WARREN COUNTY WATER DISTRICT
WARREN COUNTY, KENTUCKY

SPECIFICATIONS AND
CONTRACT DOCUMENTS

Morgantown Road Area Improvements
Contract 1

Warren County
Water District

December 23, 2019

STATE OF KENTUCKY
12/23/19
JONATHAN
LAWSON
30397
LICENSED
PROFESSIONAL ENGINEER

Project No. 346992

Prepared by
Engineering Staff
Warren County Water District

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ADVERTISEMENT FOR BIDS

Separate sealed BIDS for the construction of Morgantown Road Area Improvements Contract 1, including construction of approx. 5,350 LF of new water mains (8" and 6" PVC), replacement of approx. 9,250 LF of existing small water lines (2" to 8"), one new water booster pump station, road bores, PRV stations and appurtenances will be received by Warren County Water District at the office of the General Manager at 523 U.S. Hwy 31-W Bypass, Bowling Green, Kentucky 42101 until 2:00 PM CST on January 21, 2020, and then at said office publicly opened and read aloud.

The CONTRACT DOCUMENTS may be examined at the office of Warren County Water District, 523 U.S. Hwy 31-W Bypass, Bowling Green, KY and McGraw Hill Construction Dodge at www.construction.com/projectcenter. Copies of the CONTRACT DOCUMENTS may be obtained at the office of the General Manager located at 523 U.S. Hwy 31-W Bypass, Bowling Green, KY 42101, upon payment of $100.00 for each set.

Refer all inquiries to:
Jonathan Lawson, P.E.
jonathanl@warrenwater.com
(270) 842-0052 ext. 556

December 23, 2019 John M. Dix, General Manager

INFORMATION FOR BIDDERS

General

BIDS will be received by Warren County Water District (hereinafter called the "OWNER") at the Office of the General Manager at 523 US 31W By Pass, Bowling Green, KY 42101 until 2:00 PM CST on January 21, 2020, and then at said office publicly opened and read aloud.

The ENGINEER is Jonathan Lawson, P.E. The ENGINEER'S address is Warren County Water District, 523 US 31W Bypass, Bowling Green, KY 42101, Phone 270-842-0052 ext. 556.

Requirements for BID

Each BID must be submitted in a sealed envelope, addressed to John M. Dix, General Manager, Warren County Water District at 523 US 31W By Pass, Bowling Green, KY 42101. Each sealed envelope containing a BID must be plainly marked on the outside as BID for "Morgantown Road Area Improvements" and the envelope should bear on the outside the BIDDER'S name, address, and license number, if applicable, and the name of the project for which the BID is submitted. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at Warren County Water District, PO Box 10180, Bowling Green, KY 42102-4780.

All BIDS must be made on the required BID form. All blank spaces for BID prices must be filled in, in ink or typewritten, and the BID form must be fully completed and executed when submitted. Only one copy of the BID form is required.

Each BID must be accompanied by a BID BOND payable to the OWNER for five percent of the total amount of the BID. As soon as the BID prices have been compared, the OWNER will return the BONDS of all except the three lowest responsible BIDDERS. When the Agreement is executed the BONDS of the two remaining unsuccessful BIDDERS will be returned. The BID BOND of the successful BIDDER will be retained until the PAYMENT BOND and PERFORMANCE BOND have been executed and approved, after which it will be returned. A certified check may be used in lieu of a BID BOND.

Each BID must be accompanied by the Compliance Statement regarding State and Federal Standards Provisions. The Compliance Statement shall be signed by the BIDDER indicating full compliance with the standard provisions.

Any BIDDER claiming Resident BIDDER status shall submit along with its BID the attached Affidavit for BIDDERS Claiming Resident BIDDER Status. The OWNER reserves the right to request documentation supporting a BIDDER'S claim of Resident BIDDER status. Failure to provide such documentation upon request shall result in disqualification of the BIDDER or Contract termination. A nonresident BIDDER shall submit, along with its BID, its certificate of authority to transact business in the Commonwealth as filed with the Commonwealth of Kentucky, Secretary of State. The location of the principal office indentified therein shall be deemed the state of residency for that BIDDER. If the BIDDER

is not required by law to obtain said certificate, the state of residency for that BIDDER shall be deemed to be that which is identified in its mailing address as provided in its BID.

Stipulations for BID

BIDDERS must satisfy themselves of the accuracy of the estimated quantities in the BID Schedule by examination of the site and a review of the Drawings and Specifications including ADDENDA. After BIDS have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of WORK or of the nature of the WORK to be done.

Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to its BID.

The OWNER reserves the right to delete any bid item or in the case of unit price items, the OWNER may delete, reduce or increase the quantities involved. BIDDERS shall be aware of this possibility and shall base their BIDS accordingly.

The CONTRACT DOCUMENTS contain the provisions required for the construction of the PROJECT. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve the CONTRACTOR from fulfilling any of the conditions of the Contract.

The OWNER shall provide to BIDDERS prior to BIDDING, all information which is pertinent to, and delineates and describes, the land owned and rights of way acquired or to be acquired.

A conditional or qualified BID will not be accepted.

Requirements for Award

A PERFORMANCE BOND and a PAYMENT BOND each in the amount of 100 percent of the CONTRACT PRICE, with a corporate surety approved by the OWNER will be required for the faithful performance of the Contract.

Attorneys-in-fact who sign BID BONDS or PAYMENT BONDS and PERFORMANCE BONDS must file with each BOND a certified and effective dated copy of their power of attorney.

The party to whom the CONTRACT is awarded will be required to execute the AGREEMENT and obtain the PERFORMANCE BOND and PAYMENT BOND within ten (10) calendar days from the date when the NOTICE OF AWARD is delivered to the BIDDER. The NOTICE OF AWARD shall be accompanied by the necessary AGREEMENT and BOND forms. In case of failure of the BIDDER to execute the AGREEMENT, the OWNER may consider the BIDDER in default, in which case the BID BOND accompanying the proposal shall become the property of the OWNER.

The OWNER, within ten (10) days of receipt of acceptable PERFORMANCE BOND, PAYMENT BOND and AGREEMENT signed by the party to whom the AGREEMENT was awarded, shall sign the AGREEMENT and return to such party an executed duplicate of the AGREEMENT. Should the OWNER not execute the AGREEMENT within such period, the BIDDER may, by WRITTEN NOTICE, withdraw the signed AGREEMENT. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.

The NOTICE TO PROCEED shall be issued upon execution of the AGREEMENT by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period, the time may be extended by mutual agreement between the OWNER AND CONTRACTOR. If the NOTICE TO PROCEED is not issued as stated above or within a period mutually agreed upon, the CONTRACTOR may terminate the AGREEMENT without further liability on the part of either party.

The low BIDDER shall supply the names and addresses of major material SUPPLIERS and SUBCONTRACTORS when required to do so by the OWNER. Also see requirements contained in the SUPPLEMENTAL GENERAL CONDITIONS regarding "Subcontractors, Suppliers and Others."

Basis for Award

BIDS that are not arithmetically correct shall be evaluated as follows: Discrepancies in the multiplication of quantities of work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

The OWNER may waive any informalities or minor defects 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. Should there be reasons why the Contract cannot be awarded within the specified period; the time may be extended by mutual agreement between the OWNER and the BIDDER.

The OWNER may make such investigations as deemed 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. **Poor performance on any prior Contracts between the BIDDER and OWNER (including work as a Sub-Contractor) shall be considered when determining the ability of the BIDDER to perform the WORK**. 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 AGREEMENT and to complete the WORK contemplated therein.

Award will be made in accordance with KRS 45A.494.

Award will be made to the lowest responsible BIDDER. Responsible BIDDERS are companies that have the capabilities in all respects to perform fully the Contract

requirements, and the integrity and reliability which will assure good faith performance. For the purpose of this project the OWNER will determine responsibility of bidders based on such investigations as deemed necessary to satisfy the OWNER that the BIDDER is properly qualified. A responsible BIDDER shall be a company that has successfully completed projects comprised mainly of the same or similar type construction in size and scope as the subject project. The BIDDER'S past experience shall include projects with a final Contract amount similar to this project.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the Contract throughout.

The BIDDER agrees to abide by the requirements under Executive Order No. 11246, as amended, including specifically the provisions of the equal opportunity clause set forth in the SUPPLEMENTAL GENERAL CONDITIONS.

BID

Proposal of _____ (hereinafter called "BIDDER") organized and existing under the laws of the State of _____ doing business as _____* to Warren County Water District, 523 US 31W By Pass, Bowling Green, Kentucky 42101 (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for Morgantown Road Area Improvements – Contract 1 in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID each party thereto certifies as to its own organization, that this BID has been arrived at independently, without consultation, communication or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence WORK under this Contract on or before a date to be specified in the NOTICE TO PROCEED. The BIDDER further agrees fully complete the PROJECT within two hundred seventy (270) consecutive calendar days after the date specified in the NOTICE TO PROCEED. The BIDDER further agrees to pay as liquidated damages, the sum of $400 for each consecutive calendar day thereafter as provided in Section 15 of the General Conditions.

*Insert "a corporation", "a partnership", or "an individual" as applicable.

BIDDER acknowledges receipt of the following ADDENDUM:

_____

_____

_____

BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS for the following unit prices or lump sum:

NOTE: BIDS shall include sales tax and all other applicable taxes and fees.

BASE BID SCHEDULE – CONTRACT 1
Glen Lily Rd. & W. Villa Rd.

NO.	ITEM	UNIT	UNIT PRICE	QTY.	TOTAL PRICE
1	8"x6" Tap Sleeve & Valve on PVC	EA		1	
2	6"x6" Tap Sleeve & Valve on PVC	EA		2	
3	6"x4" Tap Sleeve & Valve on CIP	EA		1	
4	8" Gate Valve	EA		2	
5	6" Gate Valve	EA		2	
6	4" PRV Assembly	EA		1	
7	2" PRV Station	EA		3	
8	8” Blowoff Assembly	EA		1	
9	Ductile Iron Fittings	LB		2,798	
10	Crushed Stone	TN		1,300	
11	Concrete	CY		20	
12	Asphalt Pavement	TN		80	
13	14” Steel Casing, by Bore, w/ 8” Rest. Jt. DIP Carrier	LF		310	
14	14” Steel Casing, Open Cut, w/ 8” Rest. Jt. DIP Carrier	LF		41	
15	12” Steel Casing, by Bore, w/ 6” Rest. Jt. DIP Carrier	LF		43	
16	12” Steel Casing, Open Cut, w/ 6” Rest. Jt. DIP Carrier	LF		12	
17	8" Class 350 D.I.P. Water Line w/ Rest. Jt.	LF		15	
18	8" Class 200 PVC Water Line	LF		4,561	
19	6" Class 200 PVC Water Line	LF		356	
20	4" Class 200 PVC Water Line	LF		15	
21	Reconnect 5/8” Water Meter	EA		5	
22	Water Service Line	LF		25	

BASE BID SCHEDULE – CONTRACT 1 (CONTINUED)
Glen Lily Rd. & W. Villa Rd.

NO.	ITEM	UNIT	UNIT PRICE	QTY.	TOTAL PRICE
23	Booster Pump Station	EA		1	
24	Valve Vault – Water Storage Tank	EA		1	
25	Communications Building	EA		1	
26	Tank Site Fence & 12' Gate	EA		1	
27	Silt Fence	LF		600	
28	Rip Rap Check Dam	TN		3	
29	Final Cleanup	LF	$2.00	5,000	$10,000.00
	TOTAL BID – Glen Lily Rd. & W. Villa Rd.				

BASE BID SCHEDULE – CONTRACT 1 (CONTINUED)
Small Line Replacements

NO.	ITEM	UNIT	UNIT PRICE	QTY.	TOTAL PRICE
1	8"x8" Tap Sleeve & Valve on PVC	EA		2	
2	6"x6" Tap Sleeve & Valve on CIP	EA		2	
3	6"x6" Tap Sleeve & Valve on PVC	EA		2	
4	6"x4" Tap Sleeve & Valve on PVC	EA		1	
5	4"x4" Tap Sleeve & Valve on PVC	EA		1	
6	12"x2" Service Saddle on PVC & 2" Gate Valve	EA		1	
7	6"x2" Service Saddle on CIP & 2" Gate Valve	EA		1	
8	6"x2" Service Saddle on PVC & 2" Gate Valve	EA		2	
9	4"x2" Service Saddle on PVC & 2" Gate Valve	EA		1	
10	4"x2" Service Saddle on CIP & 2" Gate Valve	EA		1	
11	3"x2" Service Saddle on PVC & 2" Gate Valve	EA		1	
12	3"x2" Service Saddle on ACP & 2" Gate Valve	EA		1	
13	4" Gate Valve	EA		1	

BASE BID SCHEDULE – CONTRACT 1 (CONTINUED)
Small Line Replacements

NO.	ITEM	UNIT	UNIT PRICE	QTY.	TOTAL PRICE
14	4" Blowoff Assembly	EA		2	
15	4" Side-Outlet Blowoff	EA		1	
16	2" Gate Valve	EA		1	
17	2” Blowoff Assembly	EA		10	
18	2" PRV Station	LS		1	
19	5—1/4" Fire Hydrant Assembly	EA		1	
20	Cut & Plug Existing Line	EA		14	
21	Crushed Stone	TN		1,250	
22	Ductile Iron Fittings	LB		1,050	
23	Concrete	CY		12	
24	Asphalt Pavement	TN		33	
25	14” Steel Casing, by Bore, w/2” PVC Carrier	LF		122	
26	Thread 10” Steel Casing with 6” PVC Water Line	LF		80	
27	4” Uncased Driveway Bore	LF		26	
28	2” Uncased Driveway Bore	LF		265	
29	Customer Side Service Line (Meter Relocates)	LF		1,060	
30	¾” PE Service Line	LF		275	
31	1” PE Service Line	LF		340	
32	1” PE Service Line By Bore	LF		380	
33	Relocate 5/8” Meter	EA		30	
34	Reconnect 5/8” Meter	EA		38	
35	8” Class 200 PVC Water Line	LF		360	
36	6” Class 200 PVC Water Line	LF		1,400	

BASE BID SCHEDULE – CONTRACT 1 (CONTINUED)
Small Line Replacements

NO.	ITEM	UNIT	UNIT PRICE	QTY.	TOTAL PRICE
37	4” Class 250 PVC Water Line	LF		500	
38	4” Class 200 PVC Water Line	LF		2,570	
39	2” Class 200 PVC Water Line	LF		3,615	
40	Silt Fence	LF		500	
41	Rip Rap Check Dam	TN		25	
42	Final Cleanup	LF	$2.00	8,845	$17,690.00
	TOTAL BID – Small Line Replacement				
+	**TOTAL BID – Glen Lily Rd. & W. Villa Rd. (Sheet 2)**				
=	**TOTAL BASE BID – CONTRACT 1**				

Respectfully submitted:

Signature	Address
Title	City, State, Zip
Date	Phone Number
License No. (If Applicable)	Facsimile Number

SEAL - (if BID is by a corporation)

ATTEST: _____

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____, as Principal, and _____ as Surety, are hereby held and firmly bound unto Warren County Water District 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, successors and assigns.

