking Tape: Install with nonmetallic piping and waterlines.
 2. Nondetectable Marking Tape: Install with metallic piping.
 3. No. 12 AWG copper wire shall be laid in full length of all non-metallic lines.

3.07 BACKFILL ABOVE PIPE ZONE

- A. General:
1. Process excavated material to meet specified gradation requirements.
 2. Adjust moisture content as necessary to obtain specified compaction.
 4. Do not allow backfill to free fall into the trench or allow heavy, sharp pieces of material to be placed as backfill until after at least 2 feet of backfill has been provided over the top of pipe.
 5. Do not use power driven impact type compactors for compaction until at least 4 feet of backfill is placed over top of pipe.
 6. Backfill to grade with proper allowances for topsoil, crushed rock surfacing, and pavement thicknesses, wherever applicable.
 7. Backfill around structures with same class backfill as specified for adjacent trench unless otherwise shown or specified.
- B. Class A Backfill:
1. Place in lifts not exceeding thickness of 9 inches.
 2. Mechanically compact each lift to a minimum of 95 percent relative compaction prior to placing succeeding lifts.

- C. Class B Backfill:
 - 1. Place in lifts of suitable thickness.
 - 2. Mechanically compact each lift prior to placing succeeding lifts.
 - 3. Determine proper lift thickness, type of compaction equipment, method to use, and amount of compaction necessary to prevent settlement.

- D. Class C Backfill:
 - 1. Backfill with earth backfill.
 - 2. Leave trench with backfill material neatly mounded across the entire trench width, but not more than 6 inches above the adjacent ground surface.
 - 3. In lawn, garden, or similar type areas, maintain trench level with the existing adjacent grade.
 - 4. At Other Locations:
 - a. Estimate and provide amount of backfill material required so that after normal settlement, the settled surface will match the adjacent ground surface.
 - b. Neatly windrow material over trench, and remove excess.
 - c. Correct excess or deficiency of backfill material apparent after settlement and within correction period by regrading, and disposing of excess material or adding additional material where deficient.

- E. Class D Backfill: Backfill with granular backfill. Determine thickness of lift, type of equipment and method to use, and amount of compaction required to prevent settlement. Backfill trench above the pipe zone with granular backfill in lifts not exceeding 8 inches. Compact each lift to a minimum of 95 percent relative compaction prior to placing succeeding lifts.

- F. Class E Backfill:
 - 1. Backfill trench above pipe zone with **earth backfill 12** inches below original ground surface.
 - 2. Fill remainder of trench with gravel surfacing rock over entire trench width.
 - 3. Compact gravel surfacing rock by at least five passes with the wheels of a loaded 10-yard dump truck or other approved equipment over entire trench surface as necessary to prevent settlement.
 - 4. Finish completed backfilled surface at same level as original surface.

- G. Concrete Backfill:
 - 1. Place above bedding.
 - 2. Minimum Concrete Thickness: 6 inches on top and sides of pipe.
 - 3. Do not allow dirt or foreign material to become mixed with concrete during placement.

4. Allow sufficient time for concrete to reach initial set before additional backfill material is placed in trench.
5. Prevent flotation of pipe.
6. Begin and end concrete backfill within 4 inches of a pipe joint on each end.
7. Do not encase pipe joints except within the limits of the concrete backfill.

H. Controlled Low Strength Fill:

1. Discharge from truck mounted drum type mixer into trench.
2. Place in lifts as necessary to prevent uplift (flotation) of new and existing facilities.
3. In traveled areas fill entire trench section to pavement finish grade for a temporary driving surface, and screed off excess and finish with a float.
4. In other areas fill the trench section as shown.

3.08 REPLACEMENT OF TOPSOIL

- A. Replace topsoil in top 12 inches of backfilled trench.
- B. Maintain the finished grade of topsoil even with adjacent area and grade as necessary to restore drainage.

3.09 MAINTENANCE OF TRENCH BACKFILL

- A. After each section of trench is backfilled, maintain the surface of the backfilled trench even with the adjacent ground surface until final surface restoration is completed.
- B. Gravel Surfacing Rock: Add gravel surfacing rock where applicable and as necessary to keep the surface of the backfilled trench even with the adjacent ground surface, and grade and compact as necessary to keep the surface of backfilled trenches smooth, free from ruts and potholes, and suitable for normal traffic flow.
- D. Topsoil: Add topsoil where applicable and as necessary to maintain the surface of the backfilled trench level with the adjacent ground surface.
- E. Asphaltic Pavement: Replace settled areas or fill with asphalt as specified in Section 02575, Pavement.
- F. Other Areas: Add excavated material where applicable and keep the surface of the backfilled trench level with the adjacent ground surface.

3.10 SETTLEMENT OF BACKFILL

- A. Settlement of trench backfill, or of fill, or facilities constructed over trench backfill will be considered as result of defective compaction of trench backfill.

END OF SECTION

**SECTION 02485
SEEDING**

1. GENERAL

1.1 This work shall be performed in all disturbed areas not receiving such site improvements as buildings, roads, walks, sod, planting, etc., and shall include, but not necessarily be limited to, all seed bed preparation; the supplying and placing of soil additives, seed, and mulch wherever required by the drawings or directed by the Owner; and maintenance.

1.2 Unless otherwise approved in writing by the Owner, seeding operations shall be limited to the following planting periods:

A. Spring - March 1 through May 30

B. Fall - August 15 through October 31

1.3 Temporary seeding/strawing to support erosion minimization (and as required by the Stormwater Pollution Prevention Plan) shall be done with the project regardless of the season. Re-seeding for final stabilization shall occur during the specified planting period.

1.4 Refer to other sections for items affecting seeding. Coordinate this work with that specified by other sections for timely execution.

2. PRODUCTS

2.1 GRASS SEED

A. Kentucky 31 Fescue (*Festuca Elatior*) and/or annual rye meeting the requirements of the State Department of Agriculture and furnished in new bags or bags that are sound and not mended. No "below standard" seed accepted. Where lawns and fields have special grass, replace in kind.

2.2 FERTILIZER

A. Commercially manufactured; Grade 10-10-10; furnished in standard containers that are clearly marked with the name, weight, and guaranteed analysis of the contents and that ensure proper protection in transportation and handling; and in compliance with all local, state, and federal fertilizer laws.

2.3 AGRICULTURAL LIMESTONE

A. Containing a minimum of 85-percent calcium carbonate and magnesium carbonate combined, 85 percent of which passes a No. 10 mesh sieve.

2.4 MULCH

- A. Stalks of rye, oats, wheat, or other approved grain crops properly cured prior to baling, air dried, and reasonably free of noxious weeds and weed seeds or other material detrimental to plant growth.

2.5 Sod shall comply with all TDOT requirements.

3. EXECUTION

3.1 Perform all seeding and related work as a continuous operation. Sow seed as soon as the seed bed has been prepared and perform subsequent work in a continuous manner.

3.2 Before beginning seeding operations in any area, complete the placing of topsoil and final grading, and have the work approved by the Owner.

3.3 Scarify, disk, harrow, rake, or otherwise work each area to be seeded until the soil has been loosened and pulverized to a depth of not less than 2 inches. Perform this work only when the soil is in a tillable and workable condition.

3.4 Apply fertilizer and agricultural limestone uniformly over the seed bed and lightly harrow, rake, or otherwise incorporate them into the soil for a depth of approximately 1 inch at the following rates:

Fertilizer: 15 pounds/1,000 square feet

Agricultural Limestone: 40 pounds/1,000 square feet

3.5 Sow seed uniformly with a rotary seeder, wheelbarrow seeder, or hydraulic equipment or by other satisfactory means.

3.6 The seeding rate shall be 5 pounds/1,000 square feet for Kentucky 31 Fescue (*Festuca Elatior*).

3.7 When seeding during March 1 through April 1 and October 1 through November 20, add an additional 3 pounds/1,000 square feet of annual rye grass.

3.8 Perform no seeding during windy weather or when the ground surface is frozen, wet, or otherwise untillable.

3.9 When seeding with mulch is specified, spread the mulch material evenly over the seeded areas immediately following the seeding operation.

Mulch Rate: 2 bales (100-pound minimum)/1,000 square feet

3.10 The mulch rate may be varied by the Owner, depending on the texture and condition of the mulch material and the characteristics of the area seeded. Cover all portions of the seeded areas with a uniform layer of mulch so that approximately 25 percent of the ground is visible.

3.11 No equipment, material storage, construction traffic, etc., will be permitted on newly seeded ground.

3.12 Dispose of all surplus materials as directed by the Owner.

3.13 INSPECTIONS

A. The Owner shall inspect the seeding within 60 days after planting and determine if it is acceptable.

3.14 GUARANTEE

A. Secure an acceptable growth of grass in all areas designated for seeding.

B. An area is considered acceptable if it is represented by a minimum of 100 seedlings/ square foot of the permanent species of grass representative of the seed mixture. If an acceptable growth is not obtained on the first planting, reseeding and remulching will be required.

C. If the planting is less than 50 percent successful, rework the ground, refertilize, reseed, and remulch.

D. The Contractor shall be responsible for guaranteeing and maintaining all seeding for a twelve month period from the date of initial acceptance of the seeding as stated above.

END OF SECTION

**SECTION 02575
PAVEMENT REPAIR**

1. GENERAL

- 1.1 The work specified by this section shall consist of repairing or replacing all damaged pavement, whether public or private. Dirt shoulders, roads, streets, drives, and walks are to be restored to their original condition as an incidental part of the installation of utilities. Repair damaged base on either side of a trench wherever necessary. Trim the oxidation surface to neat lines outside of the trench wall and repave the entire area as specified below.
- 1.2 Both these specifications and the drawings make reference to the current edition of the standard specifications of the Tennessee Department of Transportation (TDOT) and the Anderson County Highway Department. Even though the weather limitations, construction methods, and materials specifications contained in the TDOT specifications may not be explicitly repeated in these specifications, they shall, wherever applicable to the work called for by this section, be considered as implied and therefore adhered to. Refer to other sections for work related to that covered by this section.

2. PRODUCTS

- A. Mineral Aggregate Base: Type A Base, Grading D crushed stone (TDOT Specification Section 303);
- B. Bituminous Prime Coats: cutback asphalt, Grade RC-250, or material emulsified asphalt, Grade AE-P (TDOT Specification Section 402);
- C. Aggregate For Cover Material: Size 7, 8 or 78 (TDOT Specification Section 402) ;
- D. Tack Coat: Grade AE-3 (TDOT Specification Section 403);
- E. Bituminous Plant Mix Base (Hot Mix): Grading A, B, B (modified), or C, AS or CW, as directed by the Engineer (TDOT Specification Section 307);
- F. Asphaltic Concrete Surface: Grading B or C as specified (TDOT Specification Section 411);
- G. Pavement Marking Paint: White and Yellow (TDOT Specification Section 716);

3. EXECUTION

3.1 SUBGRADE

- A. Before any base material is installed, compact the subgrade of the area to be paved to 95 percent of optimum density as determined by ASTM D698 (Standard Proctor).

- B. The backfill material shall contain no topsoil or organic matter. For all areas where subgrade has been prepared, test for uniformity of support by driving a loaded dump truck at a speed of 2 to 3 mph over the entire surface. Make further improvements on all areas that show a deflection of 1 inch or more. When completed, the finished subgrade shall be hard, smooth, stable, and constructed in reasonably close conformance with the lines and grades that existed prior to beginning construction.
- C. When a base course is compacted, cut back the surface course of the existing pavement a minimum of 1 foot beyond the limit of the joint between the old and new base course or as shown on the standard drawings. Take special care to ensure good compaction of the new base course at the joint. Apply and compact the surface to conform to the existing pavement so that it will have no surface irregularity.

3.2 BASE

- A. Install a mineral aggregate base of the type specified above in accordance with TDOT specifications. The maximum compacted thickness of any one layer shall be 6 inches and the total thickness of the base shall be that indicated by the standard drawings or as shown on the plans.

3.3 SEAL COAT SURFACE

- A. Uniformly apply a bituminous prime coat of either emulsified asphalt, Grade AE-P, or cutback asphalt, Grade RC-250, over the entire width of the area to be surfaced at a rate of 0.3 gallons/square yard. Immediately after application, uniformly cover the entire area with Size 7 crushed stone chips at a rate of 12 pounds/square yard.

3.4 DOUBLE BITUMINOUS SURFACE

- A. Apply the first course at a rate of 0.38 to 0.42 gallons/square yard with either emulsified asphalt, Grade RS-2, or cutback asphalt, Grade RC-800 or RC-3000, and then immediately cover with Size 6 crushed stone chips at a rate of 33 to 37 pounds/square yard. After this is rolled, apply the second course at a rate of 0.30 to 0.35 gallons/square yard, and at once uniformly cover with Size 7 chips at a rate of 20 to 25 pounds/square yard. Then roll the entire area.
- B. After the application of the cover aggregate, lightly broom or otherwise maintain the surface for a period of 4 days, or as directed by the Owner. Maintenance of the surface shall include the distribution of cover aggregate over the surface to absorb any free bitumen and cover any areas deficient in aggregate. Sweep excess material from the entire surface with rotary brooms. Sweep the surface at the time determined by the Owner.