Signed, this _____ day of _____, 20_____. The Condition of the above obligation is such that whereas the Principal has submitted to Warren County Water District a certain BID, attached hereto and hereby made a part hereof to enter into a Contract in writing, for Morgantown Road Area Improvements – Contract 1.

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a Contract in the Form of Contract attachment hereto (properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said Contract, and for the payment of all persons performing labor 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 any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

** Required Bid Bond is 5 percent of Base Bid amount.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands 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:_____

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

COMPLIANCE STATEMENT REGARDING
STATE AND FEDERAL STANDARDS PROVISIONS

1. Equal Employment Opportunity

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, creed, sex, color 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, creed, sex, color 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 by the County setting forth the provisions of this non-discrimination clause.

B. The CONTRACTOR will, in all solicitation or advertisements for employees placed by or on behalf of the CONTRACTOR, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex, or national origin.

C. The CONTRACTOR will cause the foregoing provisions to be inserted in all subcontracts for any work covered by this Contract so that such provisions will be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

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 the rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the County's Department of Housing and Community Development and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

F. In the event of the CONTRACTOR's noncompliance with the noncompliance clauses of this Agreement or with any of such rules, regulations or orders, this Agreement may be canceled, 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, and such other sanctions may be imposed and remedies invoked as provided 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 paragraphs (a) through (g) in every subcontract or purchase order unless exempted by rules, regulations or 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 County's Department of Housing and Community Development may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that in the event the CONTRACTOR becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the County's Department of Housing and Community Development, the CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

2. <u>"Section 3" Compliance in the Provision of Training, Employment, and Business Opportunities</u>

A. The work to be performed under this Contract is on a project assisted under a program providing direct Federal financial assistance from the Division of Abandoned Mine Lands and is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 USC 1701u. Section 3 requires that to the greatest extent feasible opportunities for training and employment be given lower income residents of the project area 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 project.

B. 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 CFR Part 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.

C. The CONTRACTOR will send to each labor organization or representative of workers with which she/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/her 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.

D. 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.

E. 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 hereunder 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 for such assistance, its successors and assigns. Failure to fulfill these requirements shall subject the applicant or recipient, its contractors and subcontractors, its successor 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.

3. Access to Records

The grantee, the Federal Grantor Agency, the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to any books, documents, papers, and records of the CONTRACTOR which are directly pertinent to this specific Contract, for the purpose of making audit, examination, excerpts, and transcriptions. The CONTRACTOR shall maintain all required records for three years after the Agency makes final payments and all other pending matters are closed.

4. 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.

5. 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.

6. Interest of Members of a County

No member of the governing body of the County and no other office, employee, or agent of the County who exercises any functions or responsibilities in connection with the planning and carrying out of the program, shall have any personal financial interest, direct or indirect, in this Contract; and the CONTRACTOR shall take appropriate steps to assure compliance.

7. Interest of Other Local Public Officials

No member of the governing body of the locality and no other public official of such locality, who exercises any functions or responsibilities in connection with the planning and carrying out of the program, shall have any personal financial interest, direct or indirect, in this Contract; and the CONTRACTOR shall take appropriate steps to assure compliance.

8. Interest of CONTRACTOR and Employees

The CONTRACTOR covenants that he presently has no interest and shall not acquire interest, direct or indirect, in the study area or any parcels therein or any other interest which would conflict in any manner or degree with the performance of his services hereunder. The CONTRACTOR further covenants that in the performance of this Contract, no person having any such interest shall be employed.

_____

Name and Title of Signer (Print or Type)

_____

Signature Date

AFFIDAVIT FOR BIDDERS CLAIMING RESIDENT BIDDER STATUS

The BIDDER hereby swears and affirms under penalty of perjury that, in accordance with KRS 45A.494(2), the BIDDER is an individual, partnership, association, corporation, or other business entity that, on the date the Contract was first advertised as available for bidding:

1. Is authorized to transact business in the Commonwealth.
2. Has for one year prior to and through the date of Advertisement:
   - 2.1 Filed Kentucky corporate income taxes.
   - 2.2 Made payments to the Kentucky unemployment insurance fund established in KRS 341.49.
   - 2.3 Maintained a Kentucky workers' compensation policy.

The OWNER reserves the right to request documentation supporting a BIDDER'S claim of Resident BIDDER status. Failure to provide such documentation upon request shall result in disqualification of the BIDDER or Contract termination.

_____ _____
Signature Printed Name

_____ _____
Title Date

Company Name _____

Address _____

_____

_____

Subscribed and sworn to before me by _____ _____
(Affiant) (Title)

of _____ this _____day of _____, 20___.
(Company Name)

_____
Notary Public

My commission expires: _____

GENERAL CONDITIONS

1. DEFINITIONS

1.1 Wherever used in the CONTRACT DOCUMENTS, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

1.2 ADDENDA—Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the CONTRACT DOCUMENTS, DRAWINGS and SPECIFICATIONS, by additions, deletions, clarifications or corrections.

1.3 BID—The offer or proposal of the BIDDER submitted on the prescribed form setting forth the prices for the WORK to be performed.

1.4 BIDDER—Any person, firm or corporation submitting a BID for the WORK.

1.5 BONDS—Bid, Performance, and Payment Bonds and other instruments of security, furnished by the CONTRACTOR and his surety in accordance with the CONTRACT DOCUMENTS.

1.6 CHANGE ORDER—A written order to the CONTRACTOR authorizing an addition, deletion or revision in the WORK within the general scope of the CONTRACT DOCUMENTS, or authorizing an adjustment in the CONTRACT PRICE or CONTRACT TIME.

1.7 CONTRACT DOCUMENTS—The contract, including Advertisement For Bids. Information For Bidders, BID, Bid Bond, Agreement, Payment Bond, Performance Bond, NOTICE OF AWARD, NOTICE TO PROCEED, CHANGE ORDER, DRAWINGS, SPECIFICATIONS, and ADDENDA.

1.8 CONTRACT PRICE—The total monies payable to the CONTRACTOR under the terms and conditions of the CONTRACT DOCUMENTS.

1.9 CONTRACT TIME—The number of calendar days stated in the CONTRACT DOCUMENTS for the completion of the WORK.

1.10 CONTRACTOR—The person, firm or corporation with whom the OWNER has executed the Agreement.

1.11 DRAWINGS—The part of the CONTRACT DOCUMENTS which show the characteristics and scope of the WORK to be performed and which have been prepared or approved by the ENGINEER.

1.12 ENGINEER—The person, firm or corporation named as such in the CONTRACT DOCUMENTS.

1.13 FIELD ORDER—A written order effecting a change in the WORK not involving an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, issued by the ENGINEER to the CONTRACTOR during construction.

1.14 NOTICE OF AWARD—The written notice of the acceptance of the BID from the OWNER to the successful BIDDER.

1.15 NOTICE TO PROCEED—Written communication issued by the OWNER to the CONTRACTOR authorizing him to proceed with the WORK and establishing the date of commencement of the WORK.

1.16 OWNER—A public or quasi-public body or authority, corporation, association, partnership. or individual for whom the WORK is to be performed.

1.17 PROJECT—The undertaking to be performed as provided in the CONTRACT DOCUMENTS.

1.18 RESIDENT PROJECT REPRESENTATIVE—The authorized representative of the OWNER who is assigned to the PROJECT site or any part thereof.

1.19 SHOP DRAWINGS—All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, a SUBCONTRACTOR, manufacturer, SUPPLIER or distributor, which illustrate how specific portions of the WORK shall be fabricated or installed.

1.20 SPECIFICATIONS—A part of the CONTRACT DOCUMENTS consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.

1.21 SUBCONTRACTOR—An individual, firm or corporation having a direct contract with the CONTRACTOR or with any other SUBCONTRACTOR for the performance of a part of the WORK at the site.

1.22 SUBSTANTIAL COMPLETION—That date as certified by the ENGINEER when the construction of the PROJECT or a specified part thereof is sufficiently completed, in accordance with the CONTRACT DOCUMENTS, so that the PROJECT or specified part can be utilized for the purposes for which it is intended.

1.23 SUPPLEMENTAL GENERAL CONDITIONS — Modifications to General Conditions required by a Federal agency for participation in the PROJECT and approved by the agency in writing prior to inclusion in the CONTRACT DOCUMENTS, or such requirements that may be imposed by applicable state laws.

1.24 SUPPLIER—Any person or organization who supplies materials or equipment for the WORK, including that fabricated to a special design, but who does not perform labor at the site.

1.25 WORK—All labor necessary to produce the construction required by the CONTRACT DOCUMENTS, and all materials and equipment incorporated or to be incorporated in the PROJECT.

1.26 WRITTEN NOTICE—Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the WORK.

2. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

2.1 The CONTRACTOR may be furnished additional instructions and detail drawings, by the ENGINEER, as necessary to carry out the WORK required by the CONTRACT DOCUMENTS.

2.2 The additional drawings and instruction thus supplied will become a part of the CONTRACT DOCUMENTS. The CONTRACTOR shall carry out the WORK in accordance with the additional detail drawings and instructions.

3. SCHEDULES, REPORTS AND RECORDS

3.1 The CONTRACTOR shall submit to the OWNER such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable as are required by the CONTRACT DOCUMENTS for the WORK to be performed.

3.2 Prior to the first partial payment estimate, the CONTRACTOR shall submit construction progress schedules showing the order in which he proposes to carry on the WORK, including dates at which he will start the various parts of the WORK, estimated date of completion of each part, and as applicable:

3.2.1. The dates at which special detail drawings will be required; and

3.2.2 Respective dates for submission of SHOP DRAWINGS, the beginning of manufacture, the testing and the installation of materials, supplies and equipment.

3.3 The CONTRACTOR shall also submit a schedule of payments that he anticipates he will earn during the course of the WORK.

4. DRAWINGS AND SPECIFICATIONS

4.1 The intent of the DRAWINGS and SPECIFICATIONS is that the CONTRACTOR shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the WORK in accordance with the CONTRACT DOCUMENTS and all incidental work necessary to complete the PROJECT in an acceptable manner, ready for use, occupancy or operation by the OWNER.

4.2 In case of conflict between the DRAWINGS and SPECIFICATIONS, the SPECIFICATIONS shall govern. Figure dimensions on DRAWINGS shall govern over scale dimensions, and detailed DRAWINGS shall govern over general DRAWINGS.

4.3 Any discrepancies found between the DRAWINGS and SPECIFICATIONS and site conditions or any inconsistencies or ambiguities in the DRAWINGS or SPECIFICATIONS shall be immediately reported to the ENGINEER, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. WORK done by the CONTRACTOR after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the CONTRACTOR's risk.

5. SHOP DRAWINGS

5.1 The CONTRACTOR shall provide SHOP DRAWINGS as may be necessary for the prosecution of the WORK as required by the CONTRACT DOCUMENTS. The ENGINEER shall promptly review all SHOP DRAWINGS. The ENGINEER'S approval of any SHOP DRAWING shall not release the CONTRACTOR from responsibility for deviations from the CONTRACT DOCUMENTS. The approval of

any SHOP DRAWING which substantially deviates from the requirement of the CONTRACT DOCUMENTS shall be evidenced by a CHANGE ORDER.

5.2 When submitted for the ENGINEER'S review, SHOP DRAWINGS shall bear the CONTRACTOR'S certification that he has reviewed, checked and approved the SHOP DRAWINGS and that they are in conformance with the requirements of the CONTRACT DOCUMENTS.

5.3 Portions of the WORK requiring a SHOP DRAWING or sample submission shall not begin until the SHOP DRAWING or submission has been approved by the ENGINEER. A copy of each approved SHOP DRAWING and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the ENGINEER.

6. MATERIALS, SERVICES AND FACILITIES

6.1 It is understood that, except as otherwise specifically stated in the CONTRACT DOCUMENTS, the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the WORK within the specified time.

6.2 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the WORK. Stored materials and equipment to be incorporated in the WORK shall be located so as to facilitate prompt inspection.

6.3 Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

6.4 Materials, supplies and equipment shall be in accordance with samples submitted by the CONTRACTOR and approved by the ENGINEER.

6.5 Materials, supplies or equipment to be incorporated into the WORK shall not be purchased by the CONTRACTOR or the SUBCONTRACTOR subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

7. INSPECTION AND TESTING

7.1 All materials and equipment used in the construction of the PROJECT shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.

7.2 The OWNER shall provide all inspection and testing services not required by the CONTRACT DOCUMENTS.

7.3 The CONTRACTOR shall provide at his expense the testing and inspection services required by the CONTRACT DOCUMENTS.

7.4 If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any WORK to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the ENGINEER timely notice of readiness. The CONTRACTOR will then furnish the ENGINEER the required certificates of inspection, testing or approval.

7.5 Inspections, tests or approvals by the engineer or others shall not relieve the CONTRACTOR from his obligations to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS.

7.6 The ENGINEER and his representatives will at all times have access to the WORK. In addition, authorized representatives and agents of any participating Federal or state agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data

and records. The CONTRACTOR will provide proper facilities for such access and observation of the WORK and also for any inspection, or testing thereof.

7.7 If any WORK is covered contrary to the written instructions of the ENGINEER it must, if requested by the ENGINEER, be uncovered for his observation and replaced at the CONTRACTOR'S expense.

7.8 If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such WORK is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection, and testing; and of satisfactory reconstruction. If, however, such WORK is not found to be defective, the CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate CHANGE ORDER shall be issued.

8. SUBSTITUTIONS

Whenever a material, article or piece of equipment is identified on the DRAWINGS or SPECIFICATIONS by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the CONTRACT DOCUMENTS by reference to brand name or catalogue number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the PROJECT will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME.

9. PATENTS

The CONTRACTOR shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and save the OWNER harmless from loss on account thereof, except that the OWNER shall be responsible for any such loss when a particular process, design, or the product of a particular manufacturer or manufacturers is specified, however if the CONTRACTOR has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the ENGINEER.

10. SURVEYS, PERMITS, REGULATIONS

10.1 The OWNER shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the WORK together with a suitable number of bench marks adjacent to the WORK as shown in the CONTRACT DOCUMENTS. From the information provided by the OWNER, unless otherwise specified in the CONTRACT DOCUMENTS, the CONTRACTOR shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pile locations and other working points, lines, elevations and cut sheets.