3.5 ASPHALTIC CONCRETE BINDER

- A. Apply a bituminous prime coat of emulsified asphalt, Grade AE-P, or cutback asphalt, Grade RC-250, at a rate of 0.38 to 0.42 gallons/square yard. Take care to prevent the bituminous material's splashing on exposed faces of curbs and gutters, walls, walks, trees, etc. If such splashing does occur, remove it immediately. After the prime coat has been properly cured, apply an asphaltic concrete binder to the thickness shown on the standard drawings or the plans.
- B. Carefully place the material to avoid segregation of the mix. Broadcasting of the material will not be permitted. Remove any lumps that do not readily break down.

3.6 ASPHALTIC CONCRETE SURFACE

- A. If the asphaltic concrete surface course is to be placed directly on the mineral aggregate base, place a bituminous prime coat as described above. If, however, the surface course is to be placed on a binder course, then apply a bituminous tack coat of the sort specified above under PRODUCTS at a rate of 0.05 to 0.10 gallons/square yard. Take care to prevent the bituminous material's splashing on exposed faces of curbs, gutters, walls, walks, trees, etc. If such splashing does occur, remove it immediately. After the prime or tack coat has been properly cured, apply the asphaltic concrete to the thickness shown on the drawings or standard drawings. Apply the surface course as described above for the binder course.

3.7 SMOOTHNESS

- A. The finished surfaces shall conform to the lines and grades that existed prior to construction. No deviations, variations, or irregularities exceeding 1/4 inch in any direction when tested with a 12-foot straightedge will be permitted in the finished work, nor will any depressions that will not drain. Correct all such defects.

3.8 SAMPLING AND TESTING

- A. Submit to the Owner test reports made by an independent testing laboratory on the crushed stone aggregate, bituminous materials, and asphaltic concrete design mixes, and obtain his approval of these reports before starting paving operations.
- B. Tests shall be made on the completed elements of the pavement to ascertain the compacted thickness of the base and surface courses. If sections with deficient thicknesses are found, the full section for a reasonable distance on each side of the deficiency shall be refused. Remove and reinstall all such sections. Patch all test holes in connection with thickness tests.

- C. When making surface tests, furnish one man to mark all surface defects for corrections.

END OF SECTION

**SECTION 02640
VALVES, HYDRANTS, SERVICES AND BLOWOFFS**

1. GENERAL

- 1.1 Refer to other specification sections for work related to valves, hydrants and blowoffs.
- 1.2 Submit product data for all items in this section per the provisions of Section 01302 – Submittals and Substitutions.
- 1.3 All valves of a single type shall be provided by a single manufacturer and shall be AWWA approved.

2. PRODUCTS

2.1 GATE VALVES

- A. Gate valves shall be used on water lines 8-inches and smaller. Gate valves shall be resilient seated, manufactured to meet or exceed the requirements of AWWA C509/C515 of the latest revision and in accordance with the following specifications and shall be manufactured by M&H or Mueller.
- B. Valves shall have an unobstructed waterway equal to or greater than the full nominal diameter of the valve.
- C. The valves shall be nonrising stem with the stem made of bronze described in AWWA C509/C515. Provide 2 stem seals of the O-ring type.
- D. The stem nut, also made of bronze, shall be independent of the gate.
- E. The sealing mechanism shall consist of a cast or ductile iron wedge gate fully encapsulated in synthetic rubber or urethane. The resilient sealing mechanism shall provide zero leakage at 200 psi working pressure when installed with flow in either direction.
- F. The valve body, bonnet, and bonnet cover shall be ductile iron or cast iron, ASTM A126, Class B, fully coated with fusion bonded epoxy, both interior and exterior.
- G. All valves shall be tested and approved in strict accordance with AWWA C509/515.
- H. Buried valves shall be mechanical joint and equipped with a 2-inch square operating nut and shall be completed with a valve box specified herein. Buried valves with wrench nut over 10 feet deep shall have an extension stem projecting within 2 feet of the ground surface and the stem extension shall be centered in the valve box and anchored to prevent horizontal movement and pinned to the valve nut below.

- I. Above grade or partially below grade installation shall have flanged ends, 125-lb. template.
- J. The valve manufacturer shall provide all glands, gaskets, and all accessories necessary to install the valve.
- K. Valves in structures shall be flanged and equipped with removable hand wheel operators.
- L. Valves shall open to the left (counterclockwise).
- M. Gate valves smaller than 3-inches in diameter shall be iron body, bronze-mounted, with solid wedge gates. Small gate valves shall be installed with all pipe connection and fittings necessary to serve the purpose intended. Valves smaller than 3-inches shall have threaded ends and shall be equipped with standard operating nuts. Small valves shall be IBBM gate valves or pre-approved equal.
- N. The use of ductile iron mega-lugs is required on all fittings and valves or in case of 2" piping mega-lug equivalents shall be used.
- O. Complete shop drawings and catalog information showing dimension, weight, specifications, and operating data for all valves that are proposed for use in the project shall be submitted to the Owner for approval prior to construction.

2.2 BLOWOFF ASSEMBLY

- A. Blowoff assemblies shall include a DI reducer to 2", a two inch gate valve, a minimum of approximately 5' of main line Class 250 PVC pipe, an MJ DI 45° bend, the appropriate 2" size main line Class 250 PVC pipe to the ground surface with a screw on cap at the end.

2.3 AIR RELEASE VALVES

- A. Automatic air release valves shall be installed at all high points as noted on drawings. Air valves shall be 1-inch on pipelines below 8 inches in diameter. For pipelines 12 inches in diameter and larger, the air valves shall be 2-inch size.
- B. Automatic air release valves shall be manufactured by ARI (SO50) or Owner approved equal.
- C. Automatic air release valves shall be installed in accordance with the manufacturer's standard drawing. It shall include a saddle (6"x1" saddle 1 bolt by AY McDonald Series 3891), a 73148B ball corporation, a 1" x 4" red brass nipple, a brass gate valve, an ARI SO50 air release valve all housed in a box.
- D. Install in a jumbo plastic meter box by XLUB or ACWA approved equal.

2.4 TAPPING VALVES – RESILIENT SEATED GATE VALVE

- A. Tapping valves shall conform to AWWA C509/C515 or latest revision covering gate valves except as modified for passage and clearance of tapping machine cutters. Valves shall be M&H, or Mueller.
- B. Tapping valves shall meet all requirements for Gate Valves (Paragraph 2.1 above) as well as having mechanical joints on one end and a tapping flange on the other end. The valve waterway shall be a full opening to admit a full size shell cutter.
- C. Valves shall be furnished with tapping sleeve sized to ANSI B16.1 standards for flanges with male pilots for centering and the outlet side mechanical joint, conforming to AWWA C111. Flange and mechanical joint assemblies shall be supplied by the valve manufacturer.

2.5 TAPPING SLEEVES FOR DUCTILE IRON PIPE

- A. Tapping sleeves shall be full sleeve, mechanical joint type manufactured from ductile iron meeting ASTM A536, Grade 65-45-12. Tapping sleeves 12 inch and larger may be Smith-Blair 622 epoxy coated with stainless bolts and nuts.
- B. Sleeves shall be rated for a minimum of 250 psi water working pressure.
- C. Side flange seals shall be of the O ring type of either round or rectangular cross sectional shape and shall butt against the split end gaskets to produce a totally watertight seal.
- D. The flange throat section of mechanical joint sleeves 12 inches and smaller shall be counterbored in accordance with MSS-SP60 for true alignment of the tapping valve and tapping machine.
- E. The inside and outside of all tapping sleeves shall be coated in accordance with AWWA Standards and Federal Specifications TT-V-51.
- F. The sleeve manufacturer shall furnish all the accessories necessary to assemble the sleeve to the pipe.
- G. Tapping sleeves shall be subjected to a pressure test while in place on the existing water line, prior to the existing line being tapped. The tapping sleeve and valve shall be subjected to a pressure of 200 psi for a period of 15 minutes. The connection being tested shall maintain 100 percent of the test pressure throughout the test period. The Contractor shall supply all necessary equipment for testing tapping sleeves and valves.

2.6 VALVE BOXES

- A. All gate valves installed below grade shall be provided with a valve box to provide access to the operating nut.
- B. Valve boxes shall be Screw Type Cast Iron Valve box with Valve Cover (18" - 24") by Mueller or equal. Valve box covers shall be marked "WATER" unless noted otherwise.
- C. Valve boxes shall be designed to accept extension section or repair extension as needed.
- D. Valves boxes shall be installed on all buried valves in accordance with the details shown on the standard drawings sheet.
- E. Valve box covers shall be cast iron and suitable for heavy traffic conditions. Covers shall have the word "WATER" cast on the exposed surface and shall be lockable.
- F. In unpaved areas, valve boxes shall be installed with a 24" square concrete collar, 6" thick. The collar shall be constructed level with both the finished grade and the valve box lid. The collar shall be pre-formed unless approved otherwise by the Owner.

2.7 FIRE HYDRANTS

- A. Fire hydrants shall comply in all respects with AWWA C502 and shall be the compression type, with the main valve opening against the pressure and closing with the pressure. The main valve opening shall be 4 1/2 inch in diameter. Hydrants shall be connected to the main by a 6-inch mechanical joint shoe, unless otherwise shown on the drawings, and fitted with strapping lugs. Two 2-½ inch hose nipples shall be threaded and screwed into the nozzle section and then pinned to prevent turning.
- B. Hydrants shall be furnished with 1 inch square operating nuts. Operating nut shall be provided with convenient means to afford lubrication to ensure ease of operation and the prevention of wear and corrosion.
- C. Hydrants shall be the dry barrel type, and the ductile iron hydrant shoe shall have two positive acting noncorrodible drain valves that drain the hydrant completely by opening as soon as the main valve is closed and by closing tightly when the main valve is open. Drain valves operated by springs or gravity will not be acceptable.
- D. The packing gland located in the bonnet shall be solid bronze, and gland bolts shall be steel with bronze nuts. A double O ring seal may be used in lieu of conventional stuffing box.
- E. The hydrant shall open by being turned to the left and so marked on the bonnet in cast letters and arrow.

- F. Threads on hose and steamer nipples, operating nut, and cap nuts shall conform to the Owner's standards.
- G. Bury shall be a nominal 36-inch with the depth being measured from grade line to bottom of trench or connecting pipe.
- H. Hydrants shall be FM and UL listed and rated for 200 psi working pressure.
- I. Hydrants shall be M&H or Owner approved equal.

2.8 CORPORATION AND CURB STOPS

- A. Corporation stops shall be brass, ball corp to conform to AWWA C-800. The outlet shall be appropriate to the size and type of service line specified. Corporation stops shall be AY McDonald 770-2-QAQD 33-L.STY MSTR SP5VX FPSCK CTSXDP or Owner approved equal.
- B. Curb stops shall be brass, threaded to conform to AWWA C-800, and shall be compression to compression type. The size of valve shall be as specified by the Owner with inlet and outlet connection appropriate to the size and type of service line specified. Unless otherwise indicated, curb stops shall not be used ahead of the water meter.
- C. Service taps must be installed on approximately 45° angles or at 3 o'clock and 9 o'clock position of the pipe.

2.9 WATER METER COMPONENTS, METER SETTER, AND METER BOX

- A. Single Meter Setter shall be 5/8" x 3/4" AY McDonald 770-2-QAQD 33 L-STY MSTR SPBV x PSCK CTS x DP or Owner approved equal.
- B. Saddle shall be 6" X 3/4" hinged type with bolt by AY McDonald 3891 or Owner approved equal
- C. Corporation Stop shall be AY McDonald 74701BQ or Owner approved equal
- D. Service Pipe shall be black SDR 9 CTS PE 3408 WTR TBG 500
- E. Meter Box shall be plastic/round 15"x18" by SIGMA equal with 18" round with C217 cast iron lid or Owner approved equal.
- F. Water meter shall be 5/8" x 3/4" Multi-jet with Itron Connector Master Meter with Digital Head (E Link) or Owner approved equal.

2.10 YARD HYDRANTS

- A. Yard Hydrants shall be installed as shown at the end of the water lines at a bury depth of a minimum of three feet. The yard hydrant shall reduce to a 1" frost proof type from the main line and shall be by ProFlo PFEM or ACWA approved equal.

3. EXECUTION

3.1 SETTING VALVES AND FITTINGS

- A. Valves, fittings, plugs, and caps shall be set and jointed to pipe in the manner heretofore specified for cleaning, laying, and jointing pipe. Megalug all gate valves on both sides of each valve.

3.2 LOCATION OF VALVES

- A. Valves in water mains shall be located within road right-of-way unless otherwise shown on the Owner approved drawings.

3.3 VALVE BOXES AND VALVE PITS

- A. Provide a valve box for every valve with the lettering on the valve box cover being placed 90° to the line.
- B. The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the wrench nut of the valve, with the box cover flush with the surface of the finished pavement or such other level as may be directed by the Owner.
- C. Pour a 2 foot square by 6-inch thick concrete pad around the top of all valve boxes that are not located in paved areas. Precast concrete rings are not acceptable.

END OF SECTION

**SECTION 02713
WATER LINES**

1. GENERAL
 - 1.1 Furnish all material, equipment, tools, and labor in connection with the water line, complete and in accordance with these specifications.
 - 1.2 It shall be the Contractor's responsibility to ensure that all necessary materials are furnished to him and that those found to be defective in manufacture are replaced at no extra cost to the Owner. Materials damaged in handling after being delivered by the manufacturer shall be replaced at the Contractor's own expense. If installed material is found to be defective before the final acceptance of the work, the cost of both the material and labor needed to replace it shall not be passed on to the Owner.
 - 1.3 The Contractor shall be responsible for safely storing materials needed for the work that have been accepted by him until they have been incorporated into the completed project. Keep the interiors of all pipes, fittings, and other accessories free from dirt and foreign matter at all times.
 - 1.4 Refer to other sections for work related to that specified by this section. Coordinate this work with that required by other sections for timely execution.
 - 1.5 Reaction blocking (thrust blocks) shall be installed on all fittings as per SUD. Wherever reaction blocking is necessary, it shall be considered an integral part of the water line work.
 - 1.6 Materials will be visually inspected by the OWNER at the site for conformance to the specifications. At the OWNER's discretion, the CONTRACTOR may be required to supply certified mill tests, samples, or other suitable form of verification that the material meets the required specifications.
2. PRODUCTS
 - 2.1 DUCTILE IRON PIPE AND FITTINGS
 - A. Ductile iron pipe shall conform to the requirements of the latest revision of ANSI/AWWA A21.51/C-151 for ductile iron pipe centrifugally cast in metal or sandlined molds. It shall be made and tested in accordance with ASTM A536 and be subjected to and able to withstand a hydrostatic pressure of 500 psi.
 - B. The pipe shall be plain end ductile iron pipe with push-on joint, single gasket joints. The design thickness shall be that specified in ANSI A21.50/AWWA C150 and a pressure class of 350. Pipe shall be manufactured by American Cast Iron Pipe Company, U.S. Pipe and Foundry Company, Clow Corporation, McWane or Griffin or equal. All pipe shall be of the same manufacturer.

- C. A bituminous coating approximately 1 mil thick shall be applied to the outside surfaces of all ductile iron pipe fittings. The finished coating shall be continuous, smooth, and its properties shall not vary with changes in temperatures. The coating shall be strongly adherent to the metal.
- D. The length of each individual piece of ductile iron pipe shipped must be plainly marked on that piece of pipe. Ductile iron pipe is required under all road crossings and in casing. Joint restraint shall be utilized for ductile iron pipe.
- E. The push-on single gasket joints shall be UL approved and shall be either "Fastite" by American Cast Iron Pipe Company, or "Tyton" by U.S. Pipe and Foundry Company or equal.
- F. The bell of each pipe shall have a tapered annular opening and a cast or machined retaining groove for the gasket. The gasket groove shall have a flared design so that maximum deflection will be provided. The plain spigot end of the pipe shall be beveled in order to simplify its entry into and centering within the bell and the compression of the gasket.
- G. The gasket shall be of high quality vulcanized rubber made in the form of a solid ring to exact dimensions. The design of the gasket groove in the bell of the pipe and the design, hardness, and other properties of the gasket itself shall be such that the joint is liquid tight for all pressures from a vacuum to the maximum internal liquid pressure of 350 psi.
- H. Enough lubricant shall be furnished with each order to provide a thin coat on the spigot end of each pipe. This lubricant shall be nontoxic, impart no taste or smell, and have no harmful effect on the rubber gasket. It shall have a consistency that will allow it to be easily applied to the pipe in either hot or cold weather and that will enable it to adhere to either wet or dry pipe.
- I. Standard and special fittings shall be ductile iron. Use standard mechanical joint fittings or anchoring tees at hydrant locations. All fittings shall conform to ANSI A21.10/AWWA C110.
- J. Pipe and pipe fittings shall have cement linings as specified in ANSI A21.4/AWWA C104. In addition, an asphalt emulsion spray coat approximately 1 mil thick shall be applied to the cement lining in accordance with the pipe manufacturer's standard practices. A petroleum asphaltic coating approximately 1 mil thick shall be applied to the outside of the pipe.
- K. All fittings shall be mechanical joint unless otherwise shown on the drawings. Where flanged is shown, no substitution of a Uni-Flange type joint will be used. Fitting laying lengths shall conform to ANSI A21.10/AWWA C110, short body or ANSI A21.53/AWWA C153, compact.

- L. Fittings shall be in accordance with the standard mechanical joint fittings manufactured by the U.S. Pipe and Foundry Company, American Ductile Iron Pipe Company, Griffin, Union Foundry, Tyler, Star, Sigma, or Pipeline Components, Inc or equal.
- M. Mechanical joint restraint, Meg-a-lug or approved equal, shall be required for a minimum of 40 feet in all directions from each and every fitting. Slip joint restraint shall be gripper gaskets.
- N. Flanged fittings and other specials shall be of ductile iron and shall be manufactured to ANSI A21.10/AWWA C110 or ANSI B16.1 specifications for a minimum working pressure of 250 psi. The flanges of pipe, fittings, and specials shall be drilled to standard 125 pound template. Flanged pipe and all fittings shall be supplied with gaskets and bolts.
- O. The pipe manufacturer is to furnish the Owner a certificate of inspection, sworn to by the factory inspector in the presences of a notary public, stating that the pieces of pipe in the shipment were made and tested in accordance with ANSI A21.51 and that they were subjected to and withstood a hydrostatic pressure of 500 psi. Each statement is to give the number of pieces of pipe in the shipment, the length of each piece of pipe, and the serial number of each piece of pipe making up the shipment. In addition, the weight of each individual piece of pipe making up the shipment is to be listed opposite the serial number of each pipe length and attached to the certificate of inspection.
- P. Restraint devices for nominal pipe sizes 3-inch through 48-inch shall consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of ANSI/AWWA C110/A21.10. The devices shall have a working pressure rating of 350 psi for 3-16 inch and 250 psi for 18-48 inch. Ratings are for water pressure and must include a minimum safety factor of 2 to 1 in all sizes. Gland body, wedges, and wedge actuating components shall be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536. Restraint device shall be MEG-ALUG® or Owner approved equal.
- Q. Restrained Joint gaskets available for nominal pipe sizes 6-inches through 48-inches shall conform to standard dimensions and weights per ANSI/AWWA C151. The restrained joint gasket assembly shall provide a positive locking system that prevents joint separation. The design of the restrained joint gasket shall allow deflection after assembly while maintaining uniform load distribution. The joint shall be a push-on joint and shall be completely boltless.

2.2 PVC PIPE

- A. All plastic pipe shall be ASTM D2241 Class 200 or 250 with elastomeric gasketed joints and 20 foot laying length. Pipe material shall be at the Owners discretion.
- B. Pipe shall be of the integral thickened bell type and annular recess designed, sized and shaped so that the gasket is locked in place against displacement.

- C. All pipes shall comply with TDEC criteria for pressure class applications, shall have NSF approval, and be manufactured in accordance with ASTM D2241. The following tests shall be run for each machine on each size and type of pipe being produced, as specified below:
 - 1. Flattening Test: once per shift in accordance with ASTM D2412. Upon completion of the test, the specimen shall not be split, cracked, or broken.
 - 2. Acetone Test (Extrusion Quality Test): once per shift in accordance with ASTM D2152. There shall be no flaking, peeling, cracking, or visible deterioration on the inside or outside surface after completion of the tests.
 - 3. Quick Burst Test: Once per 24 hours in accordance with ASTM 5199.
 - 4. Impact Tests: for 6 inches and larger, once per shift in accordance with ASTM D2444; for 4 inches and smaller, once each 2 hours in accordance with ASTM D2444.
 - 5. Wall Thickness and Outside Dimensions Tests: once per hour in accordance with ASTM D2122.
 - 6. Bell Dimensions Test: once per hour in accordance with ASTM D3139.
- D. If any specimen fails to meet any of the abovementioned tests, all pipe of that size and type manufactured between the test periods must be scrapped and a full set of tests rerun.
- E. Furnish a certificate from the pipe manufacturer stating that he is fully competent to manufacture PVC pipe of uniform texture and strength and in full compliance with these specifications and further stating that he has manufactured such pipe and done so in sufficient quantities to be certain that it will meet all normal field conditions. In addition, the manufacturer's equipment and quality control facilities must be adequate to ensure that each extrusion of pipe is uniform in texture, dimensions, and strength. Also furnish a certificate from the manufacturer certifying that the pipe furnished for this project meets the requirements of these specifications.
- F. All pipe shall be manufactured in the United States of America. All pipe for any one project shall be made by the same manufacturer.
- G. All pipe may be furnished in the manufacturer's standard laying lengths of 20 feet. The Contractor's methods of storing and handling the pipe shall be approved by the OWNER. All pipe shall be supported within 5 feet of each end; in between the end supports, there shall be additional supports at least every 15 feet. The pipe shall be stored away from heat or direct sunlight. The practice of stringing pipes out along the proposed water line routes will not be allowed.
- H. Certain information shall be applied to each piece of pipe. At the least, this shall consist of:
 - 1. Nominal size
 - 2. Type of material
 - 3. SDR or class

4. Manufacturer
 5. NSF Seal of Approval
-
- I. Pipe that fails to comply with the requirements set forth in these specifications shall be rejected.
 - J. Gaskets shall be made of vulcanized natural or synthetic rubber; no reclaimed rubber will be allowed. The gaskets shall be of the manufacturer's standard design dimensions and of such size and shape as to provide a positive seal under all combinations of joint and gasket tolerance. The gasket and annular groove shall be designed and shaped so that when the joint is assembled, the gasket will be radially compressed to the pipe and locked in place against displacement, thus forming a positive seal.
 - K. The spigot end of each pipe shall be beveled so that it can be easily inserted into the gasket joint, which in turn shall be designed so that the spigot end may move in the socket as the pipe expands or contracts. The spigot end shall be striped to indicate the distance into which it is to be inserted into the socket. Each joint shall be able to accommodate the thermal expansions and contractions experienced with a temperature shift of at least 75 degrees F.
 - L. Enough lubricant shall be furnished with each order to provide a coat on the spigot end of each pipe. This lubricant shall be nontoxic, impart no taste or smell to the water, have no harmful effect on the gasket or pipe material, and support no bacterial growth. The lubricant containers shall be labeled with the manufacturer's name.
 - M. Joints shall be manufactured in accordance with ASTM D3139 except that the thickness of the bell shall be, as a minimum, equal to that of the barrel. Joints shall be either integral bell and ring joints with rubber compression gaskets as manufactured by the Clow Corporation, Johns-Manville, or Vulcan Plastic Corporation or equal. However, the pipe and bell must be made by the same manufacturer.
 - N. Standard and special fittings shall be gray iron or ductile iron. Use standard mechanical joint fittings. All fittings shall conform to the specifications of ANSI A21.10/AWWA C110 or ANSI A21.53/AWWA C153. The gaskets shall be ducked tipped transition fittings for use with PVC pipe.
 - O. Fittings shall be lined with enameline or a thin cement lining as specified in ANSI A21.4/AWWA C104; this lining is to be furnished at no extra cost. In addition, a bituminous seal coat or asphalt emulsion spray coat approximately 1 mil thick shall be applied to the cement lining in accordance with the pipe manufacturer's standard practices.
 - P. Fitting laying lengths shall conform to ANSI A21.10/AWWA C110 or ANSI A21.53/AWWA C153.

- Q. Fittings shall be in accordance with the standard mechanical joint fittings manufactured by the U.S. Pipe and Foundry Company, American Cast Iron Pipe Company, Clow Corporation, or equal.
- R. No. 12 copper wire shall be laid in full length of all non-metallic lines. All service shall have tracer wire nutted and scaled with silicone to water main tracer wire. The wire shall come up to outside of valve boxes. Wire shall be duct taped directly to the top of water line. Locating tape shall be installed directly above pipe and buried one foot above the pipe.