10.2 The CONTRACTOR shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

10.3 Permits and licenses of a temporary nature necessary for the prosecution of the WORK shall be secured and paid for by the CONTRACTOR unless otherwise stated in the SUPPLEMENTAL GENERAL CONDITIONS. Permits, licenses and easements for permanent structures or permanent changes in

existing facilities shall be secured and paid for by the OWNER, unless otherwise specified. The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the WORK as drawn and specified. If the CONTRACTOR observes that the CONTRACT DOCUMENTS are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in Section 13. CHANGES IN THE WORK.

11. PROTECTION OF WORK, PROPERTY AND PERSONS

11.1 The CONTRACTOR will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the WORK. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the WORK and other persons who may be affected thereby, all the WORK and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

11.2 The CONTRACTOR will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He will erect and maintain, as required by the conditions and progress of the WORK, all necessary safeguards for safety and protection. He will notify owners of adjacent utilities when protection of the WORK may affect them. The CONTRACTOR will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the CONTRACTOR, any SUBCONTRACTOR or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the CONTRACT DOCUMENTS or to the acts or omissions of the OWNER or the ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the CONTRACTOR.

11.3 In emergencies affecting the safety of persons or the WORK or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the ENGINEER or OWNER. shall act to prevent threatened damage, injury or loss. He will give the ENGINEER prompt WRITTEN NOTICE of any significant changes in the WORK or deviations from the CONTRACT DOCUMENTS caused thereby, and a CHANGE ORDER shall thereupon be issued covering the changes and deviations involved.

12. SUPERVISION BY CONTRACTOR

The CONTRACTOR will supervise and direct the WORK. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The CONTRACTOR will employ and maintain on the WORK a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR's representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the WORK.

13. CHANGES IN THE WORK

13.1 The OWNER may at any time, as the need arises, order changes within the scope of the WORK without invalidating the Agreement. If such changes increase or decrease the amount due under the CONTRACT DOCUMENTS, or in the time required for performance of the WORK, an equitable adjustment shall be authorized by CHANGE ORDER.

13.2 The ENGINEER, also, may at any time, by issuing a FIELD ORDER, make changes in the details of the WORK. The CONTRACTOR shall proceed with the performance of any changes in the WORK so ordered by the ENGINEER unless the CONTRACTOR believes that such FIELD ORDER entitles him to a change in CONTRACT PRICE or TIME, or both, in which event he shall give the ENGINEER WRITTEN NOTICE thereof within seven (7) days after the receipt of the ordered change. Thereafter the CONTRACTOR shall document the basis for the change in CONTRACT PRICE or TIME within thirty (30)

days. The CONTRACTOR shall not execute such changes pending the receipt of an executed CHANGE ORDER or further instruction from the OWNER.

14. CHANGES IN CONTRACT PRICE

The CONTRACT PRICE may be changed only by a CHANGE ORDER. The value of any WORK covered by a CHANGE ORDER or of any claim for increase or decrease in the CONTRACT PRICE shall be determined by one or more of the following methods in the order of precedence listed below:

(a) Unit prices previously approved.

(b) An agreed lump sum.

(c) The actual cost for labor, direct overhead, materials, supplies, equipment and other services necessary to complete the work. In addition, there shall be added an amount to be agreed upon but not to exceed fifteen (15) percent of the actual cost of the WORK to cover the cost of general overhead and profit.

15. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

15.1 The date of beginning and the time for completion of the WORK are essential conditions of the CONTRACT DOCUMENTS and the WORK embraced shall be commenced on a date specified in the NOTICE TO PROCEED.

15.2 The CONTRACTOR will proceed with the WORK at such rate of progress to insure full completion within the CONTRACT TIME. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the CONTRACT TIME for the completion of the WORK described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the WORK.

15.3 If the CONTRACTOR shall fail to complete the WORK within the CONTRACT TIME, or extension of time granted by the OWNER, then the CONTRACTOR will pay to the OWNER the amount for liquidated damages as specified in the BID for each calendar day that the CONTRACTOR shall be in default after the time stipulated in the CONTRACT DOCUMENTS.

15.4 The CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the WORK is due to the following, and the CONTRACTOR has promptly given WRITTEN NOTICE of such delay to the OWNER or ENGINEER.

15.4.1 To any preference, priority or allocation order duly issued by the OWNER.

15.4.2 To unforeseeable causes 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 abnormal and unforeseeable weather, and

15.4.3 To any delays of SUBCONTRACTORS occasioned by any of the causes specified in paragraphs 15.4.1 and 15.4.2 of this article.

16. CORRECTION OF WORK

16.1 The CONTRACTOR shall promptly remove from the premises all WORK rejected by the ENGINEER for failure to comply with the CONTRACT DOCUMENTS, whether incorporated in the construction or not, and the CONTRACTOR shall promptly replace and re-execute the WORK in accordance with the CONTRACT DOCUMENTS and without expense to the OWNER and shall bear the expense of making good all WORK of other CONTRACTORS destroyed or damaged by such removal or replacement.

16.2 All removal and replacement WORK shall be done at the CONTRACTOR's expense. If the CONTRACTOR does not take action to remove such rejected WORK within ten (10) days after receipt of WRITTEN NOTICE, the OWNER may remove such WORK and store the materials at the expense of the CONTRACTOR.

17. SUBSURFACE CONDITIONS

17.1 The CONTRACTOR shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the OWNER by WRITTEN NOTICE of:

17.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the CONTRACT DOCUMENTS; or

17.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered arid generally recognized as inherent in WORK of the character provided for in the CONTRACT DOCUMENTS.

17.2 The OWNER shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the WORK, an equitable adjustment shall be made and the CONTRACT DOCUMENTS shall be modified by a CHANGE ORDER. Any claim of the CONTRACTOR for adjustment hereunder shall not be allowed unless he has given the required WRITTEN NOTICE; provided that the OWNER may, if he determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

18. SUSPENSION OF WORK, TERMINATION AND DELAY

18.1 The OWNER may suspend the WORK or any portion thereof for a period of not more than ninety days or such further time as agreed upon by the CONTRACTOR, by WRITTEN NOTICE to the CONTRACTOR and the ENGINEER which notice shall fix the date on which WORK shall be resumed. The CONTRACTOR will resume that WORK on the date so fixed. The CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to any suspension.

18.2 If the CONTRACTOR is adjudged a bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to SUBCONTRACTORS or for labor, materials or equipment or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the WORK or if he disregards the authority of the ENGINEER, or if he otherwise violates any provision of the CONTRACT DOCUMENTS, then the OWNER may, without prejudice to any other right or remedy and after giving the CONTRACTOR and his surety a minimum of ten (10) days from delivery of a WRITTEN NOTICE, terminate the services of the CONTRACTOR and take possession of the PROJECT and of all materials, equipment, tools, construction equipment and machinery thereon owned by the CONTRACTOR, and finish the WORK by whatever method he may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the WORK is finished. If the unpaid balance of the CONTRACT PRICE exceeds the direct and indirect costs of completing the PROJECT, including compensation for additional professional services, such excess SHALL BE PAID TO THE CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR will pay the difference to the OWNER. Such costs incurred by the OWNER will be determined by the ENGINEER and incorporated in a CHANGE ORDER.

18.3 Where the CONTRACTOR'S services have been so terminated by the OWNER, said termination shall not affect any right of the OWNER against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of monies by the OWNER due the CONTRACTOR will not release the CONTRACTOR from compliance with the CONTRACT DOCUMENTS.

18.4 After ten (10) days from delivery of a WRITTEN NOTICE to the CONTRACTOR and the ENGINEER, the OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the PROJECT and terminate the Contract. In such case, the CONTRACTOR shall be paid for all WORK executed and any expense sustained plus reasonable profit.

18.5 If, through no act or fault of the CONTRACTOR, the WORK is suspended for a period of more than ninety (90) days by the OWNER or under an order of court or other public authority, or the ENGINEER fails to act on any request for payment within thirty (30) days after it is submitted, or the OWNER fails to pay the CONTRACTOR substantially the sum approved by the ENGINEER or awarded by arbitrators within thirty (30) days of its approval and presentation, then the CONTRACTOR may, after ten (10) days from delivery of a WRITTEN NOTICE to the OWNER and the ENGINEER, terminate the CONTRACT and recover from the OWNER payment for all WORK executed and all expenses sustained. In addition and in lieu of terminating the CONTRACT, if the ENGINEER has failed to act on a request for payment or if the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon ten (10) days written notice to the OWNER and the ENGINEER stop the WORK until he has been paid all amounts then due, in which event and upon resumption of the WORK. CHANGE ORDERS shall be issued for adjusting the CONTRACT PRICE or extending the CONTRACT TIME or both to compensate for the costs and delays attributable to the stoppage of the WORK.

18.6 If the performance of all or any portion of the WORK is suspended, delayed, or interrupted as a result of a failure of the OWNER or ENGINEER to act within the time specified in the CONTRACT DOCUMENTS, or if no time is specified, within a reasonable time, an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, shall be made by CHANGE ORDER to compensate the CONTRACTOR for the costs and delays necessarily caused by the failure of the OWNER or ENGINEER.

19. PAYMENTS TO CONTRACTOR

19.1 At least ten (10) days before each progress payment falls due (but not more often than once a month), the CONTRACTOR will submit to the ENGINEER a partial payment estimate filled out and signed by the CONTRACTOR covering the WORK performed during the period covered by the partial payment estimate and supported by such data as the ENGINEER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the WORK but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the OWNER, as will establish the OWNER'S title to the material and equipment and protect his interest therein, including applicable insurance. The ENGINEER will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the OWNER, or return the partial payment estimate to the CONTRACTOR indicating in writing his reasons for refusing to approve payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the partial payment estimate. The OWNER will, within thirty (30) days of presentation to him of an approved partial payment estimate, pay the CONTRACTOR a progress payment on the basis of the approved partial payment estimate. The OWNER shall retain ten (10) percent of the amount of each payment until final completion and acceptance of all work covered by the CONTRACT DOCUMENTS.

19.2 The request for payment may also include an allowance for the cost of such major materials and equipment which are suitably stored either at or near the site.

19.3 Prior to SUBSTANTIAL COMPLETION, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portions of the WORK. Such use shall not constitute an acceptance of such portions of the WORK.

19.4 The OWNER shall have the right to enter the premises for the purpose of doing work not covered by the CONTRACT DOCUMENTS. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the care and protection of the WORK, or the restoration of any damaged WORK except such as may be caused by agents or employees of the OWNER.

19.5 Upon completion and acceptance of the WORK, the ENGINEER shall issue a certificate attached to the final payment request that the WORK has been accepted by him under the conditions of the CONTRACT DOCUMENTS. The entire balance found to be due the CONTRACTOR, including the retained percentages, but except such sums as may be lawfully retained by the OWNER, shall be paid to the CONTRACTOR within thirty (30) days of completion and acceptance of the WORK.

19.6 The CONTRACTOR will indemnify and save the OWNER or the OWNER'S agents harmless from all claims growing out of the lawful demands of SUBCONTRACTORS, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the WORK. The CONTRACTOR shall, at the OWNER'S request, furnish satisfactory evidence that all obligations of the nature designated above have been paid discharged, or waived. If the CONTRACTOR fails to do so the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTORS 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 the CONTRACT DOCUMENTS, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, his Surety, or any third party. In paying any unpaid bills of the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the CONTRACT DOCUMENTS by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

19.7 If the OWNER fails to make payment thirty (30) days after approval by the ENGINEER, in addition to other remedies available to the CONTRACTOR, there shall be added to each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the CONTRACTOR.

20. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER of all claims and all liability to the CONTRACTOR other than claims in stated amounts as may he specifically excepted by the CONTRACTOR for all things done or furnished in connection with this WORK and for every act and neglect of the OWNER and others relating to or arising out of this WORK. Any payment, however, final or otherwise, shall not release the CONTRACTOR or his sureties from any obligations under the CONTRACT DOCUMENTS or the Performance BOND and Payment BONDS.

21. INSURANCE

21.1 The CONTRACTOR shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S execution of the WORK, whether such execution be by himself or by any SUBCONTRACTOR or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

21.1.1 Claims under workmen's compensation, disability benefit and other similar employee benefit acts;

21.1.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;

21.1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;

21.1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person us a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person; and

21.1.5 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.

21.2 Certificates of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the WORK. These Certificates shall contain a provision that coverages afforded under the policies will not be cancelled unless at least fifteen (15) days prior WRITTEN NOTICE has been given to the OWNER.

21.3 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, liability insurance as hereinafter specified:

21.3.1 CONTRACTOR'S General Public Liability and Property Damage Insurance including vehicle coverage issued to the CONTRACTOR and protecting him from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any operations under the CONTRACT DOCUMENTS, whether such operations be by himself or by any SUBCONTRACTOR under him, or anyone directly or indirectly employed by the CONTRACTOR or by a SUBCONTRACTOR under him. Insurance shall be written with a limit of liability of not less than $500,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than $500,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than $200,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than $200,000 aggregate for any such damage sustained by two or more persons in any one accident.

21.3.2 The CONTRACTOR shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the PROJECT to the full insurable value thereof for the benefit of the OWNER, the CONTRACTOR, and SUBCONTRACTORS as their interest may appear. This provision shall in no way release the CONTRACTOR or CONTRACTOR'S surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.

21.4 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, in accordance with the provisions of the laws of the state in which the work is performed. Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the PROJECT and in case any work is sublet, the CONTRACTOR shall require such SUBCONTRACTOR similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees, unless such employees are covered by the protection afforded by the CONTRACTOR. In case any class of employees engaged in hazardous work under this contract at the site of the PROJECT is not protected under Workmen's Compensation statute, the CONTRACTOR shall provide, and shall cause each SUBCONTRACTOR to provide, adequate and suitable insurance for the protection of his employees not otherwise protected.

21.5 The CONTRACTOR shall secure, if applicable, "All Risk" type Builder's Risk Insurance for WORK to be performed. Unless specifically authorized by the OWNER, the amount of such insurance shall not be less than the CONTRACT PRICE totaled in the BID. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the CONTRACT TIME, and until the WORK is accepted by the OWNER. The policy shall name as the insured the CONTRACTOR, the ENGINEER, and the OWNER.

22. CONTRACT SECURITY

The CONTRACTOR shall within ten (10) days after the receipt of the NOTICE OF AWARD furnish the OWNER with a Performance Bond and a Payment Bond in penal sums equal to the amount of the CONTRACT PRICE, conditioned upon the performance by the CONTRACTOR of all undertakings, covenants, terms, conditions and agreements of the CONTRACT DOCUMENTS, and upon the prompt payment by the CONTRACTOR to all persons supplying labor and materials in the prosecution of the WORK provided by the CONTRACT DOCUMENTS. Such BONDS shall be executed by the

CONTRACTOR and a corporate bonding company licensed to transact such business in the state in which the WORK is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these BONDS shall be borne by the CONTRACTOR. If at any time a surety on any such BOND is declared a bankrupt or loses its right to do business in the state in which the WORK is to be performed or is removed from the list of Surety Companies accepted on Federal BONDS. CONTRACTOR shall within ten (10) days after notice from the OWNER to do so, substitute an acceptable BOND (or BONDS) in such form and sum and signed by such other surety or sureties as may be satisfactory to the OWNER. The premiums on such BOND shall be paid by the CONTRACTOR. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable BOND to the OWNER.

23. ASSIGNMENTS

Neither the CONTRACTOR nor the OWNER shall sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of his right, title or interest therein, or his obligations thereunder, without written consent of the other party.

24. INDEMNIFICATION

24.1 The CONTRACTOR will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses including attorneys fees arising out of or resulting from the performance of the WORK, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the CONTRACTOR, and SUBCONTRACTOR, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

24.2 In any and all claims against the OWNER or the ENGINEER, or any of their agents or employees, by any employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under workmen's compensation acts, disability benefit acts or other employee benefits acts.

24.3 The obligation of the CONTRACTOR under this paragraph shall not extend to the liability of the ENGINEER, his agents or employees arising out of the preparation or approval of maps, DRAWINGS, opinions, reports, surveys, CHANGE ORDERS, designs or SPECIFICATIONS.

25. SEPARATE CONTRACTS

25.1 The OWNER reserves the right to let other contracts in connection with this PROJECT. The CONTRACTOR shall afford other CONTRACTORS reasonable opportunity for the introduction and storage of their materials and the execution of their WORK, and shall properly connect and coordinate his WORK with theirs. If the proper execution or results of any part of the CONTRACTOR'S WORK depends upon the WORK of any other CONTRACTOR, the CONTRACTOR shall inspect and promptly report to the ENGINEER any defects in such WORK that render it unsuitable for such proper execution and results.

25.2 The OWNER may perform additional WORK related to the PROJECT by himself, or he may let other contracts containing provisions similar to these. The CONTRACTOR will afford the other CONTRACTORS who are parties to such Contracts (or the OWNER, if he is performing the additional WORK himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of WORK, and shall properly connect and coordinate his WORK with theirs.

25.3 If the performance of additional WORK by other CONTRACTORS or the OWNER is not noted in the CONTRACT DOCUMENTS prior to the execution of the CONTRACT, written notice thereof shall be

given to the CONTRACTOR prior to starting any such additional WORK. If the CONTRACTOR believes that the performance of such additional WORK by the OWNER or others involves him in additional expense or entitles him to an extension of the CONTRACT TIME, he may make a claim therefore as provided in Sections 14 and 15.

26. SUBCONTRACTING

26.1 The CONTRACTOR may utilize the services of specialty SUBCONTRACTORS on those parts of the WORK which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.

26.2 The CONTRACTOR shall not award WORK to SUBCONTRACTOR(S), in excess of fifty (50%) percent of the CONTRACT PRICE, without prior written approval of the OWNER.

26.3 The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of his SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

26.4 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the WORK to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the CONTRACT DOCUMENTS insofar as applicable to the WORK of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.

26.5 Nothing contained in this CONTRACT shall create any contractual relation between any SUBCONTRACTOR and the OWNER.

27. ENGINEER'S AUTHORITY

27.1 The ENGINEER shall act as the OWNER's representative during the construction period. He shall decide questions which may arise as to quality and acceptability of materials furnished and WORK performed. He shall interpret the intent of the CONTRACT DOCUMENTS in a fair and unbiased manner. The ENGINEER will make visits to the site and determine if the WORK is proceeding in accordance with the CONTRACT DOCUMENTS.

27.2 The CONTRACTOR will be held strictly to the intent of the CONTRACT DOCUMENTS in regard to the quality of materials, workmanship and execution of the WORK. Inspections may be made at the factory or fabrication plant of the source of material supply.

27.3 The ENGINEER will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

27.4 The ENGINEER shall promptly make decisions relative to interpretation of the CONTRACT DOCUMENTS.

28. LAND AND RIGHTS-OF-WAY

28.1 Prior to issuance of NOTICE TO PROCEED, the OWNER shall obtain all land and rights-of-way necessary for carrying out and for the completion of the WORK to be performed pursuant to the CONTRACT DOCUMENTS, unless otherwise mutually agreed.

28.2 The OWNER shall provide to the CONTRACTOR information which delineates and describes the lands owned and rights-of-way acquired.

28.3 The CONTRACTOR shall provide at his own expense and without liability to the OWNER any additional land and access thereto that the CONTRACTOR may desire for temporary construction facilities, or for storage of materials.

29. GUARANTY

The CONTRACTOR shall guarantee all materials and equipment furnished and WORK performed for a period of one (1) year from the date of SUBSTANTIAL COMPLETION. The CONTRACTOR warrants and guarantees for a period of one (1) year from the date of SUBSTANTIAL COMPLETION of the system that the completed system is free from all defects due to faulty materials or workmanship and the CONTRACTOR shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects, The OWNER will give notice of observed defects with reasonable promptness. In the event that the CONTRACTOR should fail to make such repairs, adjustments, or other WORK that may be made necessary by such defects, the OWNER may do so and charge the CONTRACTOR the cost thereby incurred. The Performance BOND shall remain in full force and effect through the guarantee period.

30. ARBITRATION

30.1 All claims, disputes and other matters in question arising out of, or relating to, the CONTRACT DOCUMENTS or the breach thereof, except for claims which have been waived by the making and acceptance of final payment as provided by Section 20, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association. This agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

30.2 Notice of the demand for arbitration shall be filed in writing with the other party to the CONTRACT DOCUMENTS and with the American Arbitration Association, and a copy shall be filed with the ENGINEER. Demand for arbitration shall in no event be made on any claim, dispute or other matter in question which would be barred by the applicable statute of limitations.

30.3 The CONTRACTOR will carry on the WORK and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

31. TAXES

The CONTRACTOR will pay all sales, consumer, use and other similar taxes required by the law of the place where the WORK is performed.

SUPPLEMENTAL GENERAL CONDITIONS

The provisions of the Supplemental General Conditions as described herein change, amend, or supplement the General Conditions. Provisions of the General Conditions which are not changed, amended, or supplemented, remain in full force.

1. Contract Approval

Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the project is located.

2. Contract Change Orders

2.1 All changes affecting the project's construction cost or modifications of the terms or conditions of the contract must be authorized by means of a written Contract change order which is mutually agreed to by the OWNER and the CONTRACTOR. The Contract change order will include extra work, work for which quantities have been altered from those shown in the bidding schedule, as well as decreases or increases in the quantities of installed units which are different than those shown in the bidding schedule because of final measurements. All changes must be recorded on a Contract change order before they can be included in a partial payment estimate.

2.2 When the CONTRACT sum is, in whole or in part, based on unit prices, the OWNER reserves the right to increase or decrease a unit price quantity as may be deemed reasonable or necessary in order to complete the work contemplated by this CONTRACT.

3. Partial Payment Estimates

3.1 Forms supplied by the ENGINEER shall be used when estimating periodic payments due the CONTRACTOR.

3.2 The OWNER may, after consultation with the ARCHITECT/ENGINEER, withhold or on account of subsequently discovered evidence, nullify the whole or part of any approved partial payment estimate to such extent as may be necessary to protect the OWNER from loss on account of:

3.2.1. Defective work not remedied.

3.2.2. Claims failed.

3.2.3. Failure of CONTRACTOR to make payments properly to subcontractors or suppliers.

3.2.4. A reasonable doubt that the WORK can be completed for the balance then unpaid.

3.2.5. Damage to another CONTRACTOR.

3.2.6. Performance of WORK in violation of the terms of the CONTRACT DOCUMENTS.

3.3 Where WORK on unit price items is substantially complete but lacks testing clean-up and/or corrections, amounts shall be deducted from unit prices in partial payment estimates to amply cover such testing, clean-up and/or corrections.

3.4 When the items in 3.2 and 3.3 are cured, payment shall be made for amounts withheld because of them.

3.5 Payments will not be made that would deplete the retainage nor replace in escrow any funds that are required for retainage nor invest the retainage for the benefit of the CONTRACTOR.

4. Conflict of Interest

4.1 Unacceptable bids. An ENGINEER or ARCHITECT (individual or firm including persons they employ) who has prepared plans and specifications will not be considered an acceptable bidder. Any firm or corporation in which such ENGINEER or ARCHITECT (including persons they employ) who has prepared plans and specifications will not be considered an acceptable bidder. A firm or corporation in which such an officer, employee, or holds or controls a substantial interest will not be considered an acceptable bidder. Contracts or purchases by the CONTRACTOR shall not be awarded or made to a supplier or manufacturer if the ENGINEER or ARCHITECT (firm or individual) who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer. Bids will not be awarded to firms or corporations which are owned or controlled wholly or in part by a member of the governing body of the OWNER or to an individual who is such a member.

4.2 The OWNER's officers, employees, or agents shall not engage in the award of administration of this CONTRACT if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (a) the employee, officer or agent; (b) any member of their immediate family; (c) their partner or (d) an organization which employs, or is about to employ, any of the above has financial or interest in the CONTRACTOR. The OWNER's officers, employees or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from the CONTRACTOR. The OWNER's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from the CONTRACTOR or subcontractor.

5. Protection of Lives and Property

5.1 In order to protect the lives and health of its employees under the CONTRACT, the CONTRACTOR shall comply with all pertinent provisions of the Occupational Safety and Health Administration (OSHA) and any State Safety and Health agency requirement.

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

6. Remedies

6.1 Unless otherwise provided in this CONTRACT, all claims, counterclaims, disputes, and other matters in question between the OWNER and the CONTRACTOR arising out of or relating to this CONTRACT or the breach thereof will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State in which the OWNER is located.

6.2 The arbitration provisions of this section may be initiated by either party to this CONTRACT by filing with the other party and the ENGINEER/ARCHITECT a WRITTEN REQUEST for arbitration.

6.3 Each party to this CONTRACT will appoint one arbitrator; the two arbitrators will select a third arbitrator.

6.4 The arbitrators will select a hearing location as close to the OWNER's locale as possible.

6.5 The procedure for conducting the hearings will follow the Construction Industry Arbitration Rules of the American Arbitration Association.

7. Gratuities

7.1 If the OWNER finds after a notice and hearing that the CONTRACTOR, or any of the CONTRACTOR's agents or representatives, offered or give gratuities (in the form of entertainment, gifts, or otherwise), to any official, employee, or agent of the OWNER or State officials in attempt to secure this CONTRACT or favorable treatment in awarding, or making any determinations related to the performance of this CONTRACT, the OWNER may, by written notice to the CONTRACTOR, terminate this CONTRACT. The OWNER may also pursue other rights and remedies that the law or this CONTRACT provides. However, the existence of the facts on which the OWNER bases such findings shall be an issue and may be reviewed in proceeding sunder the Remedies clause of this CONTRACT.

7.2 In the event this CONTRACT is terminated as provided in paragraph 7.1 the OWNER may pursue the same remedies against the CONTRACTOR as it could pursue in the event of a breach of the CONTRACT by the CONTRACTOR. As a

penalty, in addition to any other damages to which it may be entitles by law, the OWNER may pursue exemplary damages in an amount (as determined by the OWNER) which shall be not less than three nor more than ten times the costs the CONTRACTOR incurs in providing any such gratuities to any such officer or employee.

8. Audit and Access to Records

For all negotiated contracts (except those of $10,000 or less), the Comptroller General, the OWNER or any of their duly authorized representatives, shall have access to any books, documents, papers, and records of the CONTRACTOR, which are pertinent to the CONTRACT, for the purpose of making audits, examinations, excerpts and transcriptions. The CONTRACTOR shall maintain all required records for three years after final payment is made and all other pending matters are closed.

9. Small, Minority and Women Businesses

If the CONTRACTOR intends to let any subcontracts for a portion of the work, the CONTRACTOR shall take affirmative steps to assure that small, minority and women's businesses are used when possible as sources of supplies, equipment, construction, and services. Affirmative steps shall consist of: (1) including qualified small minority, and women's businesses on solicitation lists; (2) assuring that small, minority and women's businesses are solicited whenever they are potential sources; (3) dividing total requirements, when economically feasible, into small tasks or quantities to permit maximum participation of small minority, and women's businesses; (4) establishing delivery schedule, where the requirements of the work permit, which will encourage participation by small, minority and women's businesses; (5) using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the U. S. Department of Commerce; (6) requiring each party to a subcontract to take the affirmative steps o this section; and (7) CONTRACTORS are encouraged to procure goods and services from labor surplus area firms.

10. Anti-kickback

The CONTRACTOR shall comply with the Copeland Anti-Kickback Act (18 USC 874) as supplemented in Department of Labor regulations (29 CFR, Part 3). This act provides that each CONTRACTOR shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which whey are otherwise entitled. The OWNER shall report all suspected or reported violations.

11. Violating Facilities

Where this CONTRACT exceeds $100,000 the CONTRACTOR shall comply with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C.

1368), Executive Order 11738, and Environmental Protection Agency regulations 40 CFR Part 15 which prohibits the awarding of non-exempt federal contracts, grants, or loans to facilities included on EPA's list of violating facilities. The CONTRACTOR will report violations to the OWNER.

12. State Energy Policy

The CONTRACTOR shall comply with the Energy Policy and Conservation Act (P.L. 94-163). Mandatory standards and policies relating to energy efficiency, contained in the State Energy Conservation Plan, shall be utilized.

13. Equal Opportunity Requirements

13.1 For all Contracts in excess of $10,000 the CONTRACTOR shall comply with Executive Order 11246, entitled "Equal Employment Opportunity," as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Part 60).

13.2 The CONTRACTOR will execute the "Compliance Statement Regarding State and Federal Standards Provisions."

13.3 The CONTRACTOR's compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmation action obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4 and its efforts to meet the goals established for the geographical are where the CONTRACT 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.

13.4 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 subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the CONTRACT is to be performed.

14. Substitutions

14.1 Requirements regarding "Substitutions" as described in paragraph 8 of the General Conditions shall be modified by adding the following:

14.2 Information on any requests for substitutions shall be submitted to the ENGINEER and must be approved in writing by the ENGINEER prior to the bid date. Substitutions not so approved will not be allowed.

15. Deductions from Estimates

With reference to Paragraph 3 of these Supplemental General Conditions, when computing the total estimate to date, 20 percent shall be deducted from unit prices on pipe when pressure testing, bacteriological testing, and rough cleanup work is not completed and 10 percent shall be deducted when only rough cleanup work is lacking. The ENGINEER may not require these deductions if the work is progressing in an organized, systematic, and expeditious manner.