2.3 SERVICE LINE TUBING

- A. Service line tubing shall be PE 3408 HDPE SDR 9 CTS WTR TBG 500. Material shall be determined by the Owner. Both shall be of the size designated on the plans or a minimum of 3/4" diameter.

2.4 HDPE PIPE

- A. HDPE Pipe shall be PE 3408/4710 IPS, DR 11. Mechanical joint sleeves and adaptor kits shall be utilized as required by ACWA.

3. EXECUTION

3.1 INSTALLATION OF WATER LINES

- A. Lay the line to and keep it at the lines and grades required by the Drawings. All fittings, valves, and hydrants shall be at the required locations, and spigots well centered in the bells and all valve and hydrant stems plumb.
- B. The pipe shall be uniformly and continuously supported throughout the entire length on a firm stable material. Where required, Size 67 crushed stone used for bedding shall meet the requirement of the Tennessee Department of Transportation.
- C. Unless otherwise indicated by the Drawings, all lines shall have at least 36inches of cover. Any line installed within the traveled shoulder or pavement of a state highway shall have a minimum depth of cover of at least 48-inches. The pipe shall slope continuously between high and low. No departure from this policy shall be made except at the order of the Owner.
- D. Install line so there is no more than five degrees of deflection per 20 foot length of regular push-on pipe. Pipe shall be laid in straight lines and grade without kinks or sags and shall be laid in a workmanlike manner.
- E. Provide and use tools and facilities that are satisfactory to the Owner and that will allow the work to be done in a safe and convenient manner. All pipe, fittings, valves,

and hydrants are to be unloaded from the trucks using suitable tools and equipment. Use a derrick, ropes, or other suitable equipment to lower all pipe and fittings into the trench one piece at a time. Carefully lower each piece so that neither it nor any protective coating or lining it may have will be damaged. Under no circumstances, drop or dump water line materials into the trench.

- F. If any defective item is discovered after the pipe is laid, the item shall be removed and replaced with a satisfactory item. In case a length of pipe is cut to fit a line, it shall be cut so as to leave a smooth end at right angles to the longitudinal axis of the pipe as per the latest revision of AWWA C600.
- G. Lower no pipes and fittings into the trench until they have been swabbed to remove any mud, debris, etc., that may have accumulated within them. After the pipe has been lowered, remove all unnecessary materials from it. Before any pipe is laid, brush and wipe clean the outside of its spigot end and the inside of its bell and ensure that the pipe is dry and oil-free.
- H. Take every precaution to keep foreign material from getting into the pipe while it is being placed in the line. If the crew laying the pipe cannot put it into the trench and in place without allowing earth to get inside it, then place a heavy, tightly woven canvas bag of suitable size over each end of the pipe and leave it there until it is time to connect that pipe to the one adjacent to it.
- I. Place no debris, tools, clothing, or other materials in the pipe during laying operations.
- J. After a length of pipe has been placed in the trench, center the spigot end in the bell of the adjacent pipe, and then insert to the depth specified by the manufacturer and bring to the correct line and grade. Secure the pipe in place by tamping an approved backfill material around it.
- K. Bell holes shall be big enough so that there is ample room for the pipe joints to be properly made. Between bell holes, carefully grade the bottom of the trench so that each pipe barrel will rest on a solid foundation for its entire length.
- L. Whenever pipe laying is not in progress, close the open ends of pipe in the trench with a watertight plug or by other means approved by the Owner. This shall be done not only at the end of each working day but also before work is stopped for lunch periods, bad weather, or any other reason. If there is water in a trench, leave this seal in place until the trench has been pumped completely dry.
- M. The cutting of pipe so that fittings or closure pieces can be inserted shall be done in a neat and workmanlike manner and without any damage to the pipe. Follow the manufacturer's recommendations concerning how to cut and machine the ends of the pipe in order to leave a smooth end at right angles to the pipe's axis.
- N. The flame cutting of pipe by means of an oxyacetylene torch will not be allowed.

- O. Unless otherwise directed by the Owner, lay pipe with the bell ends facing in the direction of laying.
- P. Wherever pipe must be deflected from a straight line (in either the vertical or horizontal plane) in order to avoid obstructions or plumb stems, or wherever long radius curves are permitted, the amount of deflection shall not exceed that necessary for the joint to be satisfactorily made, nor that recommended by the pipe manufacturer, and shall be approved by the Owner.
- Q. Lay no pipe in water or when it is the Owner's opinion that trench conditions are unsuitable. If crushed stone is used to improve trench conditions or as backfill for bedding the pipe, this shall be considered incidental to the project, and no separate payment will be made for its use.
- R. Where a water line main crosses over a sewer line, use a full joint of pipe and center over the sewer. Where a water line is to be parallel to a sanitary sewer, lay it at least 10 feet from the sewer. If it is not practical for the water line and sewer line to be separated as described, then lay the water line at least 18 inches above the top of the sewer. When using ductile iron pipe, the top of 4" concrete should be below bottom of water level and 6" of concrete on top of pipe.
- S. Install thrust blocks wherever the water main changes direction (e.g., at tees and bends), at dead ends, or at any other point where the manufacturer recommends. Thrust blocks shall be considered an integral part of the water main work.
- T. Make all joints, whether standard mechanical or push-on joints, in conformance with the recommendations of the joint manufacturer as approved by the Owner.
- U. Air valves shall be located at all high points on the water line as shown on the drawings.
- V. When the water line crosses a ditch, creek, or stream, or as shown on the Drawings, a 6" concrete cap shall be placed above and below the pipe at the bottom of the ditch or stream bed to minimize potential erosion over the pipe. All pipe shall be ductile iron pipe.
- W. Any and all pipe installed in an existing or future roadway shall be Ductile Iron Pipe restrained the entire length of the crossing, including shoulders on each side of the roadway. Backfill trench in accordance with specification section 02221.

3.2 INSTALLATION OF FLANGED PIPE

- A. Install flanged ductile iron pipe in the manner specified above except that the faces of the flanges shall be carefully centered and the sections adjusted to proper line and grade before the flange bolts are tightened. Place gaskets in position without damage. Discard and replace any gasket damaged in the process. Attach gaskets to the flange with rubber gum before the joint is made up in a manner that will prevent displacement. After the

pipes have been properly centered and adjusted to true line and grade, firmly bolt them together, taking care to tighten all nuts around the flange to the same degree of pressure.

- B. Unless otherwise shown on the Plans, all flanged pipe shall extend 5 feet from all structures.

3.3 DISINFECTION

- A. If dirt or other foreign material that has gotten into a pipe will not, in the opinion of the Owner, be removed by flushing, the interior of the pipe shall be cleaned and swabbed with a disinfection solution of 5% hypochlorite.
- B. Water shall be diverted into the pipe from the existing distribution system or some other source approved by the Owner into the newly laid pipe. Chlorine additives shall be so proportioned that the chlorine concentration is kept at a minimum of 50 mg/l available chlorine. To ensure that this concentration is maintained, measure the chlorine residual at regular intervals.
- C. Table I shows the chlorine amount needed for each 100 feet of water line for various diameters. A 1 percent chlorine solution may be prepared either with 1 pound of calcium hypochlorite for each 8.5 gallons of water or with sodium hypochlorite.

Table I
Chlorine Required to Produce a 50 mg/l Concentration in 100 Feet of Pipe, by Diameter

Pipe Size (Inches)	100% Chlorine (pounds)	0.8% Chlorine Solutions (gallons)
6	0.061	0.73
8	0.108	1.30
12	0.240	2.88
16	0.428	5.20
18	0.540	6.58
20	0.680	8.12
24	0.980	11.70
30	1.526	18.28
36	2.197	26.32
42	2.991	35.83
48	3.906	46.80

- D. While chlorine is being applied, the Contractor shall manipulate valves so that the treatment dosage will not flow back into the line that is supplying the water. The Contractor shall continue the application of chlorine until the entire line being treated is filled with chlorine solution. Then the Contractor shall retain the chlorinated water in the

line for at least 24 hours, during which time all valves and hydrants in the line being treated shall be operated so that appurtenances can also be disinfected. After 24 hours, the treated water shall have a chlorine concentration of at least 25 mg/l throughout the line.

- E. After the applicable retention period, the Contractor shall dechlorinate and flush the heavily chlorinated water from the line until the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the system, or less than 1 mg/l. The Contractor shall perform flushing only at sites where there is adequate drainage and as approved by the Owner.
- F. The velocity of the water used to flush a line shall be at least 2.5 feet per second. The flow rates required to produce this velocity in various sizes of pipe are shown in Table II.
- G. Once a line has been flushed, the Owner shall test to make certain that the residual chlorine in the water is within acceptable limits.
- H. Note that flushing is no substitute for taking preventative measures before and during the laying of water lines. Certain contaminants, especially those in caked deposits, are difficult or even impossible to remove by flushing no matter how high the velocity. Furthermore, in pipes with diameters of 16 inches or more, it can be difficult to achieve even the minimum recommended flushing velocity of 2.5 feet per second.

Table II
Required Openings to Flush Pipelines
(40 psi Residual Pressure)

Pipe Size (Inches)	Flow Required to Produce 2.5 fps Velocity (gpm)	Orifice Size (Inches)	Number of Hydrant Outlets	Hydrant Nozzle Size (Inches)
6	220	1 - 3/8	1	2 - ½
8	390	1 - 7/8	1	2 - ½
12	880	2 - 13/16	1	2 - ½
16	1,565	3 - 5/8	2	2 - ½
18	1,980	4 - 3/16	2	2 - ½
20	2,440	-----	1	4 - ½
24	3,470	-----	2	4 - ½
30	5,560	-----	2	4 - ½
36	7,920	-----	2	4 - ½
			3	2 - ½
42	10,800	-----	2	4 - ½
			4	2 - ½
48	14,100	-----	3	4 - ½
			6	2 - ½

3.4 BACTERIOLOGICAL TESTS

- A. Forty-eight hours after a water line has undergone final flushing but before it is placed into service, the contractor shall collect a set of 2 samples for bacteriological testing from each 2,500 feet of line and at the end of that line.
- B. Samples shall be collected in sterile bottles treated with sodium thiosulphate. Do not use a hose or fire hydrant to collect samples. A standard corporation cock in the line may be installed in the main with a copper tube gooseneck assembly. After the samples are collected, the gooseneck assembly may be removed and retained for future use.
- C. The collected samples shall be taken to a TDEC approved laboratory to be tested for bacteriological quality in order to determine if they contain any coliform organisms. If the initial disinfection fails to produce satisfactory samples, disinfection will be repeated by the Contractor, at no additional cost to the Owner, until satisfactory samples are obtained.
- D. When samples are found to be satisfactory, the water line should be hydrostatically tested.

3.5 HYDROSTATIC TESTS

- A. All newly laid and backfilled pipe shall be subjected to both a pressure test and a leakage test as described in the paragraphs below. The Contractor shall provide a connection on his test apparatus for the Owner's pressure recorder during both tests. These tests shall be completed prior to the bacteriological tests.

3.6 PRESSURE TEST

- A. After pipe has been laid and backfilled as specified above, subject all newly laid pipe or any valved section thereof to a pressure of 200 psi. All services are to be laid prior to testing the main and tested as part of the test of the main.
- B. The duration of the pressure test shall be at least two hours. The specified pressure shall be maintained within 200 psi during this test or 1-½ times working pressure, whichever is greater. The pressure cannot vary over 4 psi during the test.
- C. Slowly fill each valved section of pipe with water. Generally newly laid line is to be filled using a 1 inch line between an existing water line and the new line. A 1 inch corporation cock is to be installed on each line and a 1 inch meter and 1 inch check valve installed in the 1 inch line. Insert plugs in these taps after all tests are completed.
- D. Flush with this 1 inch line until the chlorine residual is below 5 parts per million. Apply the specified pressure (based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge) with a pump connected to

the pipe in a manner satisfactory to the Owner. The Contractor shall furnish the pump, the pipe, connection, gauges, and all necessary apparatus.

- E. The pipe shall be filled at least 24 hours prior to testing. After the Contractor’s test indicates there is no leakage notify the Owner to witness the test.
- F. Before applying the specified test pressure, expel all air from the pipe. If hydrants or blow-offs are not available at high places, make the necessary taps at the points of highest elevation before testing and insert plugs after the tests have been completed.
- G. Carefully examine all exposed pipes, fittings, valves, and hydrants during the test. Remove any cracked or defective pipes, fittings, valves, or hydrants discovered in consequence of the pressure test.