16. Additional Insurance Requirements and Summary

16.1 In addition to the coverages listed in Paragraph 21 "Insurance," the CONTRACTOR shall also secure Explosion, Collapse, and Underground (XCU) coverage in the amounts listed herein for other liability coverages. The CONTRACTOR shall also obtain Products and Completed Operations Insurance for the term of the contract and warranty periods. CONTRACTOR=s vehicle coverage in the amount specified herein for other liability coverages shall include "any auto" used on the project.

16.2 The CONTRACTOR=s liability insurance shall be a total coverage in an amount such that the sum of the underlying coverage and the umbrella coverage shall total $2,000,000 each occurrence and $2,000,000 aggregate. A summary of insurance coverages and minimum amounts required is presented below (also see General Conditions, Paragraph 21 for further details of coverage requirements):

General public liability:	
Bodily injury	$500,000
Property Damage	$200,000
Personal Injury	$500,000
Vehicle, "Any Auto"	$500,000 / $200,000
Explosion, Collapse & Underground	$500,000 / $200,000
Products and Completed Operations	Total Contract Amt.
"All Risks" Builders' Risk Insurance	Total Contract Amt.
Excess Liability Umbrella Coverage	Amt required for sum of general liability and umbrella to equal minimum of $2,000,000
Workmen's Compensation	As req'd by Kentucky statutes

16.3 The CONTRACTOR=s Certificate of Insurance acceptable to the OWNER shall be delivered to the OWNER with the executed Agreement, Performance Bond and Payment Bond according to the timetable described on Page 2 of the

Information for Bidders. The OWNER shall not be required to execute the Contract and proceed with the project until an acceptable insurance certificate is delivered to the OWNER. If the Certificate of Insurance as specified is not delivered to the OWNER within 10 calendar days from the date when the Notice of Award if delivered to the Bidder, the OWNER may consider the Bidder in default, in which case the Bid Bond shall become the property of the OWNER.

16.4 The Certificate of Insurance shall include positive statements regarding Explosion, Collapse, and Underground Coverage and Products and Completed Operations coverage as specified above and all other coverages required in the General Conditions and Supplemental General Conditions. If any insurance coverage expires during the term of the Contract or warranty period the CONTRACTOR shall deliver to the OWNER a new Certificate of Insurance as specified prior to the expiration date of the former policy. The cancellation clause on the Certificate of Insurance shall be worded as shown on the sample certificate on the next page and the OWNER shall be listed as an "Additional Named Insured."

16.5 The insurance shall cover all OWNER-furnished materials and equipment stored at the Site or at another location prior to being incorporated in the Work and accepted by OWNER.

17. Bid Bonds

17.1 A certified check or cash in the amount of 5 percent of the total bid may be used in lieu of a bond from a surety company; however, an "Official" check is not an acceptable substitute. Throughout these Contract Documents, the term BID BOND shall be defined so as to include the certified check or cash, where such security is used in lieu of a bond from a surety company.

17.2 If the BIDDER fails to execute and deliver the Agreement, Performance Bond, Payment Bond, and Certificate of Insurance acceptable to the OWNER within 10 days from the date when the NOTICE OF AWARD is delivered to the BIDDER, the OWNER may consider the BIDDER in default. In this case the BID BOND accompanying the proposal shall become the property of the OWNER.

18. Execution of Performance and Payment Bonds

The Attorney-in-Fact that executes Performance and Payment Bonds for the Surety must be a resident of the Commonwealth of Kentucky. Otherwise, the bonds must be co-signed by an agent with residence in Kentucky who has Power of Attorney from the Surety.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): MM/DD/20YY

PRODUCER

Insurnce Agent/Broker Name
Insurnce Agent/Broker Street Address or P.O. Box
Insurnce Agent/Broker City, State & Zip Code
Contact & Phone Number

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE		NAIC #
INSURER A:	Name of Insurance Company	NAIC#
INSURER B:	Name of Insurance Company (if applicable)	NAIC#
INSURER C:	Name of Insurance Company (if applicable)	NAIC#
INSURER D:	Name of Insurance Company (if applicable)	NAIC#
INSURER E:	Name of Insurance Company (if applicable)	NAIC#

INSURED

Contractor Name
Contractor Street Address or P.O. Box
Contractor City, State & Zip Code

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	☒	**GENERAL LIABILITY** ☒ COMMERICAL GENERAL LIABILITY ☐ ☐ CLAIMS MADE ☒ OCCUR ☒ INCLUDES XCU COVERAGE ☐ _____ GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☐ PROJECT ☐ LOC	Policy #	Effective Date	Expiration Date	EACH OCCURENCE	$1,000,000
						DAMAGE TO RENTED PREMISES (Ea occurrence)	$100,000
						MED EXP (Any one person)	$5,000
						PERSONAL & ADV INJURY	$500,000
						GENERAL AGGREGATE	$2,000,000
						PRODUCTS - COMP/OP AGG	$1,000,000
							$
A	☒	**AUTOMOBILE LIABILITY** ☒ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ☐ NON-OWNED AUTOS ☐ _____ ☐ _____	Policy #	Effective Date	Expiration Date	COMBINED SINGLE LIMIT (Each Occurrence)	$500,000
						BODILY INJURY (Per person)	$
						BODILY INJURY (Per accident)	$
						PROPERTY DAMAGE (Per accident)	$
A	☐	**GARAGE LIABILITY** ☐ ANY AUTO ☐ _____				AUTO ONLY - EA ACCIDENT	$
						OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
A	☒	**EXCESS/UMBRELLA LIABILITY** ☒ OCCUR ☐ CLAIMS MADE ☐ DEDUCTIBLE ☐ RETENTION $____	Policy #	Effective Date	Expiration Date	EACH OCCURRENCE	$1,000,000
						AGGREGATE	$1,000,000
							$
							$
							$
A	☒	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below	Policy #	Effective Date	Expiration Date	☒ WC STATUTORY LIMITS ☐ OTHER	
						E.L. EACH ACCIDENT	$500,000
						E.L. DISEASE - EA EMPLOYEE	$500,000
						E.L. DISEASE - POLICY LIMIT	$500,000
	☒	**OTHER** "ALL RISKS" BUILDER RISK OR INSTALLATION FLOATER, AS APPLICABLE	Policy #	Effective Date	Expiration Date		MINIMUM OF CONTRACT AMOUNT

"EXAMPLE"

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

"PROJECT NAME"

Certificate holder is also additional insured.

CERTIFICATE HOLDER

Owners Name
P. O. Box 10180
Bowling Green, KY 42102

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE INSURER AFFORDING COVERAGE WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

19. Guarantee

19.1 The following shall be added to Paragraph 29 of the General Conditions, "Guarantee":

19.2 When a failure of the CONTRACTOR=s work creates an emergency which threatens service to the OWNER=s customers and, in the opinion of the OWNER, the CONTRACTOR=s forces cannot be mobilized in a timely fashion, the OWNER may perform Warranty work. Work may also be performed by the OWNER under the above conditions prior to commencement of the warranty period. The CONTRACTOR shall pay the OWNER for the actual cost of all such work.

20. Subcontractors, Suppliers and Others

The CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those who are to furnish the principal items of materials and/or equipment) against whom the OWNER or ENGINEER may have reasonable objection. The CONTRACTOR shall deliver a list of all such Subcontractors, Suppliers, or other persons or organizations for acceptance by the OWNER and ENGINEER at least twenty (20) days prior to their being employed on the Project. Said list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each name listed. The CONTRACTOR shall supply any additional information regarding those named on said list that may be requested by the OWNER or ENGINEER. Acceptance of or objection to any Subcontractor, Supplier, or other person or organization shall be forwarded to the CONTRACTOR in writing within 10 days of receipt of said list by the OWNER or ENGINEER. If there are written objections, the CONTRACTOR shall then submit substitute names for acceptance. No acceptance by the OWNER or ENGINEER of any Subcontractor, Supplier, or other person or organization shall constitute a waiver of any right of the OWNER or ENGINEER to reject defective work or to object to such party after further investigation or unacceptable performance.

21. Progress Payment Subcontractors and Suppliers Release of Liens

21.1 With each partial payment estimate the CONTRACTOR shall submit to the ENGINEER a "Progress Payment Subcontractors and Suppliers Release of Lien" on the forms provided by the ENGINEER. The purpose of the releases of lien is to indicate to the OWNER that the CONTRACTOR has paid for all subcontracted work, equipment rental, supplies and/or materials (either stored or installed) that were included on the previous partial payment estimate. A separate release form shall be executed by an authorized representative of each subcontractor or supplier that had items included for payment on the previous estimate.

21.2 If the CONTRACTOR fails to provide clear release(s) of lien, the OWNER may proceed with either of the alternatives set forth in the General Conditions, Section 19.6.

22. Termination of Contractor's Services

In regards to Paragraph 18.2 of the General Conditions, the OWNER may terminate the services of the CONTRACTOR, take possession of the project, and finish the work by whatever method the OWNER may deem expedient. The reasons for such action by the OWNER are listed in the first sentence of said Paragraph 18.2 and each reason separated by the conjunction "or" shall be considered independent of the others, therefore it is not necessary for one of the reasons listed to occur in combination with any other reason listed for the OWNER to rightfully take such action.

23. Independent Contractor

Throughout the term of the contract and the specified warranty period the CONTRACTOR is and shall be considered an independent contractor and as such, is not an agent of the OWNER.

24. Required Documents for Processing Final Payment and Disbursement of Payment

When the project is completed the CONTRACTOR shall execute the following documents:

24.1 Final Estimate shall be prepared and submitted in accordance with the General Conditions, Section 19 and Supplemental General Conditions Section 3.

24.2 Prior to Disbursement of Final Payment the CONTRACTOR shall provide a "Certification of Release of Contractors Liens" as set forth on page SGC-12 of the Supplemental General Conditions and as called for in the General Conditions, Section 19.6 Payment to Contractor.

24.3 "Warranty Agreement" as set forth on Page SGC-13 of the Supplemental General Conditions and as called for in the General Conditions, Section 29 Guaranty.

24.4 "Certification of Receipt of Final Payment" as set forth on page SGC-14 of the Supplemental General Conditions shall be executed by the CONTRACTOR upon receipt of payment.

24.5 In addition to the above the CONTRACTOR shall provide for contract closeout purposes all other information, documentation, and/or certifications as may be required by any agency involved with the project including the OWNER. It shall be the CONTRACTOR's responsibility to determine from the OWNER and execute any and all such documents that may be required prior to submitting Final Estimate.

25. Wage Rates

Prevailing wage rates as issued by the Kentucky Department of Labor **are NOT required** on this Contract.

26. American Iron and Steel

American Iron and Steel compliance **is NOT required** on this Contract.

CERTIFICATION OF RELEASE OF CONTRACTOR LIENS

This is to certify that (Contractor's Name) has paid all debts for materials, supplies, labor, and subcontractors relative to the work which was performed on Morgantown Road Area Improvements – Contract 1 for Warren County Water District under a Contract dated _____.

The only exceptions are those listed below. If there are no exceptions, write in "None".

NAME	DOLLAR AMOUNT
1. _____	$_____
2. _____	$_____
3. _____	$_____
4. _____	$_____

We further certify that to the best of our knowledge there are no litigations either in process or pending in connection with the subject work with the following exceptions. If there are no exceptions, write in "None".

1. _____

2. _____

We further certify that this work was performed in strict conformance with the Drawings, Specifications, and Contract.

_____

DATE: _____ BY: _____

State of Kentucky
County of _____

I, _____, a Notary Public in and for the State of Kentucky at Large, do hereby certify that the foregoing certification from _____ was duly produced before me on this ____ day of _____, 20___.

_____
NOTARY PUBLIC, STATE OF KENTUCKY

My Commission Expires: _____

WARRANTY AGREEMENT

It is hereby agreed on this __ day of _____, 20 ___, that the Warranty Period for the work performed on Morgantown Road Area Improvements – Contract 1. Contract dated _____, 20 ___, with Warren County Water District shall end at midnight on _____, 20 ___.

_____

BY: _____

WARREN COUNTY WATER DISTRICT

BY: _____

State of Kentucky
County of _____

I, _____, a Notary Public in and for the State of Kentucky at Large, do hereby certify that the foregoing certification from _____ was duly produced before me on this _____ day of _____, 20 ___.

_____
NOTARY PUBLIC, STATE OF KENTUCKY

My Commission Expires: _____

State of Kentucky
County of _____

I, _____, a Notary Public in and for the State of Kentucky at Large, do hereby certify that the foregoing certification from _____ was duly produced before me on this _____ day of _____, 20 ___.

_____
NOTARY PUBLIC, STATE OF KENTUCKY

My Commission Expires: _____

CERTIFICATION OF RECEIPT OF FINAL PAYMENT

This is to certify that as of _____, 20___, (Contractor's Name) has accepted full and final payment for all work performed on Morgantown Road Area Improvements – Contract 1, Contract dated _____, 20___, with Warren County Water District (OWNER) and having done so, has released the OWNER in accordance with Section 20 of the General Conditions.

_____

BY: _____

State of Kentucky
County of _____

I, the undersigned, a Notary Public in and for the State of Kentucky, do hereby certify that the above Certification from_____ was on this day sworn before me and acknowledged by him to be a free act and deed.

Witness my hand this _____ Day of _____, 20___

_____
NOTARY PUBLIC

My Commission Expires: _____

STORM WATER POLLUTION PREVENTION PLAN

Project Name: Morgantown Road Area Improvements & Small Line Replacement

Project Location: Bowling Green/Warren County, Kentucky

Owner: Warren County Water District
PO Box 10180
Bowling Green, KY 42102
270-842-0052

Name: _____

Signature: _____

1. General

1.1. This Storm Water Pollution Prevention Plan (SWPPP) shall be implemented at the commencement of construction disturbance. All operators working on this project will comply with the SWPPP or obtain separate coverage under this permit.

1.2. This SWPPP includes erosion prevention measures, sediment controls measures, and other site management practices necessary to prevent the discharge of sediment and other pollutants into waters of the Commonwealth. It is intended that the site management practices be adequately protective to minimize receiving waters from being degraded and failing to support their designated uses. These sediment control measures may include retention basins, erosion control measures, and other site management practices, as required, based on site-specific conditions. Appropriate installation and maintenance will be provided to effectively minimize such discharges for storm events up to an including a 2-year, 24- hour event.

1.3. The site, erosion prevention measures, sediment control measures and other site management practices have been designed to minimize post-construction stormwater runoff using low-impact technologies. Soil compaction will be minimized except in specific site areas where intended function dictates compaction and topsoil will be preserved if at all practical.

1.4. This SWPPP includes and / or addresses the following:

1.4.1. A site description and map identifying sources of pollution to stormwater discharges associated with construction activity on site.

1.4.2. Description of erosion prevention & sediment control measures that have been developed and will be implemented in accordance with sound practices and have been developed specific to the project and

site. The goal of these devices are 80% removal of Total Suspended Solids that exceed predevelopment levels. The Kentucky Erosion Prevention and Sediment Control Field Guide and the Kentucky Best Management Practices Technical Manual shall provide general guidelines for this project.

1.4.3. All construction activities within the common plan of development. Each individual site operator will be a signatory of the SWPPP and shall not conduct activities that are not consistent with the SWPPP or result in failure or ineffectiveness of erosion & sediment control measures, or any other site management practices that have been implemented.

1.5. The primary sediment control measure for this project is vegetative buffer strips along the pipeline alignment.

2. Site Description

2.1. The project site consists of a twenty (20) foot wide construction easement, centered along a proposed water pipeline(s), a new 40'x40' water pump station site, and 200'x200' elevated water storage tank site.

2.2. Soil disturbing activities will include excavation of a trench along the proposed pipeline alignment, excavation for pump station installation, excavation at tank site for various facilities, installation of the pipeline & all facilities, backfill of the excavation, and cleanup/restoration of surface. These activities will be performed concurrently to minimize areas of open excavation.

2.3. The estimated total project area is 7.15 acres spread across multiple locations. It is estimated that approximately 35 percent, or 2.5 acres, of this project area will be disturbed.

2.4. The water quality classification of the receiving waters for this project is: not impaired (non-construction related).

3. Site Map

3.1. A Site Map is attached. Generally, the map includes the following:

3.1.1. Property lines.

3.1.2. Drainage patterns within the project area.

3.1.3. Soil will be disturbed along the proposed pipeline alignment.

3.1.4. Locations of sediment control measures and erosion control measures. Note that the primary sediment control measure is

vegetative buffer strips along the entire length of the project (where practical), and stabilization measures will be re-vegetation in all location where vegetation existed prior to construction.

3.1.5. Locations of surface waters within the project area.

3.1.6. Locations of karst features within the project area.

3.1.7. Locations of discharge points.

3.1.8. The location of equipment and material storage areas is to be determined. Once determined by the Contractor, appropriate BMP's will be identified and indicated on the Drawings.

3.1.9. The use of concrete is very limited for this project. A designated concrete washout station will be utilized as needed and will be identified on available site plans.

3.1.10. Areas in which final stabilization has been completed will be shown on the Drawings.

3.1.11. Other potential pollutant sources, as applicable.

4. There are no known industrial discharges in the project area other than construction.

5. Stormwater Controls

5.1. Erosion prevention measures, sediment controls, and other site management practices shall be as described in *Best Management Practices Manual for Erosion Prevention and Sediment Control, City of Bowling Green, KY*, dated December 2004 and as shown on the Drawings.

5.2. The primary sediment control measure for this project is vegetative buffer strips along the pipeline alignment.

5.3. Stabilization will be employed as soon as practicable, meeting criteria noted in Section 12 of this SWPPP, in critical areas.

5.4. Erosion Control Measures

5.4.1. General

5.4.1.1. The total disturbed area shall be minimized.

5.4.1.2. Trenching, backfill, and restoration shall be performed concurrently along the pipeline alignment so that only a portion of the alignment is disturbed at one time.

5.4.1.3. Clearing and grading should be scheduled to reduce the probability that bare soils will be exposed to rainfall.

5.4.2. Managing Stormwater flows on the Site

5.4.2.1. When practicable, soil from the pipeline trench should be placed on the upslope side of the trench to form diversion berms or conveyance channels.

5.4.2.2. Vegetated buffers shall remain in place whenever practicable.

5.4.2.3. Slope drains or other adequately protective alternate practices may be required.

5.4.3. Energy Dissipation Approaches

5.4.3.1. Vegetated filter strips shall remain in place whenever practicable.

5.4.3.2. Other adequately protective alternate practices may be required.

5.4.4. Minimization of Exposure of Bare Soils

5.4.4.1. Vegetation shall be used as required to stabilize bare soils. Vegetation may include annual grasses, perennial grasses, or other measures.

5.4.4.2. Other measures to minimize exposure to bare soils may include geotextiles, straw, rolled erosion control mats, mulch, etc.

5.5. Sediment Control Measures

5.5.1. General

5.5.1.1. Sediment control measures shall be utilized as required to control and trap sediment that is entrained in stormwater runoff.

5.5.2. Sediment Barriers

5.5.2.1. Sediment barriers shall be utilized as required including: silt fences with filter fabric, fiber rolls, etc.

5.5.3. Slope Protection

5.5.3.1. Slope protection shall be utilized as required including: tread tracking, erosion blankets, mulching, etc.

5.5.4. Conduit/Ditch Protection

5.5.4.1. Conduit/ditch protection shall be utilized as required including: inlet protection, outlet protection, etc.

5.5.5. Stabilizing Drainage Ditches

5.5.5.1. Ditches shall be stabilized as required through the use of check dams, ditch lining, etc.

5.5.6. Sediment Trapping Devices

5.5.6.1. Sediment trapping devices shall be utilized as required to settle out sediment eroded from disturbed areas. These devices include: sediment traps, sediment basins, adequate mechanical or chemical settlement enhancers, etc.

5.5.7. Perimeter Controls

5.5.7.1. Perimeter controls shall be utilized as required including: silt fences, berms, swales, etc. However, due to the nature of this pipeline project's area and associated disturbed areas, perimeter controls are generally impractical to surround the entirely of the site.

5.6. Other Construction Site Management Practices

5.6.1. Construction materials shall be handled, stored, maintained, and disposed of properly to avoid contamination of runoff to the maximum extent practicable.

5.6.2. Construction materials, chemicals, and lubricants shall be protected from exposure to rainfall.

5.6.3. Litter, construction debris, and construction chemicals shall not enter receiving waters.

5.6.4. The discharge of pollutants from equipment and vehicle washing, wheel wash water and other wash waters will be minimized. Wash waters will be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge. Soaps or solvents used in vehicle washing are prohibited.

5.6.5. Exposure of freshly placed concrete rainfall shall be limited.

5.6.6. Stormwaters and other wastewaters from fuels, lubricants, sanitary wastes, and other chemicals such as pesticides, herbicides, and fertilizers shall be segregated to prevent runoff being contaminated. Discharges of fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance are prohibited.

5.6.7. Chemicals, pesticides, herbicides, fertilizers and fuels shall be stored in a neat, orderly fashion.

5.6.8. Trash and sanitary waste shall be collected and managed promptly.

5.6.9. Spills of liquids and solid materials that could pose a pollutant risk shall be cleaned promptly.

5.6.10. Off-site accumulations of sediment shall be removed regularly to minimize the potential for discharge

5.6.11. Wastewater from washout of concrete is prohibited, unless managed by an appropriate control.

5.6.12. Wastewater from cleanout of stucco, paint, form release oils and curing compounds is prohibited.

5.7. Any alternate protective practices will be described on the Drawings with locations indicated.

5.8. Stormwater controls will be installed, as necessary, for each section of the project as the pipeline construction progresses. Sections will be determined by the direction of natural stormwater flow. Stormwater controls will be removed as final stabilization is completed.

5.9. Permanent stabilization shall occur as soon as practical for each section of the project after sufficient time is allowed for trench line settlement. Allowing for settlement reduces the overall disturbance required. Where required, interim stabilization will be implemented.

5.10. Proposed off-site locations of equipment and material storage will be marked on the Drawings.

5.11. The estimated construction schedule shall be as indicated on the DOW Notice of Coverage Letter.

5.12. All materials shall be stored in accordance with manufacturers' recommendations regarding contamination of stormwater. Construction materials consist of polyvinyl chloride or ductile iron pipe and associated appurtenances. Materials for water distribution must be NSF Standard 61 approved for drinking water use.

5.13. There are no known pollutant sources from areas untouched by construction. Therefore, no stormwater controls are anticipated to be required in undisturbed areas.

6. Maintenance of Stormwater Controls

6.1. Erosion prevention measures, sediment controls measures, and other site management practices shall be maintained in accordance with manufacturers' recommendations at an interval as required to maintain effective, operating condition. Sediment control devices shall be maintained at no more than 1/3 capacity to allow for sediment capture.

6.2. If site inspections identify sediment controls measures, erosion control measures, and other site management practices that are not operating effectively or otherwise require maintenance, maintenance shall be performed, prior to the next storm event. If maintenance before the next storm event is impracticable, the required maintenance shall be completed as soon as possible.

7. Non-Stormwater Discharge Management

7.1. The following non-stormwater discharges shall *not* be combined with stormwater discharges.

7.1.1. Discharges from fire-fighting activities.
7.1.2. Fire hydrant flushing.
7.1.3. Waters used for vehicle washing where detergents are not used.
7.1.4. Water used for dust control.
7.1.5. Potable water including uncontaminated water-line flushing.
7.1.6. Routine external building wash down that does not use detergents.
7.1.7. Pavement wash waters where spills or leaks or toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used.
7.1.8. Landscape irrigation.
7.1.9. Clean, non-turbid water-well discharges of groundwater.
7.1.10. Construction dewatering provided the requirements of this permit are met.

8. Inspections

8.1. **The CONTRACTOR shall be responsible for conducting EPSC inspections as indicated herein.**

8.2. Scope

8.2.1. Inspections will generally be conducted at least every seven (7) calendar days. Alternatively, inspections will be conducted at least every fourteen (14) calendar days and within 24 hours of the end of a rain event resulting in 0.5 inches of precipitation or greater.

8.2.2. For sections of the project area which have undergone temporary or final stabilization, inspections will be performed at least every thirty (30) days.

8.2.3. Inspections shall be performed by personnel knowledgeable and skilled in assessing conditions at the construction site that could impact stormwater quality and assessing the effectiveness of erosion prevention measures, sediment control measures, and other site management practices chosen to control the quality of the stormwater discharges. Inspectors shall have training in stormwater construction management.

8.2.4. Visual inspections will be performed to determine whether erosion prevention measures, sediment controls measures, and other site management practices are properly installed, properly maintained, and effective. Visual inspection will be made to determine if excessive pollutants are entering the drainage system.

8.2.5. Visual inspection shall comprise erosion prevention measures, sediment control measures, other site management practices, points of site egress, areas used for storage of materials exposed to precipitation, and disturbed areas.

8.2.6. Discharge points will be inspected, if accessible, to ascertain whether erosion prevention measures, sediment control measures, other site management practices, and points of site egress are effective in preventing impacts to waters of the Commonwealth by inspecting the receiving water bodies for evidence of new erosion and/or the introduction of newly deposited sediment or other pollutants. If discharge points are not accessible, nearby downstream points can be inspected.

8.2.7. Representative inspections can be made of the project area 0.25 miles above and below each point where a roadway, undisturbed right-of-way, or other similar feature intersects the construction site and allows access to the construction site.

8.3. Reporting

8.3.1. **The CONTRACTOR shall be responsible for reporting EPSC inspections as indicated herein.**

8.3.2. Inspection reports shall be prepared for all inspections and shall be retained with the SWPPP. Inspection reports will generally include:

8.3.2.1. The date and time of inspection.
8.3.2.2. The name and title of the inspector.
8.3.2.3. A synopsis of weather information for the period since the last inspection (or since start of construction for the initial inspection) including an estimate of the beginning of each storm event, the duration of each storm event, and the approximate amount of rainfall for each storm event (in inches).

8.3.2.4. Weather conditions and a description of any discharges occurring at the time of the inspection.
8.3.2.5. Location(s) of discharges of sediment or other pollutants from the site.
8.3.2.6. Location(s) of sediment controls measures, erosion control measures, or other site management practices that require maintenance.
8.3.2.7. Location(s) of any erosion prevention measures, sediment controls measures, or other site management practices that failed to operate as designed or proved inadequate for a particular location.
8.3.2.8. Location(s) where additional erosion prevention measures, sediment controls measures, or other site management practices are needed that did not exist at the time of the inspection.
8.3.2.9. Identify any actions taken in response to inspection findings.
8.3.2.10. Identify any incidents of non-compliance with the SWPPP.
8.3.2.11. A certification that the site is in compliance with the SWPPP, if no incidents of non-compliance are identified.
8.3.2.12. A signature in accordance with the requirements of 401 KAR 5:060, Section 4.

9. Plan Maintenance

9.1. The CONTRACTOR shall maintain the plan Drawings as provided by the OWNER.

9.2. SWPPP will be revised whenever erosion prevention measures, sediment controls measures, or other site management practices are significantly modified in response to a change in design, construction method, operation, maintenance procedure, etc., that may cause a significant effect on the discharge of pollutants to receiving waters or municipal separate storm sewer systems.

9.3. The SWPPP will be amended if inspections or investigations by site staff or by local, state, or federal officials determine that the existing sediment controls measures, erosion control measures, or other site management practices are ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the construction site.

9.4. If an inspection reveals design inadequacies, the site description and sediment controls measures, erosion control measures, or other site management practices identified in the SWPPP will be revised.

9.5. All necessary modifications to the SWPPP will be made within seven (7) calendar days following the inspection unless granted an extension of time by Kentucky Division of Water (DOW).

9.6. If existing sediment controls measures, erosion control measures, or other site management practices need to be modified or if additional sediment controls measures, erosion control measures, or other site management practices are necessary, implementation shall be completed before the next storm event whenever practicable. If implementation before the next storm event is impracticable, the situation will be documented in the SWPPP and the changes shall be implemented as soon as practicable.

10. Plan Availability

10.1. This SWPPP will be signed & certified in accordance with the signatory requirements in 401 KAR 5:065, Section 1(11).

10.2. A current copy of the SWPPP will be made readily available to the construction site from the date of project initiation to the date of Notice of Termination.

10.3. The person with day-to-day operational control over the plan's implementation will keep a copy of the SWPPP readily available whenever on site.

10.4. If an on-site location is unavailable to store the SWPPP when no personnel are present, notice of the plan's location shall be posted in a convent location at the construction site.

10.5. The SWPPP will be made available to DOW or its authorized representative for review and copying during on-site inspections.

10.6. Upon request, the SWPPP will be made available to the Environmental Protection Agency and other federal agencies or their contractor, and local governmental agencies and officials approving sediment and erosion plans, grading plans or stormwater management plans; including the operator of any MS4 receiving discharges from the site.

11. Critical Areas – Minimize Size and Duration of Disturbance

11.1. No “critical areas” have been identified in the project area.

12. Stabilization

12.1. Final stabilization for portions of the project where construction has permanently ceased will be initiated within fourteen (14) days of the date of cessation of construction. Final stabilization will be initiated as soon as practical on portions of the project area where construction has been suspended for more than 180 days, and within no more than 14 days.