3.7 LEAKAGE TEST

- A. All newly installed and backfilled pipe shall be subjected to a leakage test, conducted in the presence of the Owner immediately after the pressure test. The Contractor shall furnish the pump, pipe, connections, gauges, meter, and all necessary apparatus as well as all necessary assistance to conduct the test.
- B. The leakage test shall be conducted by measuring, through a calibrated meter, the amount of water which enters the test section under 200 psi or normal working pressures, whichever is greater, for a period of at least 2 hours. No installation will be accepted until the leakage is less than the number of gallons per 2 hour period as shown in the table below.
- C. Should any test of pipe laid disclose leakage greater than that specified, the Contractor shall at his own expense locate and repair the defective joints until the leakage is within the specified allowance.

Leakage Test Allowance

<u>Pipe Sizes (Inches)</u>	<u>Gallons per 1,000 Feet of Pipe</u>
6	0.6
8	0.8
12	1.1
16	1.5
18	1.7
20	1.9
24	2.2
30	2.8
36	3.3
42	3.9
48	4.4

3.8 DISINFECTION PROCEDURE AFTER CUTTING INTO OR REPAIRING EXISTING LINES

- A. The procedures outlined above apply primarily to cases in which the lines are wholly or partially dewatered. However, leaks or breaks that are repaired with clamping devices while the lines remain full of water under pressure present little danger of contamination and require no disinfection.
- B. When an existing line is opened, whether by accident or design, the excavated area could be wet and contaminated because of the presence of sewers and/or groundwater nearby. The danger of contamination from such pollution can be lessened if liberal quantities of hypochlorite are applied to the open trenches. It is best to use tablets for disinfection in these cases because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation site.
- C. Treat the lines by the slug method in accordance with AWWA C651, when applicable.
- D. The following disinfection procedure is considered the minimum that may be used when existing lines are repaired:
 - 1. Swab the interior of all pipes and fittings (particularly couplings and tapping sleeves) that are to be used in repairing an existing line with a solution of 5 percent hypochlorite before installation.
 - 2. The most practical means of removing the contamination introduced into a line during repairs is to give the line a thorough flushing. If the locations of valves and hydrants make it possible, flushing in both directions is recommended. Start flushing as soon as repairs are completed, and continue until all discolored water is eliminated.

3.9 CLEANUP

- A. After completing each section of water line, all debris and construction materials shall be removed from the work site. Then the surface shall be graded and smoothed on both sides of the line. The entire area shall be left clean and in a condition satisfactory to the Owner. The Contractor shall keep cleanup operations as close to active pipe laying activities as practical, generally following by less as 300 feet, or as approved by the Owner.

END OF SECTION

**SECTION 03300
CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

1.01 SCOPE

- A. This section covers concrete to be used for thrust blocking and joint restraint.

1.02 QUALITY ASSURANCE

- A. Perform cast-in-place concrete work in accordance with ACI 318, unless specified otherwise in this Section.

1.03 SUBMITTALS AND TESTS

- A. Submit proposed mix design and certified test results for each class of concrete to Engineer for review prior to commencement of work.
- B. Tests of cement and aggregates shall be performed to ensure conformance with specification requirements. Manufacturer's certification that materials meet specification requirements and results of manufacturer's own material tests will be acceptable in lieu of tests by inspection and testing firm.
- C. Field quality control tests are specified in Part 3 of this Section.

1.04 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete for Buildings.
- B. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- C. ACO 305 - Recommended Practice for Hot Weather Concreting.
- D. ACI 306 - Recommended Practice for Cold Weather Concreting.
- E. ACI 318 - Building Code Requirements for Reinforced Concrete.
- F. ASTM C33 - Concrete Aggregates.
- G. ASTM C94 - Ready-mixed Concrete.
- H. ASTM C150 - Portland Cement.
- I. ASTM C171 - Sheet Materials for Curing Concrete.
- J. ASTM C260 - Air Entraining Admixtures for Concrete.
- K. ASTM C309 - Liquid Membrane-forming Compounds for Curing Concrete.
- L. ASTM C494 - Chemical Admixtures for Concrete.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. Cement: Portland cement, ASTM C150, type I, gray color.
- B. Fine and Coarse Aggregates: ASTM C33.

- C. Water: Clean, and free from injurious amounts of oil, alkali, organic matter, or other deleterious material.

2.02 ADMIXTURES

- A. Air Entrainment: ASTM C260.
- B. Chemical: ASTM C494.

2.03 CURING MATERIALS

- A. Polyethylene Film: 4 mil thick, white opaque color, ASTM C171.

2.04 CONCRETE MIXES

- A. Mix concrete in accordance with ASTM C94.
- B. Provide concrete of the following strength.
 1. Compressive strength (28 day): 4,000 psi for structured slabs. 2,500 psi for all other applications.
 2. Entrained air content: As indicated in ACI 301, Table 3.4.1.
 3. Cement content: Minimum 564 pounds per cubic yard.
 4. Water cement ratio: Maximum 6 gallons per bag.
 5. Slump: 2 inch minimum, 4 inch maximum.
- C. Select proportions for normal weight concrete in accordance with ACI 301, 3.8, Method 2.
- D. Use water reducing admixtures only when accepted by Engineer.
- E. Use accelerating admixtures only in cold weather and only when accepted by Engineer. If accepted, use of admixture will not relax cold weather placement requirements. Calcium chloride may be used only with written consent of Engineer for each use and location.
- F. Use retarding admixtures only in hot weather and only when accepted by Engineer.
- G. Use air entrained concrete for all concrete exposed to the exterior.

PART 3 - EXECUTION

3.01 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304.
- B. Notify Engineer minimum 24 hours prior to commencement of concreting operations.
- C. Ensure anchors, seats, plates, and other items to be cast into concrete are placed, held

securely, and will not interfere in placing concrete. Rectify same and proceed with work.

- D. Maintain records of poured concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.
- E. Ensure reinforcement, inserts, and embedded parts are not disturbed during concrete placement.
- F. Pour concrete continuously between predetermined construction and control joints. Do not break or interrupt successive pours such that cold joints occur.
- G. Honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.
- H. Conform to ACI 305 when concreting during hot weather.
- I. Conform to ACI 306 when concreting during cold weather.
- J. Maintain concrete cover around reinforcing in accordance with ACI 318 or as otherwise indicated on drawings.

3.02 CURING AND PROTECTION

- A. Beginning immediately after placement, protect concrete from premature drying, excessive hot or cold temperatures, and mechanical injury. Maintain concrete with minimal water loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- B. Spread polyethylene film over slab areas, lapping edges and sides a minimum of 6 inches, maintain in place with pressure sensitive tape and plywood for 3 days.

3.03 CONCRETE TESTING

A. GENERAL

- 1. Concrete shall be tested to ensure that the concrete will meet the requirements of this Specification. The Contractor shall perform all necessary sampling, storing, transporting, handling, and testing and shall provide all equipment or materials necessary to satisfactorily perform this work. All laboratory tests shall be performed by an independent testing laboratory approved by the Engineer and paid for by the Contractor.

B. SLUMP TESTS

- 1. Slump tests shall be made in accordance with ASTM C-143 and with such frequency as to insure proper consistency of the concrete mix.

C. COMPRESSION TESTS

1. Compression test samples shall be made and cured in accordance with ASTM C-31. Not less than four samples shall be made for each test; two of these samples shall be broken at 7 days and two at 28 days. One test shall be made for each 50 cubic yards of concrete poured or not less than one test per day if less than 50 cubic yards are poured. Samples shall be tested in accordance with ASTM C-39.

D. REPORTING TEST RESULTS

1. The testing laboratory shall submit originals of the test results to the Engineer.

END OF SECTION

**SECTION 03303
CONCRETE FOR UTILITIES**

1. GENERAL

- 1.1 This item shall include furnishing and installing concrete blocking, cradles, anchors, caps, pipe protection, and/or encasement at the locations shown on the drawings and/or as directed by the Owner.
- 1.2 Submit concrete mix design, including all add mixtures with past strength data for review per the requirements of Section 01302 – Submittals and Substitutions.

2. PRODUCTS

NOT USED

3. EXECUTION

- 3.1 Concrete work shall conform to ACI 301-72 (as revised), as modified by the supplemental requirements listed below.
 - A. Strength: The strength of concrete shall be 4,000 psi unless otherwise shown on the drawings.
 - B. Durability: All concrete exposed to weather shall be air entrained.
 - C. Slump: Concrete shall be proportional and produced to have a slump of 3-inches with a 1-inch tolerance.
 - D. Admixtures: Air entrainment, mandatory for concrete exposed to weather, may be used. A water reducing admixture [retarding (normal or accelerating) depending on placing temperature] may be used if approved by the Owner.
 - E. Reinforcing Steel: Yield strength of reinforcing steel shall be 60,000 psi.

END OF SECTION

**SECTION 03310
REINFORCING STEEL FOR CONCRETE**

PART 1: GENERAL

1.01 SCOPE

- A. The work to be performed under this Division shall consist of furnishing and placing all reinforcing steel for use in reinforced concrete and any other incidental work.

1.02 MATERIALS

A. STEEL BARS

- 1. Reinforcing steel bars shall be high strength grade steel conforming to ASTM 615-60 and shall be deformed.

B. WELDED STEEL WIRE FABRIC

- 1. Welded steel fabric shall conform to ASTM A-185.

1.03 MATERIALS TESTING

- A. Steel bars shall be tested by an independent testing laboratory in accordance with ASTM A-615-60. Welded steel wire fabric shall be tested by an independent testing laboratory in accordance with ASTM A-185. Reports of test results shall be submitted (in duplicate) to the Engineer.

1.04 SHOP DRAWINGS

- A. Complete shop drawings, bending diagrams and schedules of the steel to be used in the work shall be submitted (in duplicate) to the Engineer for review and approval prior to the fabrication of the steel. The steel received at the job shall be labeled so as to facilitate placing it as shown on the shop drawings.

1.05 PLACING REINFORCING STEEL

- A. When concrete is poured, reinforcing steel shall be free from rust, scale or any coating that will reduce the bond.
- B. Reinforcing steel shall be placed according to the Plans and adequately secured in position by concrete, metal, or other approved spacers, or ties.
- C. Reinforcement shall be spliced only as shown on the Plans or as directed by the Engineer.
- D. The Engineer shall have inspected the placing of the reinforcement steel and given approval to proceed before any concrete shall be poured.

END OF SECTION

**HALLSDALE-POWELL
UTILITY DISTRICT
TECHNICAL SPECIFICATIONS**

WATER LINE SPECIFICATIONS

PART 1 GENERAL

1.1 Preface

- A. The standard specifications have been prepared to complement the standard detail drawings and to provide the qualitative requirements for products, materials and workmanship for construction of additions to and replacements of the water and wastewater system of Hallsdale-Powell Utility District (HPUD). These Standard Specifications are only to be used for projects with Drawings which have been approved by the Tennessee Department of Environment Conservation, Division of Water Resources as prepared by a developer's engineer whose drawings must first be approved by HPUD. All standard specifications are subject to revision for a special project.

PART 2 REQUIREMENTS

2.1 Engineers Requirements

- A. The engineer shall field verify all utilities' locations and elevations.
- B. The engineer shall provide a proposed site plan drawing to HPUD to be approved before the project starts. If HPUD returns the drawings to the engineer with revisions the drawings shall be revised by the engineer and returned to HPUD.
- C. The engineer shall have the drawings accepted by HPUD before sending them to The Tennessee Department of Environment and Conservation.
- D. The engineer shall provide HPUD with two sets of paper copy as-built drawings and an electronic copy in dgn format after the job has been completed.
- E. The engineer shall provide the items listed below on the As-built drawings:
 - 1. Location of Waterline
 - 2. Location of Valves
 - 3. Location of Fire Hydrants
 - 4. Location of Water Service Stub Outs
 - 5. Location of Blow-Offs
 - 6. Type of Pipe Materials

2.2 Contractors Requirements

- A. The contractor shall guarantee all materials, equipment and workmanship for a period of one year from the date of final acceptance of the work by HPUD. If during this time period any material, equipment, or item of construction proves defective, the contractor shall make the repairs at their own expense to HPUD specifications.
- B. The contractor shall comply with all applicable laws, regulations and requirements which may or may not be included in these technical specifications, including, but not limited to, contractor Licensing Act of 1994, as amended, and the Tennessee State, Health, and Labor Standards.
- C. The contractor shall obtain all licenses and permits prior to the start of work. Copies of each permit shall be submitted to HPUD. The contractor shall have their municipality utility license to install water and sewer HPUD's district. The contractor shall be responsible for obtaining permission to work in the right-of-way from the necessary agencies.
- D. The contractor is required to contact HPUD inspector three days prior to construction for a pre-construction meeting.
- E. The contractor shall submit three (3) copies of the materials they plan to use.
- F. The contractor is responsible for getting the most recently revised plans and to be working off those plans.
- G. The contractor is responsible for pre-testing all lines before calling HPUD for testing. The contractor is responsible for calling the inspector and setting up testing dates seven days prior to final testing.

2.3 Developer Requirements

- A. The developer shall read and sign the Developers Agreement and return it to HPUD main office.
- B. The developer shall refer to the Developers Agreement for most requirements.
- C. The developer is responsible for the engineer and contractor meeting their requirements.
- D. The developer is responsible for all costs in providing HPUD with as-built plans.

HALLSDALE POWELL UTILITY DISTRICT'S WATER LINE SPECIFICATIONS

PART 3 PRODUCTS

3.1 Pipe

- A. PVC Pipe: (2"- 4") SDR 17 Class 250 with elastomeric gasketed joints, 20-foot laying length. Integral thickened bell at annular recess designed, sized, and shaped so that gasket is locked in place against displacement. The District will insist on approving the manufacturer on all pipe and fittings.
- B. PVC Pipe Ultra-Blue: (6"-12") ASTM F1483, Class 200 with elastomeric gasketed joints, 20-foot laying length. Integral thickened bell at annular recess designed, sized and shaped so that the gasket is locked in place against displacement.
- C. Ductile Iron Pipe shall be in conformance with AWWA C151/A21.51 Standard, Pressure Rating of 250 PSI, and push on joints lined with cement mortar according to ANSI 21.4/AWWA C-104. Ductile Iron fittings shall meet AWWA C110 standards, Pressure Rating of 250 PSI and made in the United States with no slots. Joints shall be in conformance with AWWA standards C111/A21.11, Rubber gasket joints for Ductile-Iron Pressure Pipe and fittings. **All water pipe over 12" in diameter, Fire Lines, and water lines under paved areas shall be ductile iron pipe.** All pipe, fittings, and jointing compound shall be NSF approved and shall be appropriately marked or labeled.
- D. Polyethylene pipe (HDPE) shall have a co-extruded blue cover or stripes designating use for potable water. Pipe shall be SDR 11 PE 3408, manufactured by an approved manufacturer. Pipe with extruded blue stripes shall have a minimum of three equally spaced stripes. Pipe shall have a heat indented print line containing the information required in ASTM D 3035.

PART 4 EXECUTION

4.1 General Requirements

- A. All ductile iron, HDPE, and PVC shall be installed with a 12-gauge solid copper wire with coating, which shall extend above ground 3 feet in valve boxes and shall run up fire hydrants base and be fixed to the bottom flange with 2" accessible. Refer to drawings.
- B. During pipe installation contractor shall take every precaution to prevent foreign material from entering the pipe. When installing pipe through a bored hole the leading end of the pipe to be inserted shall be closed. After water pipe has been placed in the ditch or inserted through a bored hole it shall be examined for damage. Damaged pipe shall be replaced, and corrective measures shall be taken to prevent damage to the replacement pipe.

HALLSDALE POWELL UTILITY DISTRICT'S WATER LINE SPECIFICATIONS

- C. All pipes laid at a slope of 20 percent or greater will use an additional restrained joint fitting.
- D. Wherever pipe must be deflected from a straight line the pipe shall not break more than 11" in a 20' joint or a 11' 1/8" or 22' 1/2" bend will be installed at the bend.
- E. Minimum cover of 36 inches shall be provided over the top of the pipe, except under streets and driveways where 48 inches of cover shall be provided.
- F. Connections to existing lines and connection of service lines shall be coordinated with HPUD.
- G. All intersections will be built with ductile iron pipe regardless of line material being used (all hydrants, short nipples between valves, fittings, etc. shall be ductile iron). All intersections will be rodded together or employ a restrained-joint gland (mega-lugs count as a restrained-joint gland), but not a retainer gland, and will be so constructed to allow placement as a unit. Quick connect adapters (Flex T-3) can be used if approved by HPUD inspector. Concrete thrust blocking may be required but does not replace restrained joint construction.
- H. Whenever pipe installation is not in progress, the open ends of the pipe shall be closed either with a watertight plug or by other means approved by Hallsdale Powell Utility District.
- I. If the water main to be installed parallels a sewer line, there must be at least 10 feet horizontally from any sewer or sewer manhole. In conditions where the 10 feet of horizontal separation cannot be obtained, the water main shall be laid in a separate trench so that the bottom of the water main is at least 18 inches above the sewer pipe.
- J. If the water main to be installed crosses under a sewer line, the water main must be Ductile Iron Pipe for a distance of 10 feet on either side of the sewer, with a full pipe section centered under the sewer, along with an 18" minimum separation. The water main, when installed under the sewer, shall be encased in concrete with a minimum 6" concrete depth to the first joint in each direction.
- K. For all roadway crossings and stream crossings, water pipe shall be installed in a casing pipe double the size of the water main. The pipe shall be centered with centering spacers at each end of the casing and at each bell of pipe. All pipe inserted through casing must be ductile iron pipe.
- L. All water mains installed that come to a dead end must have a flushing device at the end of the line.

4.2 High Density Polyethylene (HDPE)

- A. Prior to installing pipe through a bored hole, ensure that the size of the hole is of sufficient diameter to prevent pipe stress during installation. The leading end of the pipe to be inserted shall be closed to prevent the entrance of dirt and debris. After insertion, the leading end of the pipe shall be examined in the exit bell hole to ensure that the pipe has not been damaged during insertion. Damaged pipe shall be replaced after corrective measures have been taken to prevent damage to the replacement pipe.
- B. HDPE pipe shall be handled using canvas or nylon slings. If a forklift is to come in direct contact with HDPE pipe, the forks shall be padded. HDPE pipe shall be stored in a manner, which minimizes crushing or bending. HDPE pipe should lay flat and be stacked no higher than 84 inches.
- C. HDPE fusion joints shall be allowed to cool for the required time. The contractor shall be qualified to perform HDPE fusion by the product manufacturer and shall provide proof of qualification prior to beginning work.

4.3 HDPE Pipe Joining

- A. HDPE pipe must be joined using a qualified joining procedure and by persons qualified on that procedure.
- B. HDPE shall be joined using socket fusion for 2 inch and smaller; butt fusion larger than 2 inches. Fusion shall take place weather conditions acceptable to HPUD.
- C. Contractor fusion training shall be completed by a manufacturer or manufacturer representative acceptable to HPUD. Contractor shall provide proof of Training.
- D. Mechanical couplings designed for use in HDPE piping systems have qualified installation procedures developed by the manufacturers. These procedures shall be followed for installation.
- E. Aqua-grip or other approved HPUD fittings shall be used for wet tie-ins.

HALLSDALE POWELL UTILITY DISTRICT'S WATER LINE SPECIFICATIONS

PART 5 THRUST BLOCKING

5.0 General Requirements

- A. Thrust blocking shall be provided at all bends of 11'1/4" or greater and tees and valves. Blocking shall be poured against undisturbed earth and shall be a minimum of 12 inches thick and 3000 psi and reconstructed so that the pipe and fitting joints will be accessible for repairs. All pipe and fittings in contact with concrete thrust blocks should be wrapped in plastic sheeting. Refer to the chart below for thrust blocking reference: **If pressure exceeds test pressure in chart below contractor shall recalculate thrust blocking volume.**

THRUST BLOCKING CHART			
PIPE SIZE @ TEST P.S.I.	VERTICAL BEND (degrees)	VOLUME OF CONCRETE (ft cubed)	SIDE OF CUBE (FEET)
4" @ 300 psi	11 1/4	8	2
	22 1/2	11	2.2
	30	17	2.6
	45	30	3.1
6" @ 300 psi	11 1/4	11	2.2
	22 1/2	25	2.9
	30	41	3.5
	45	68	4.1
8" @ 300 psi	11 1/4	16	2.5
	22 1/2	47	3.6
	30	70	4.1
	45	123	5.0
12" @ 250 psi	11 1/4	32	3.2
	22 1/2	88	4.5
	30	132	5.1
	45	232	6.1
16" @ 225 psi	11 1/4	70	4.1
	22 1/2	184	5.7
	30	275	6.5
	45	478	7.8
20" @ 200 psi	11 1/4	91	4.5
	22 1/2	225	6.1
	30	330	6.9
	45	560	8.2
24" @ 200 psi	11 1/4	128	5.0
	22 1/2	320	6.8
	30	480	7.9
	45	820	9.4

HALLSDALE POWELL UTILITY DISTRICT'S WATER LINE SPECIFICATIONS

PART 6 SERVICE ASSEMBLIES

6.1 Products

- A. Corporation Stop: The corporation stop shall be made of solid bronze and furnished with AWWA CC threads and compression connections for Type-K Copper.
- B. Type K copper: All 3/4"- 1" service lines shall be Type K copper.
- C. Tapping Saddle: Tapping saddle shall be threaded to accept the corporation stop specified above. All tapping saddles shall be a ductile saddle with an epoxy coating with a stainless-steel band.
- D. Ball Valve: 3/4" or 1" ball valve with a 5/8" reduced port is required. All ball valves must be female pipe thread or compression.

ITEM	MODEL #	BRAND	DETAILS
Corporation Stop	B25008	Mueller or equal	CC Threads
	Fb1000	Ford or equal	CC Threads
Tapping Saddle	DR2S	Mueller or equal	CC Threads 3/4" & 1"
	FS202	Ford or equal	CC Threads 3/4" & 1"
Ball Valve	B25170R	Mueller or equal	
	B41 Series with Q nut	Ford or equal	
Yoke	234B2458R2	Mueller or equal	5/8 X 3/4 X 7
	VBH72-7W-4M-33-Q	Ford or equal	5/8 X 3/4 X 7
Meter Box for 3/4" Meter	MS1518B	Mid-State or equal	Round Plastic Box
Meter Box Lid for 3/4"		Mid-State or equal	15" Cast Iron Lid
Meter Box for 1-2"			Jumbo Box with a Cast Iron Reading Lid

6.2 General Requirements

- A. The contractor will be responsible for running all service lines using a tapping saddle, corporation stop, type K copper and a ball valve at the end of the service line.
- B. The copper service line shall have a 3/4" or 1" ball valve at the end of the line. The ball valve shall have a piece of 6" PVC Pipe, painted blue, with a cap extending 3 feet above the ground over the top of it.

HALLSDALE POWELL UTILITY DISTRICT'S WATER LINE SPECIFICATIONS

- C. The service line shall have a minimum of 18 inches of cover.
- D. The contractor is responsible for providing temporary services as approved by the District where needed.
- E. Services crossing a road or driveway must be in casing a **minimum of three inches in diameter**. This casing pipe maybe PVC or HDPE. If the service is installed 3 feet to 8 feet deep, thin-walled PVC may be used.

PART 7 VALVES

7.1 Valves

VALVE	MODEL NUMBER	TYPE
Gate	A2360	Mueller or equal
Butterfly	B5227	Mueller or equal
Gate	7571-01	M&H or equal
Butterfly	4500-MJ-C1250	M&H or equal
Gate	Series 2500	American or equal

- A. Gate Valves (2” – 12”) shall be iron body, bronze trim, resilient wedge design, non-rising stem, turning **counterclockwise to open**. Valves shall meet the requirements of AWWA C509. Internal and external iron surfaces of the valve shall be coated with fusion bonded epoxy meeting the requirements of AWWA C550. All Valves shall be by Mueller, M&H, or American. HPUD must approve the class of the valve being used before installing.
- B. Gate Valves (12” & Larger) shall be resilient wedge type rated for 250 p.s.i.g. cold water working pressure. The gate valve stem and wedge nut shall be copper alloy in accordance with Section 4.4.5.1 of AWWA C515 standard.
- C. Butterfly Valves (12” & Larger) all butterfly valves shall be of the rubber-seated tight-closing type. They shall meet or exceed performance requirements for AWWA specification C504. HPUD inspector must approve class of valve.
- D. Valve boxes shall be standard design cast-iron with cover. Boxes shall be two-piece coal tar coated, screw and adjustable type, consisting of a cover marked water. Valve boxes must be set to be flush with finished grade. **All valves shall have a valve box.**
- E. Both valve ends shall be mechanical-joint per AWWA Specification C111. Accessories (Bolts, glands and gaskets) shall be supplied by the valve

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manufacturer.

- F. All internal and external surfaces shall have an epoxy coating. Epoxy coating shall conform to AWWA standard C550.
- G. The operating nut and valve box shall be extended if deeper than five feet. The extension must be approved by HPUD.

PART 8 HYDRANTS

8.1 Hydrants

MODEL NUMBER	SIZE	OPEN	TYPE
421	4 1/2"	RIGHT	Mueller or equal
129	4 1/2"	RIGHT	M & H or equal
MK73	4 1/2"	RIGHT	American or equal

- A. Fire hydrants where the system can provide greater than 500 gpm @ 20 psi shall be designed for 150 PSI working pressure. Valve opening shall be 4-1/2 inches. Hydrant shall be equipped with two 2-1/2-inch nozzles, with National Standard threads. Hydrant shall be of the break-flange type. Hydrant shall be furnished with auxiliary gate valve and box.
- B. Hydrants shall be by Mueller, M&H, or American (Model MK73) or equal. Hydrants shall be open right.
- C. There shall be a hydrant or a blow-off valve at the dead end of every main. Refer to the standard drawing # 2 for blow-off assembly.