12.2. Temporary stabilization for portions of the project where construction has temporarily ceased will be initiated, as required, within fourteen (14) days of the date of cessation of construction activities.

13. Buffer Zones

13.1. No waters categorized as High Quality Waters or Impaired Waters (Non-construction related impairment) have been identified within the project area.

13.2. No waters categorized as Impaired Waters (Sediment impaired, but no TMDL) have been identified within the project area.

SWPPP APPENDIX A

EPSC INSPECTION REPORT

Project Name: Morgantown Road Area Improvements NOI #: TBD

Date & Time: _____

Inspection Type: ☐ Weekly Inspection
☐ Post Rain Inspection Amount of Rain: _____ inches

	Parameter of Inspection	YES	NO	N/A
1	Is the Erosion Control Plan on site?			
2	Are all modifications and deviations up to date and noted on the Drawings?			
3	Is the Storm Water Pollution Prevention Plan (SWPPP) being followed?			
4	Are required sediment controls in place at storm drain inlets and other required areas?			
5	Are sufficient measures in place to prevent mud from entering roadways and/or is sediment, debris, and/or mud cleaned from public roads as required?			
6	Are required slit fences in place properly and maintained on a regular schedule?			
7	Are required temporary sediment traps maintained according to the Drawings?			
8	Are required inlet protection devices installed and maintained properly?			
9	Are required check dams installed and maintained according to the Drawings?			
10	Are all disturbed areas stabilized according to the Drawings?			
11	Are all temporary stockpiles or construction materials located in approved areas and protected according to the Drawings?			
12	Are dust control measures being appropriately implemented?			
13	Are all discharge points where water is leaving the site maintained properly?			
14	Are all material storage and secondary containment properly maintained and shown on the Drawings?			

For any item marked "NO" above, see corresponding note with matching number below or on additional pages.

Issues of Non-compliance, other comments, and corrective action summary:

_____

_____

_____

_____

_____

By signing below, I certify under penalty of law this document and all attachments were prepared under my supervision and the information submitted is, to the best of my knowledge, true, accurate and complete.

_____
Site Foreman's Name (Print)

_____
Site Foreman's Signature

_____
Inspector's Name (Print)

_____
Inspector's Signature

_____
Inspector's Qualifications

SWPPP APPENDIX B

EPSC CERTIFICATION

Project Name: Morgantown Road Area Improvements

Project Location(s): Warren County, Kentucky

Contractor Name: _____

Address: _____

_____

_____

Telephone Number: _____

Check One: ☐ Prime Contractor ☐ Sub-Contractor

"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the stormwater discharges associated with industrial activity from the construction site identified as part of this certification."

Signature: _____

Print Name: _____

Title: _____

Date: _____

State of Kentucky
County of _____

I, _____, a Notary Public in and for the State of Kentucky at Large, do hereby certify that the foregoing certification from _____ was duly produced before me on this ____ day of _____, 20___.

_____
NOTARY PUBLIC, STATE OF KENTUCKY

My Commission Expires: _____

NOTICE OF AWARD

TO: _____
_____
_____

Project Description: Morgantown Road Area Improvements – Contract 1.

The OWNER has considered the BID submitted by you for the above described WORK in response to its Advertisement for Bids dated December 23, 2019 and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of $ _____.

You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance BOND, Payment BOND, and certificates of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said BONDS within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this ___ day of _____, 2020.

Owner: Warren County Water District

By: _____
John M. Dix

Title: General Manager

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by _____ this the __ day of _____, 2020.

By: _____ Title: _____

AGREEMENT

THIS AGREEMENT, made this ____ day of _____, 20__, by and between Warren County Water District, hereinafter called "OWNER" and _____ doing business as a corporation hereinafter called "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and agreements herein after mentioned:

1. The CONTRACTOR will commence and complete the Morgantown Road Area Improvements - Contract 1.

2. The CONTRACTOR will furnish all of the materials, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the PROJECT described herein.

3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS within 10 calendar days after the date of the NOTICE TO PROCEED and will fully complete the same within 270 calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.

4. The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of $_____ or as shown in the BID schedule.

5. The term "CONTRACT DOCUMENTS" means and includes the following:
   - (A) Advertisement for Bids
   - (B) Information for Bidders
   - (C) Bid
   - (d) Bid Bond
   - (E) Compliance Statement
   - (F) Affidavit for Bidders Claiming Resident Bidder Status
   - (G) General Conditions
   - (H) Supplemental General Conditions
   - (I) Notice of Award
   - (J) Agreement
   - (K) Performance Bond
   - (L) Payment Bond
   - (N) Notice to Proceed
   - (O) Detailed Specifications prepared or issued by: Warren County Water District dated December 23, 2019.
   - (P) Drawings prepared by: Warren County Water District.
   - (Q) Addenda:
     - No. __, dated _____.
     - No. __, dated _____.
     - No. __, dated _____.
   - (R) Change Order(s)

6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the General Conditions such amounts as required by the CONTRACT DOCUMENTS.
7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed or caused to be executed by their duly authorized official, this Agreement in three (3) copies each of which shall be deemed an original on the date first above written.

OWNER:

Warren County Water District

By: _____
Name: John M. Dix
Title: General Manager

(SEAL)
Attest:

_____
Name: _____

_____
Title: _____

CONTRACTOR:

_____

By: _____
Name _____
Address: _____

_____

Employer Identification No. _____

(SEAL)
Attest:

_____
Name: _____

_____
Title: _____

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

_____
(NAME OF CONTRACTOR)

_____
(ADDRESS OF CONTRACTOR)

a _____, hereinafter called
(Corporation, Partnership, or Individual)

Principal, a _____
(NAME OF SURETY)

_____
(ADDRESS OF SURETY)

hereinafter called Surety, are held and firmly bound unto

Warren County Water District
(NAME OF OWNER)

P. O. Box 10180, 523 US 31W Bypass, Bowling Green, KY 42102-4780
(ADDRESS OF OWNER)

hereinafter called OWNER, in the total aggregate penal sum of _____ ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the ___ day of _____, a copy of which is hereto attached and made a part hereof for the construction of:

Morgantown Road Area Improvements – Contract 1

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the SURETY and during the one year guaranty period

and if the PRINCIPAL shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, that the said SURETY, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that it is expressly agreed that the BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the CONTRACT as so amended. The term "Amendment", wherever used in this BOND, and whether referring to this BOND, the Contract or the Loan Documents shall include any alteration, addition, extension, or modification of any character whatsoever.

PROVIDED, FURTHER, that no final settlement between the OWNER and the PRINCIPAL shall abridge the right of the other beneficiary hereunder, whose claim may be unsatisfied. The OWNER is the only beneficiary hereunder.

IN WITNESS WHEREOF, this instrument is executed in three counterparts, each one of which shall be deemed an original, this the ___ day of _____ . _____.

ATTEST:

_____	_____
(Principal) Secretary	Principal
(SEAL)	By: _____
	_____
_____	_____
(Witness as to Principal)	(Address)
_____	_____
(Address)	
_____	_____
	(Surety)

ATTEST:

_____	_____
Witness to Surety	Attorney-in-Fact
_____	_____
(Address)	(Address)
_____	_____

NOTE: Date of BOND must not be prior to date of Contract.

If CONTRACTOR is partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the Project is located.

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

_____
(NAME OF CONTRACTOR)

_____
(ADDRESS OF CONTRACTOR)

a _____, hereinafter called
(Corporation, Partnership, or Individual)

Principal, a _____
(NAME OF SURETY)

_____
(ADDRESS OF SURETY)

hereinafter called Surety, are held and firmly bound unto

Warren County Water District
(NAME OF OWNER)

P. O. Box 10180, 523 US 31W Bypass, Bowling Green, KY 42102-4780
(ADDRESS OF OWNER)

hereinafter called OWNER and unto all persons, firms, and corporations who or which may furnish labor, or who furnish materials to perform as described under the CONTRACT and to their successors and assigns in the total aggregate penal sum of_____ ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the PRINCIPAL entered into a certain CONTRACT with the OWNER, dated the ___ day of _____, a copy of which is hereto attached and made a part hereof for the construction of:

Morgantown Road Area Improvements – Contract 1

NOW, THEREFORE, if the PRINCIPAL shall promptly make payment to all persons, firms, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such CONTRACT, and any authorized extensions or modifications thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in

connection with the construction of such WORK, and for all labor cost incurred in such WORK including that by a SUBCONTRACTOR, and to any mechanic or materialman lienholder whether it acquires its lien by operation of State or Federal law; then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, that beneficiaries or claimants hereunder shall be limited to the SUBCONTRACTORS, and persons, firms, and corporations having a direct contract with the PRINCIPAL or its SUBCONTRACTORS.

PROVIDED, FURTHER, that the said SURETY for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the CONTRACT or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of this contact or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no suit or action shall be commenced hereunder by any claimant: (a) Unless claimant, other than one having a direct contract with the PRINCIPAL shall have given written notice to any two of the following: The PRINCIPAL, the OWNER, or the SURETY above named within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials of which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the PRINCIPAL, OWNER, or SURETY, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer. (b) After the expiration of one (1) year following the date of which PRINCIPAL ceased work on said CONTRACT, is being understood, however, that if any limitation embodied in the BOND is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

PROVIDED, FURTHER, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the CONTRACT not increasing the CONTRACT price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the CONTRACT as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the CONTRACT or the loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in three counterparts, each one of which shall be deemed an original, this the ___ day of _____ . _____.

ATTEST:

_____	_____
(Principal) Secretary	Principal
(SEAL)	By: _____
	_____
_____	_____
(Witness as to Principal)	(Address)
_____	_____
(Address)	
_____	_____
	(Surety)

ATTEST:

_____	_____
Witness to Surety	Attorney-in-Fact
_____	_____
(Address)	(Address)
_____	_____

NOTE: Date of BOND must not be prior to date of Contract.

If CONTRACTOR is partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the Project is located.

NOTICE TO PROCEED

TO: _____ DATE: _____

_____ PROJECT: Morgantown Road Area

_____ Improvements – Contract 1

_____

You are hereby notified to commence WORK in accordance with the Agreement dated _____, on or before _____, 20__. You are to fully complete the WORK within 270 consecutive calendar days thereafter. The date of completion of all WORK is therefore _____, 20__.

Owner: Warren County Water District

By: _____
John M. Dix

Title: General Manager

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged

by _____

_____

this the __ day of _____, 20__

By: _____

Title: _____

Employer Identification Number: _____

SECTION 1
GENERAL SCOPE AND SPECIAL PROVISIONS

1. Scope

The instructions and information set out in the paragraphs of the Detailed Specifications shall supersede the instructions and information set out in the Information for Bidders, General Conditions, and Supplemental General Conditions if and when differences occur.

2. Shop Drawings, Product Data, and Samples

Shop drawings, product data, and samples as discussed in Paragraph 5 of the General Conditions shall be furnished by the CONTRACTOR to the ENGINEER. Unless otherwise set out, all shop drawings shall be furnished in five copies. It shall be clearly understood by the CONTRACTOR that the ENGINEER will examine the shop drawings for general design only, and that his approval stamped on such drawings shall be approval only for general design, and the CONTRACTOR shall in all cases be held responsible for detailed dimensions. In case of discrepancy between the shop drawings and the requirements of the Drawings, Specifications, and Contract Documents, the provisions of the Drawings, Specifications, and Contract Documents shall prevail even though the shop drawings have been approved by the ENGINEER, unless the conflict therein has been specifically waived in writing by a Change Order.

3. Owner's Right to Carry Out the Work

If the CONTRACTOR defaults or neglects to carry out the work in accordance with the Contract Documents and fails within ten days after receipt of written notice from the OWNER to commence and continue correction of such default or neglect with diligence and promptness, the OWNER may, (without prejudice to any other remedy he may have) make good such deficiencies. In such case an appropriate Change Order shall be issued deducting from the payments then or thereafter due the CONTRACTOR the cost of correcting such deficiencies. If the payments then or thereafter due the CONTRACTOR are not sufficient to cover such amount, the CONTRACTOR shall pay the difference to the OWNER.

4. Execution and Coordination of the Work

4.1 It is intended that the work covered by this Contract be done so as to cause the minimum amount of interference with traffic and/or existing utilities. The CONTRACTOR will be required to organize and schedule his work so as to keep the existing facilities in full operation during the construction period insofar as is consistent with the nature of the construction work to be performed. The manner in which shutdowns will be made and the work schedule of the CONTRACTOR during shutdowns will be subject to the approval of the OWNER. The CONTRACTOR shall schedule a proposed shutdown with the OWNER at least three days prior to the

outage. All shutdowns shall be made by employees of the OWNER. Although every effort will be made to cause the minimum amount of interference with the CONTRACTOR's work, the interest of the OWNER in regard to the existing facilities must always take precedence over the construction work. Therefore, the right is reserved by the OWNER to put any lines or other facilities (that may be shut down for the construction work) back into service when an emergency arises.

4.2 The work on the project shall be scheduled so as to expedite service to new customers. The CONTRACTOR shall install meters and perform testing as each section of new water main is constructed. Water lines or sections of lines thus completed shall be placed in service while work proceeds on other lines or sections.

4.3 Following installation of the pipeline, "rough cleanup" work shall be performed. This shall consist of grading the trench to create a neat, low mound of backfill material and disposing of any excavated material, rubbish, etc. (See Section 3, Paragraph 21 and Section 7 Paragraph 13) Crushed stone shall be added to driveways where necessary and fences repaired to the satisfaction of the property owners. After trenches have had adequate time to settle, final grade work and seeding shall be performed as described in Section 3, Paragraph 22 and Section 7 Paragraph 14.

5. Progress Schedule, Construction Records, and Reports

5.1 The CONTRACTOR shall furnish the OWNER with proof that all payrolls for services rendered and invoices for materials supplied have been duly paid as herein required, and such other data as the OWNER may require.

5.2 The CONTRACTOR shall furnish (and keep current) a suitable progress chart or schedule showing the estimated (and actual) progress on the work. The progress chart or schedule shall be subject to the approval of the ENGINEER.

5.3 The CONTRACTOR shall furnish all the necessary information for and prepare the partial payment estimates on forms approved by the ENGINEER.

5.4 The OWNER, or his authorized representatives and agents, shall be permitted to inspect all payrolls, records of personnel, invoices of materials, and other relevant data and records.

6. Lines and Grades

6.1 The CONTRACTOR shall be held totally responsible for construction of the work according to the lines and grades shown on the Drawings. The CONTRACTOR shall also insure that the work is constructed in proper relation to proposed highway construction where applicable.

6.2 The CONTRACTOR shall furnish all labor, equipment, stakes, and grade boards. The CONTRACTOR also shall be required to furnish equipment and aides when required by the ENGINEER in checking lines and grades. The labor and

equipment shall be available to the ENGINEER on call, and the labor shall be fully capable of performing the duties of rodman and/or chainman.