PART 9 BLOW-OFFS AND AIR RELEASE VALVES

9.1 Blowoffs

- A. Blow-offs shall be made of all brass material with a 90-degree bend. A resilient wedge design valve shall be used on blow-off assemblies. Refer to the drawings to see specifications.

9.2 Air Release Valves

- A. Refer to site plans for placements of air release valves. Site plans are subject to change by the request of Hallsdale Powell Utility District. Refer to the drawings for specifications on air release valves.

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- B. Valves shall be manufactured and tested in accordance with American Water Works Association standard C512.

VAL-MATIC AIR RELEASE VALVES OR EQUAL							
MODEL NO.	HEIGHT	WIDTH	INLET SIZE N.P.T	OUTLET SIZE	ORIFICE SIZE	MAX W.P.	WT. LBS
15A 15A.2	5 1/4"	4 3/4"	1/2" 3/4"	1/2" NPT	1/16"	175 PSI	6
22.4 22.9	6"	5 1/8"	1/2"-3/4" 1/2"- 1"	1/2" NPT	3/32" 1/16"	175 PSI 300 PSI	8
25.5 25.6	7"	6 1/8"	3/4"- 1"	1/2" NPT	1/8" 5/64"	150 PSI 300PSI	11

APCO AIR RELEASE VALVES OR EQUAL							
MODEL NO.	HEIGHT	WIDTH	INLET SIZE N.P.T	OUTLET SIZE	ORIFICE SIZE	MAX W.P.	WT. LBS
200A	10"	7"	1"	1/2" NPT	5/16"	50 PSI	20
200A	10"	7"	1"	1/2" NPT	3/16"	150 PSI	20
200A	10"	7"	1"	1/2" NPT	5/32"	300 PSI	20

A.R.I. COMBINATION AIR VALVE OR EQUAL							
MODEL NO.	HEIGHT	WIDTH	INLET SIZE N.P.T	OUTLET SIZE	ORIFICE SIZE	MAX W.P.	WT. kg
D-040-C	5.9"	4.6	1"	3/4"-1"-2"	3/8" BSP	230 psi	1.7

PART 10 TESTING & DISINFECTING

10.1 Field Test

- A. All newly installed water lines shall be tested in the presence of Hallsdale Powell Utility District before being placed into service. Prior to making tests, all air shall be expelled from the pipe. The Contractor is responsible for installing taps at high points of the line for purpose of expelling air if necessary.
- B. A two-hour test shall be made in accordance with AWWA testing procedures on the pipeline between valves or temporary plugs at a test pressure of 200 psi, for

HALLSDALE POWELL UTILITY DISTRICT'S WATER LINE SPECIFICATIONS

two hours with no loss of pressure.

- C. All newly installed lines shall be pre-tested by the contractor before contacting Hallsdale Powell Utility District for a leakage test. The Contractor will be responsible for costs for lost time incurred by Hallsdale Powell Utility District when attempting to test a faulty line. The contractor will be charged by the District 250 dollars if the first test fails and a second test is needed at a later date.

10.2 Flushing and Disinfecting

- A. All new sections of water mains including repaired portions of or extensions to existing systems must be flushed, disinfected and tested for bacteriological quality before being put into service. Disinfection must be by the use of chlorine or chlorine compounds in such amounts as to produce a concentration of at least 25 ppm at the end of 24 hours and followed by flushing.
- B. During installation, be certain to use the necessary amount of chlorine (HTH granules) necessary to provide proper disinfection. A chart will be provided to show how much granular HTH must be added to each pipe length according to its diameter. This should produce a chlorine residual of about 25mg/L.

Number of 5-gram hypochlorite tablets required for 25 mg/L dosage					
PIPE DIAMETER	13 or less	18	20	30	40
4"	1	1	1	1	1
6"	1	1	1	2	2
8"	1	2	2	3	4
10"	2	3	3	4	5
12"	3	4	4	6	7
16"	4	6	7	10	13

- C. Once the installation is complete, SLOWLY fill the line (approximately 1ft/sec) to ensure that the calcium hypochlorite granules are not flushed to the end of the line. Also, take action to release trapped air in the line while filling the line at dead ends and/or high points
- D. Once the chlorinated water has remained in the line for 24 hours, there should be detectable chlorine residual in the line at any given point. The line can now be flushed to discharge heavily chlorinated water. This can be achieved through a hydrant using a diffuser to reduce the chlorine residual to a minimum. Final chlorine residual should be less than 4 mg/L. Once this is achieved, the main is now ready for bacteriological testing and pressure testing. These two tests can be coordinated through the district inspector.

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Pipe Size (Inches)	Flow Required For 2.5 ft/sec (gpm)	Orifice Size (Inches)	Hydrant Outlet(s) (number)	Hydrant Nozzle Size Inches
4	100	15/16	1	2-1/2
6	220	1-3/8	1	2-1/2
8	390	1-7/8	1	2-1/2
10	610	2-5/16	1	2-1/2
12	880	2-13/16	1	2-1/2
14	1200	3-1/4	2	2-1/2
16	1565	3-5/8	2	2-1/2
18	1980	4-3/16	2	2-1/2
20	2440	4-3/16	2	2-1/2
24	3470	4-3/16	2	2-1/2

- E. Two sets of samples will be taken 24 hours apart and will be collected by Hallsdale Powell Utility District. Samples will need to be collected every 2500 feet. Until the sample test results are found to be satisfactory the line is not to be put into service.
- F. Following disinfection, all treated water shall be thoroughly flushed from the newly laid pipeline at its extremities until the replacement water throughout its length shall, upon test, be proved comparable to the quality of water served the public from the existing water supply system and approved by the Tennessee Department of Environment and Conservation, Division of Water Resources. This quality of water delivered by the new main should continue for a period of at least two full days as demonstrated by laboratory examination of samples taken from a tap located and installed in such a way as to prevent outside contamination. Samples shall not be taken from an un-sterilized hose.

**SECTION 01010
SUMMARY OF WORK**

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The work of this contract consists of furnishing, installing and testing water line and various appurtenances, as shown on the project plans. This work is being performed to the standards of **the Hallsdale-Powell Utility District.**

1.02 QUALITY ASSURANCE

- A. Contractor shall comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on the performance of the work.

1.03 JOB CONDITIONS

- A. Except as specifically noted, Contractor shall provide and pay for:
 - 1. Materials, labor, tools and equipment.
 - 2. Concrete, bedding stone, tie rods, and incidentals.
 - 3. Water, heat and utilities required for construction.
 - 4. Other facilities and services necessary for proper execution and completion of the work.
- B. Contractor shall secure and pay for, as necessary for proper execution and completion of work, and as applicable at time of receipt of bids, all temporary:
 - 1. Permits
 - 2. Government Fees
 - 3. Licenses
- C. Contractor shall give notices to Owners of adjacent property and utilities when prosecution of the work may affect them. Utilities and other concerned agencies shall be contacted at least 24 hours prior to cutting or closing streets or other traffic areas or excavating near underground utilities or pole lines.
- D. The rights-of-way for the water line and project limits will be provided by Owner. Contractor shall confine his construction operations within the limits indicated on the drawings, and shall use due care in placing construction tools, equipment, excavated

materials, and pipeline materials and supplies, so as to cause the least possible damage to property and interference with traffic.

- E. There shall be continuous clean-up on the job.
- F. Final restoration of all owner's property shall be performed to as good or better condition than before construction.

1.04 WORK SEQUENCE

- A. During performance of this project the Contractor shall:
 - 1. Coordinate the construction schedule and operations with the Owner and the Local County Highway Department. Traffic control is critical. The contractor shall be responsible for repairing all damage caused by his construction to all roads.
 - 2. Construct the new water line within the limits of private easements and county right-of-way with minimum interference or interruption of existing utilities. Provided permission from the Owner is obtained in advance, service may be interrupted for short periods during periods of low demand. Work shall proceed continuously (around the clock) if necessary to complete operations in the minimum time. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of **the Hallsdale-Powell Utility District**.
 - 3. Contact Owner prior to any blasting work. Contractor shall be responsible for any damage caused as a result of blasting.
 - 4. Survey all road crossings and critical depth installations in the presence of and to the satisfaction of the Owner and Engineer.
- B. Construct the Work in stages to provide for public convenience. Do not close off public use of roads or facilities until completion of one stage of construction will provide alternative access.
- C. Construct the Work to the following sequence unless prior written consent of the OWNER is obtained:
 - 1. Videotape the entire project area indicating all yards, culverts, mailboxes and other important features. Provide three copies for the approval of the engineer before construction shall be allowed to commence.
 - 2. **INSTALLATION OF NEW WATER LINES AND WATER SERVICES:** Installation to include water line and all associated appurtenances.

- D. Coordinate all work with all the local utility companies regarding overhead and underground utilities. The Contractor shall be responsible for any and all damage caused to the existing utilities resulting from the construction of the water line.

1.05 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit his use of the premises for work and for storage, and shall allow for:
 - 1. Owner's access.
 - 2. Public use.
 - 3. Other construction and utility contractors.
- B. Coordinate use of premises and utilities under direction of Owner's representative.
- C. Assume full responsibility for the protection and safekeeping of materials under this Contract, stored on or near the site.
- D. Move any stored products, under Contractor's control, which may interfere with operations of the Owner or separate Contractor.
- E. Construct temporary fence as necessary in all areas that involve school children to keep them away from construction activities during the period of construction.

1.06 BENEFICIAL USE BY OWNER

- A. Contractor shall cooperate with Owner's representative in all construction operations to minimize conflict, and to facilitate Owner usage. Owner must maintain uninterrupted service in the existing water line and other utilities in the project area.
- B. Contractor shall at all times conduct his operations as to ensure the least inconvenience to the general public.
 - 1. Coordinate work with Anderson County and the Hallsdale-Powell Utility District.
 - 2. Coordinate work with local telephone and power companies.

1.07 UNFAVORABLE CONSTRUCTION CONDITIONS

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

1.08 CUTTING AND PATCHING

- A. Contractor shall perform all cutting and patching required for the Work, and as may be necessary in connection with uncovering Work for inspection or for the correction of defective Work.

PART 2 - SALVAGED MATERIALS

- A. In the absence of special provisions to the Contract, salvaged materials, equipment or supplies that occur are the property of the Owner and shall be cleaned and stored in a workmanship like manner. Surplus excavated materials remain the property of the Owner and shall be spoiled in a workmanship like manner. All existing meter boxes shall be left in place as applicable.

PART 3 - MAINTAINING TRAFFIC

- A. Traffic shall be maintained on all roads and streets which must be crossed by the components of the project.

END OF SECTION

**SECTION 01150
MEASUREMENT AND PAYMENT**

PART 1 – WATER MAIN ITEMS

1.1 GENERAL

- A. For the information and guidance of bidders, the following explanation of the bid form items is made. The omission of reference to any items in this description shall not, however, alter the intent of the bid form or relieve the Contractor of the necessity of furnishing such items as part of the contract. The quantities set forth in the bid form are approximate and are given to establish a uniform basis for the comparison of bids. The Owner reserves the right to increase or decrease the quantity of any class or portion of the work during the progress of construction in accordance with the terms of the contract. Unit prices are used as a means of computing the final figures for bid and contract purposes, for periodic payments for work performed, for determining value of additions or deletions and wherever else as is reasonable.

- B. The basis of payment for work and materials shall be the actual amount of work completed, including but not limited to, the furnishing of all necessary labor, materials, equipment, transportation, clean up, and all other appurtenances to complete the construction and installation of the work to the configuration and extent as shown on the drawings and as described in the specifications.

1.2 WATER MAINS

Payment for furnishing and installing water mains will be made at the contract unit price per linear foot for the type and size of pipe in place and shall include all necessary labor and materials for the furnishing and laying of the pipe; dewatering if required; special restrained joints as required; clamps, harnessing, adapters, and all ductile iron fittings, megalug restraint, concrete encasement, concrete thrust blocks and anchors; tracer tape and copper wire in trench for pvc pipe and ductile iron pipe; excavation of all material encountered including rock bedding; backfill; trench stabilization; replacement of grass, sod, asphalt and concrete paving; and other surface materials not specifically designated in the Bid Proposal; road crossings; clean up; restoration of fencing, mailboxes, shrubbery, sidewalks, paved and gravel driveways and roads, and road shoulder stone; ductile iron pipe required for creek or ditch crossings; repair of existing utilities and private water lines damaged during construction; sterilization and testing. No separate payment will be made for thrust blocks; ductile iron fittings including a solid sleeve to connect to an existing water line; yard restoration; tracer tape and copper wire; mechanical joint restraint including all megalug type restraint; concrete encasement over a ductile iron line across a stream; rip rap; erosion control and other items included in the Storm Water Pollution Prevention Plan for this project, videotaping of the property and crushed stone for bedding, backfill, trench stabilization, and in gravel driveway and shoulder areas. Measurement of the pipe will be to the nearest foot along the centerline including the lengths of valves and fittings. Ductile iron fittings shall not be paid separately and will be considered as a part of the unit price per linear foot of water line.

1.3 BORE AND/OR JACK CROSSINGS

Payment for installing a water line by bore and/or jack under creeks, railroads, or roadways shall be made at the contract unit price per linear foot. The installation shall include bore pits, restrained joint Class 350 ductile iron pipe, casing, casing spacers, end seals, and all excavation and backfill.

1.4 GATE VALVES

Payment for furnishing and installing gate valves shall be made at the contract unit price for each valve in place. Payment shall include compensation for the valve, box, concrete slab around the valve cover, valve marker, megalug mechanical joint restraint, and all necessary labor, material, and equipment for the complete installation. There shall be no difference in the price for valves cut into the existing lines and those placed in new lines. No payment will be made for removing and salvaging existing gate valves and boxes.

1.5 UNCASSED BORE CROSSINGS BY DIRECTIONAL BORE

Where required by the agency having jurisdiction, or where directed by the Owner, driveway and road crossings shall be directional bored. Payment for these crossings shall be made at the contract unit price per linear foot. Price shall include furnishing all labor, materials and equipment required to bore under the roadway or driveway including the HDPE pipe, excavation of bore pits, and all other requirements.

1.6 AIR RELEASE VALVES

Payment for furnishing and installing air release valves shall be made at the contract unit price and shall include, but not be limited to, tapping of the water line; all excavation; crushed stone; backfill; furnishing and installing a corporation stop; fittings; a ball valve; labor; materials; valve boxes, air release valves; and expendables necessary to install each air release valve shown on the drawings as a complete and operational unit.

1.7 PAVEMENT REPLACEMENT

Payment for this item shall be for furnishing all labor, materials and equipment to properly cut pavement and replace the road, driveway, and pavement as specifically detailed in the specifications or as shown on the plans; which in all cases shall be equal to or better than the pavement being replaced. Payment shall also include crushed stone required for temporary maintenance. Payment for pavement replacement will be made at the contract unit price per linear foot of pipeline in trench under pavement, regardless of width.

1.8 MECHANICAL JOINT DUCTILE IRON FITTINGS

Payment for this item shall be for furnishing all labor, materials and equipment to properly install mechanical joint ductile iron fittings as specifically detailed in the specifications or as shown on the plans. Payment shall also include thrust blocks for all fittings. Payment for ductile iron fittings will be made as a part of the contract price per linear foot of water line. Megalug restraint shall be placed at all fittings.

1.9 MISCELLANEOUS CONCRETE

Concrete for encasement of pipe, fittings and under valves will be measured for payment as a part of water line installation. Payment for miscellaneous concrete SHALL NOT be made under a separate proposed item from the cost of furnishing and installing water main, footings, thrust blocks, and under valves.

1.10 MECHANICAL JOINT RESTRAINT

Payment for mechanical joint restraint SHALL NOT be made under a separate proposal item as the cost for furnishing and installing the aforementioned fittings and SHALL BE INCLUDED in the contract unit price per linear foot for water main construction.

1.11 DETECTABLE TAPE AND LOCATER WIRE

Payment for furnishing detectable tape and locater wire on all pipe will be made at the contract unit price per linear foot of water line as measured along the centerline of pipe, complete in place as shown on the plans, which price shall include all materials and labor for a complete installation.

1.12 VIDEOTAPING OF WORK AREA

Payment for videotaping of work area will be made at the Contract Unit price per linear foot of water line including three (3) complete videotapes of each work area prior to beginning any construction. The audio portion of each video shall indicate the line being shown and the location along the line with addresses. The video shall show conditions of all adjacent properties including yards, culverts, mailboxes, etc. prior to construction work beginning. One copy shall be viewed by the Engineer and approved prior to distribution to the Owner, Engineer and Contractor.

1.13 CONNECTION TO EXISTING WATER MAINS (Dry Tap)

Payment for connection to existing water mains will be made as a part of the contract unit price per each, which price shall include compensation for required sleeves, fittings, MJ restraint, cutting existing mains, removing existing caps, plugs or fittings, closing valves to isolate connection, hauling, excavating (including rock), labor, backfilling, and all other installation requirements for connection to existing mains. Tie or connection to an existing water line shall receive restraint as per the direction of the Water Authority.

1.14 DIRECTIONAL BORE CROSSINGS WITH CASING

Where required by the agency having jurisdiction, or where directed by the Owner, highway and road crossings shall be directional bored. Payment for directional highway crossings shall be made at the contract unit price per linear foot of HDPE casing with HDPE carrier. Price shall include furnishing all labor, materials and equipment required to bore under the highway including a HDPE casing pipe, HDPE carrier pipe, excavation of bore pits, casing spacers and seals, and all other highway requirements.

1.15 CUT AND CAP OR PLUG EXISTING WATER LINE

Payment for cutting an existing water line and installing a cap or plug will be made at the contract unit price per each and shall include all necessary labor and materials for the furnishing and installing the cap or plug.

1.16 MECHANICAL JOINT RESTRAINT

Payment for mechanical joint restraint SHALL NOT be made under a separate proposal item as the cost for furnishing and installing the aforementioned fittings and SHALL BE INCLUDED in the contract unit price per linear foot for water main construction.

1.17 TAPPING SLEEVE OR SADDLE AND VALVE

Payment for furnishing and installing tapping sleeves or saddles and valves shall be made at the contract unit price for each in place. Payment shall include compensation for the tapping sleeves, saddles, tapping the main, tapping gate valve, valve box, concrete slab around the valve cover, valve marker, mechanical joint restraint, and all necessary labor, material, and equipment for the complete installation. A 2" tap will be by a saddle and resilient seated gate valve as approved by the Anderson County Water Authority.

1.18 RELOCATION – WATER METER ASSEMBLY

Payment for furnishing and installing a water meter relocation shall be made at the contract unit price for each size meter assembly in place at the locations directed by the Owner. Payment for a relocation for a water meter assembly shall include compensation for tapping the water main; installing the service saddle and corporation stop for a ¾" or 1" service, a new meter setter or yoke; a new meter box and lid; clean up; and all necessary labor, materials, and equipment for the complete installation. All meter assembly components shall be the same as used by the Anderson County Water Authority. The existing AMR meter shall be transferred over and included with each new service relocation for the Anderson County Water Authority. Excluded shall be payment for furnishing and installing the service line, which shall be made under a separate Bid Item. A new meter box and top shall be used at each location while the new service line shall connect to a new meter setter or yoke and tail piece and the existing service line. All appropriate gaskets or spacers to complete the relocation of the meter assembly shall be included with the item for payment. A relocation shall include tying a new water service line from the water meter box to the existing service line to the customer.

1.19 CONNECTION TO EXISTING WATER LINE

Payment for installing a connection to an existing water line shall be paid per each at the contract unit price. The installation shall include removing the fitting at the end of the existing water line and all necessary fittings to make the connection to the existing water line including gravel or other bedding material and mechanical joint restraint.

1.20 BLOWOFF ASSEMBLY

Payment for this item shall be for furnishing all labor, materials and equipment to properly install a blowoff assembly to include a reducer to 2", a 2" gate valve with valve box, a Class 250 PVC water line to a 45° bend and Class 250 PVC pipe to just above grade level with a screw on cap. Payment shall also include crushed stone and concrete around the 45° bend. Payment for a blowoff assembly will be made at the contract unit price per each according to the size of blowoff required.

1.21 SERVICE LINE

Payment for furnishing and installing service line to the meter box of 3/4" or 1" Orburg SDR 9 CTS PE3408 WTR TBG 500 Service Line or approved equal, shall be made at the contract unit price per linear foot for the line in place. Payment shall include compensation for furnishing and laying the line; excavation of all materials encountered including rock; highway borings or jacks in a PVC casing as required; backfill including borrow dirt for suitable material if required; replacement of grass, sod, or asphalt paving for roads, shoulders, and driveways as required; clean up; all other necessary labor, materials and equipment for the complete installation. The quantity of service line to be paid shall be the length of completed service line measured along its centerline. Service piping for all households shall extend to the connection to the existing service line to the household. The amount of service line for highway borings or jacks in a PVC casing shall be paid only for that amount of service line in the casing and not for the service line leading to or from the casing. No holehogging of service lines is allowed.

END OF SECTION

**SECTION 01150
MEASUREMENT AND PAYMENT**

PART 1 – WATER MAIN ITEMS

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1.20 BLOWOFF ASSEMBLY

Payment for this item shall be for furnishing all labor, materials and equipment to properly install a blowoff assembly to include a reducer to 2", a 2" gate valve with valve box, a Class 250 PVC water line to a 45° bend and Class 250 PVC pipe to just above grade level with a screw on cap. Payment shall also include crushed stone and concrete around the 45° bend. Payment for a blowoff assembly will be made at the contract unit price per each according to the size of blowoff required.

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END OF SECTION

APPENDIX 1

LOREC

CLEARANCE OF LOREC NOTATIONS for P&S APPROVAL

Project Name _____

Contract Number _____

Agency, Date and Notation 1:

Response to Notation 1:

The ground disturbance during construction phase will be made aware to the contractor with any findings before report to the engineer and further reporting to the Tennessee Historical Commission.

Agency, Date and Notation 2:

Response to Notation 2:

Any findings made by the contractor will be reported to the engineer and further reporting made to the Coushatta Tribe of Louisiana.

Agency, Date and Notation 3:

Response to Notation 3:

The initial plans and specs will involve approval from TDEC and Corp of Engineers will be included in the submittal to determine if permit is needed.

This form must accompany Plans and Specifications sent to ECD.

CLEARANCE OF LOREC NOTATIONS for P&S APPROVAL

Project Name _____

Contract Number _____

Agency, Date and Notation 4:

Response to Notation 4:

The ground disturbance during construction phase will be made aware to the contractor with any findings before report to the engineer and further reporting to the U.S. Fish and Wildlife Service, Cookeville Office.

Agency, Date and Notation 5:

Response to Notation 5:

No changes to the plans are anticipated so the identification of no Division of Remediation sites remains valid.

Agency, Date and Notation 6:

Response to Notation 6:

The contractor will be made aware of the potential risk during the pre-construction meeting.

This form must accompany Plans and Specifications sent to ECD.

CLEARANCE OF LOREC NOTATIONS for P&S APPROVAL

Project Name 2020 Anderson County Water Line Extension

Contract Number 14049

Agency, Date and Notation 7:

The Tennessee Department of Environment and Conservation, Division of Water Resources in a letter dated February 4, 2021, stated "The project will disturb well more than one acre of land and require a Construction Stormwater Permit (CGP). Construction activities, including clearing, grading, filling and excavating, or other similar activities, including staging areas, that result in the disturbance of one acre or more of total land area require coverage under aa CGP. Target area 3 has a number of stream crossings which will require an Aquatic Resources Alteration Permit (ARAP). The topographic map for Target area 2 indicates two large sinkholes will be crossed (there are likely more than show on map). Extreme caution should be used in the filling and construction of the pipeline on, or along or in a sinkhole. It may be necessary to add extra support for the water main over the expanse of a sinkhole, even after the sinkhole has been filled."

Response to Notation 7:

The engineer will acquire the needed permits during the plans and specs phase of the project.

Agency, Date and Notation 8:

The Tennessee Department of Environment and Conservation, Division of Natural Areas in a letter dated February 22, 2021, stated "The Division of Natural Areas - Natural Heritage Program has reviewed the location of the proposed project workspace with respect to rare plant species. Based on the habitat within the project area and the type of project, we do not anticipate any impacts to occurrences of rare, threatened, or endangered plant species from this project."

Response to Notation 8:


The ground disturbance during construction phase will be made aware to the contractor with any findings before report to the engineer and further reporting to the TDEC Division of Natural Areas.

Agency, Date and Notation 9:

The Tennessee Wildlife Resource Agency in an email dated January 29, 2021, stated "We do not anticipate adverse impacts to state listed species under our authority due to the project as proposed; provided that best management practices to address erosion and sediment are implemented and maintained during construction activities."

Response to Notation 9:

The engineer will assure proper erosion and sediment are implemented by the contractor and made aware during the pre-construction meeting.



Signature, Title

8/15/23

Date

This form must accompany Plans and Specifications sent to ECD.