7. Access to and Inspection of the Work

Representatives of the OWNER shall at all time have full access for inspection of the work and the CONTRACTOR shall provide proper facilities for such access and inspection.

8. Work on Private Property

8.1 In connection with work performed on private property, the CONTRACTOR shall take every precaution to avoid damage to the property owners' buildings, grounds, and facilities. Fences, hedges, shrubs, etc., within the construction limits shall be removed carefully, preserved, and replaced when the Construction is completed in accordance with the requirements set out hereinafter in these specifications. When construction is completed, the private property owner's facilities and grounds shall be restored to as good (or better) condition than found as quickly as possible at the CONTRACTOR's expense. The OWNER reserves the right to require the CONTRACTOR to obtain a signed Release from each property owner affected by the work. Said Release shall indicate that the property owner is satisfied with the restoration of his land. However, the execution of such a release shall not relieve the CONTRACTOR from any of his contractual obligations or other claims that may arise at a later date. The widths of construction easements obtained by the OWNER from property owners is normally 15 feet each side of the pipeline and the CONTRACTOR shall confine his activities to the area within the limits of the easements unless specific permission is obtained by the CONTRACTOR from property owners.

8.2 Large trees, or other facilities within the actual construction limits that cannot be preserved and replaced shall be removed by the CONTRACTOR but the OWNER will assume the responsibility for settling with the property owner for the loss of said trees or facilities. However, trees and facilities for which the OWNER has made such settlement will be designated on the Drawings and the CONTRACTOR shall be solely and entirely responsible for any damage to trees and facilities not so designated.

8.3 All trees and brush cleared along the route of the pipeline shall be disposed of by the CONTRACTOR in a manner suitable to the ENGINEER and property owner. If such trees and brush are left on the property the CONTRACTOR shall obtain a release for same from the property owner.

9. Traffic Control and Work in Highway Rights of Way

9.1 The CONTRACTOR shall (before beginning work on any public highway right-of-way) make arrangements for maintaining the traffic on said highways and/or roadways, or rerouting traffic as may be required. The applicable regulations of the Kentucky Department of Transportation (Ky D.O.T.) must be followed in this regard.

9.2 The CONTRACTOR shall furnish proper equipment which shall be available at all times for maintaining streets and roads upon which work is being performed. All such streets and roads shall be maintained suitable for traffic until complete and final acceptance of the work.

9.3 When the CONTRACTOR is cutting across a street or highway, he is to cut half of the street at one time, lay the pipe, and complete the backfilling operation so that traffic may pass over this trench before the opening of the trench for the other half of the street or highway. In lieu of the above, bridging of the trench may be required. The time and method of making these crossings shall be approved by the ENGINEER, and the agency or legal entity having responsibility for the maintenance of the street or highway.

9.4 The CONTRACTOR shall be responsible for erecting signs, providing flagmen, providing any other such items, and performing all work as required by Kentucky D.O.T. regulations, the Kentucky D.O.T. permit granted to the OWNER for construction of this specific project, and/or regulations of other agencies having jurisdiction over the right-of-way.

9.5 The CONTRACTOR shall plan his operations so as to cause a minimum of inconvenience to property owners and to traffic. No road, street or alley may be closed unless absolutely necessary, and then only if the following conditions are met:

9.5.1 Permit is secured from appropriate, State, County or Municipal authorities having jurisdiction.

9.5.2 Fire and Police Departments are notified before road is closed.

9.5.3 Suitable detours are provided and are clearly marked.

9.6 No driveways shall be cut or blocked without first notifying the occupants of the property. Every effort shall be made to schedule the blocking of drives to suit to occupants' convenience, and except in case of emergency, drives shall not be blocked for a period of more than 8 hours.

10. Shoring, Sheeting, and Bracing of Excavations

10.1 Where unstable material is encountered or where the depth of excavation warrants it, 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. The design and installation of all sheeting, sheet piling, bracing, and shoring shall be based on computations of pressure exerted by the materials to be retained under existing conditions. Adequate and proper shoring of all excavations and safety of workmen shall be the entire responsibility of the CONTRACTOR; however, the OWNER may require the submission of shoring drawings (accompanied by supporting computations) for approval prior to the CONTRACTOR undertaking any portion of the work.

10.2 Foundations, adjacent to where the excavation is to be made below the depth of the foundation, shall be supported by shoring, bracing, or underpinning as long as the excavation shall remain open and the CONTRACTOR shall be held strictly responsible for any damage to said foundations.

10.3 Care shall be taken to avoid excessive backfill loads on the completed pipe lines and the requirements regarding the width of the ditch as specified herein be strictly observed.

10.4 Trench sheeting shall not be removed until sufficient backfill has been placed to protect the pipe.

10.5 All sheeting, planking, timbering, bracing, and bridging, shall be placed, renewed, and maintained, as long as is necessary. Sheeting is not a pay item unless the CONTRACTOR is required and/or instructed by the OWNER to leave same in place.

11. Existing Utilities

11.1 Special precautions shall be taken by the CONTRACTOR to avoid damage to existing overhead and underground utilities owned and operated by the OWNER, or by other public or private utility companies.

11.2 With particular respect to existing underground utilities, all available information concerning their location has been shown on the Drawings. While it is believed that the locations shown are reasonably correct, the OWNER cannot guarantee the accuracy or adequacy of this information.

11.3 The location of buried telephone cable often differs from the preliminary information given the OWNER by phone companies and shown on the Drawings. Therefore, in order to construct a pipeline that is parallel to the highway right-of-way as specified, the CONTRACTOR may be required to cross buried telephone cable at various locations not indicated on the Drawings. The CONTRACTOR shall consider these crossings as incidental to the pipeline construction.

11.4 Before proceeding with the work, the CONTRACTOR shall confer with all public or private companies, agencies, or departments that own and operate utilities in the vicinity of the construction work. The purpose of the conference (or conferences) shall be to notify said companies, agencies, or departments of the proposed construction schedule, verify the location of, and possible interference with, the existing utilities that are shown on the Drawings, arrange for necessary suspension of service, and make arrangements to locate and avoid interference with all utilities (including house connections). The OWNER has no objection to the CONTRACTOR arranging for the said utilities companies, agencies, or departments to locate and uncover their own utilities; however, the CONTRACTOR shall bear the entire responsibility for locating and avoiding, or repairing damage to said existing utilities.

11.5 Where existing utilities or other underground structures are encountered, they shall not be displaced or molested unless necessary and then only with the approval of the respective owner. In such cases they shall be replaced in as good (or better) condition than found as quickly as possible. All such utilities that are so displaced or molested shall be replaced at the CONTRACTOR's expense.

11.6 Should it become necessary to provide additional guying or support of power, lighting, or telephone facilities, the CONTRACTOR shall consult with the authorities of these utilities so that suitable arrangements can be made for the protection of same.

11.7 All costs for temporary or permanent work necessary for the protection of utilities, private or public, shall be included in the contract amount to which the items of work pertain, or may be considered to be incidental thereto. In addition, the CONTRACTOR shall be responsible for any damage to the existing utilities resulting from the construction operations and shall bear the cost of all repair or replacement necessary for correction.

11.8 It is expected that the CONTRACTOR will be diligent in his efforts and use every possible means to locate existing utilities. Any claims for unavoidable damage, based on improper or unknown locations, will be examined thoroughly in the light of the CONTRACTOR's efforts to locate the said utilities or obstructions prior to beginning construction.

12. Utilities Required by CONTRACTOR

All electrical current and/or any utility service required by the CONTRACTOR shall be furnished at his own expense except as noted hereinafter.

13. Supervision of Installation

All special equipment or materials shall be installed under the supervision of a qualified installation engineer and/or representative furnished by the manufacturer of such equipment or materials.

14. Execution of the Contract

The construction Contract and the Performance Bonds shall be executed within the time specified in the Information for Bidders and in at least three (3) copies.

15. Permits, Codes, Etc.

Unless otherwise set out in the Specifications or required by the agencies involved, the CONTRACTOR shall make application for, obtain, and pay for all licenses and permits, and shall pay all fees and charges in connection therewith. The CONTRACTOR shall be required to comply with all state or municipal ordinances, laws, and/or codes insofar as the same is binding upon the OWNER.

16. Cleaning up and Removal of Rubbish

16.1 The CONTRACTOR shall at all times keep the premises free from accumulations of waste materials or rubbish caused by his employees or work and shall keep the work site in a clean and useable condition satisfactory to the ENGINEER. The CONTRACTOR shall direct his forces to promptly clean up streets, sidewalks, drainage channels, or private property, affected by his construction operations, when in the opinion of the ENGINEER such clean up is needed. At the completion of the work the CONTRACTOR shall remove all his rubbish from and about the site of the work and all of his tools, equipment, and surplus materials.

16.2 The Contract shall not be considered complete until all construction structures, equipment and rubbish from construction are cleaned from the site of the work. All damage to existing paving, grounds, and structures caused by the CONTRACTOR's operations must be repaired or the owners compensated for such damage before the contract will be considered complete. This includes the removal of rock from blasting (1 1/2 inches or larger in size), and the broom sweeping, or water removal, of dirt from pavement.

17. Items Deleted and Quantity Changes

The OWNER reserves the right to delete any bid item or in the case of unit price items, the OWNER may delete, reduce, or increase the quantities involved. BIDDERS shall be aware of this possibility and shall base their BIDS accordingly.

SECTION 2
QUALITY ASSURANCE

1. Approval of Testing Agencies and Reports

When in these Contract Documents inspection and testing services are required, bureaus, laboratories, and/or agencies selected for such inspection and testing shall be approved by the ENGINEER. If inspection and testing services are provided by the OWNER or are performed in accordance with Section 7.8 of the General Conditions, the OWNER shall select the laboratories and/or agencies for such inspection and testing.

2. Suitability of Materials and Test Reports

Where prior inspection and testing of materials is required, documentary evidence in the form of test reports, in the form and number required by the ENGINEER, shall be furnished prior to the time the material is incorporated into the work. All rejected material shall be removed promptly from the premises.

3. Governing Specifications

It is the intention of the ENGINEER in the preparation of these Specifications to define properly the kind and quality of materials to be furnished. The standards of the American Society of Testing Materials (ASTM); standards of the American Water Works Association (AWWA); or other such agencies may be referred to in the Specifications. Where such standards are referred to, said references shall be construed to mean the latest amended and/or revised versions of the said standard specifications. In the selection of samples and the routine testing of materials, the testing laboratory shall follow the standard procedure as outlined by the ASTM, unless otherwise set out.

4. Extent of Inspection and Testing Service

It is intended that materials of construction, particularly those upon which the strength and durability of the work may depend, shall be inspected and tested to establish conformance with specifications and suitability for uses intended. This Section indicates the extent of testing, and requirements and methods of reporting. If it is found that this Section does not cover all items that will require testing, then such materials shall be tested as directed by the ENGINEER.

5. Requirements and Methods of Reporting

In general, four (4) copies of all test reports will be required with two (2) copies to the CONTRACTOR, one (1) to the ENGINEER, and one (1) to the OWNER. All copies shall be forwarded to the ENGINEER.

6. Coarse Aggregate (Backfill and Surfacing)

Regarding coarse aggregates for use in backfill and surfacing, certifications, which state that the aggregates comply with the Specifications and give the gradation for each size used, will be required from the material supplier.

7. Fine Aggregate (For Use In Cement Concrete)

Standard tests shall be made in advance of concreting by an approved independent laboratory per ASTM C33, Paragraphs 2, 3, 4, and 5, and ASTM C40 on each fine aggregate proposed to be used. Other tests being satisfactory, the aggregate may be used pending results of 28 day concrete strength tests.

8. Coarse Aggregate (For Use In Cement Concrete)

Standard tests shall be made in advance of concreting by an approved laboratory on each grading of each coarse aggregate proposed to be used per ASTM C33, Paragraphs 6, 7, 8, 9, 10, and 11.

9. Concrete Tests (For Concrete Used In Structures)

9.1. Standard Slump Tests

Slump tests shall be made per ASTM C143, as specified in Section 6 of these Specifications.

9.2. Concrete Control Tests

9.2.1 During the progress of the Work and for each different mix of concrete, standard 6-inch concrete cylinders shall be made and tested. The testing shall be done per ASTM C39, and ASTM C31 (Paragraphs 7a and 7c). When field curing will be used in lieu of, or supplementing laboratory curing, care shall be exercised to avoid mistreatment of the cylinders in the field and testing shall be the same as specified for laboratory cured samples.

9.2.2 Test cylinders shall be made from each day's pour at the frequency specified by ACI 318 with a maximum of two (2) from each batch or ready-mix truck load. The maximum requirement will be imposed only when the ENGINEER deems necessary due to wide fluctuations in the concrete quality. A minimum of three (3) cylinders will be required for each day's pour if the concrete is used in structures or otherwise in a load-carrying capacity.

9.2.3 Each cylinder shall be numbered and logged, so as to adequately identify the representative concrete in the structure. Where three (3) cylinders are made from each day's pour, one (1) cylinder shall be tested at 7 days and two (2) at 28 days. Where more than three (3) cylinders per day are required, the "break" schedule shall be as requested by ENGINEER.

10. Reinforcing Steel

Reinforcing steel shall undergo a field inspection for section, rust, shape, and dimensions, plus certified test report for heat number(s).

11. Ductile Iron Pipe

Each piece of pipe shall bear the manufacturer's name or trademark and the date manufactured. Each piece of pipe shall also be certified by the manufacturer to have met the requirements of the governing standard specifications. Manufacturer Certifications and test reports shall be forwarded to the ENGINEER. Also, each piece shall be visually inspected in the field for any defects and specification conformance.

12. PVC and PVC(MO) Pipe for Force Mains (Not Applicable to C905 PVC Pipe)

12.1 PVC or PVC (MO) pipe shall be marked in accordance with ASTM D-2241. The manufacturer shall supply certifications indicating that all pipe to be supplied for the project meets the applicable Specification. This information shall be furnished to the ENGINEER with the shop drawings.

12.2 The total quality system of the pipe manufacturer shall meet the requirements set forth in ISO/IEC Guide 25:1990 (E), Sections 4 through 16, and the pipe manufacturer shall be capable of maintaining the specified requirements of both the pipe and material. Pipe manufacturer compliance shall be required prior to approval of any shop drawings for PVC or PVC (MO) pipe.

12.3 Each truckload of pipe delivered to the project shall be subject to whatever field measurements and tests deemed necessary by the OWNER. These tests may be conducted by the OWNER or his representative. The cost of field testing shall be the responsibility of the OWNER, but the cost of any pipe destroyed during such testing shall be the responsibility of the CONTRACTOR.

13. Testing Force Mains

13.1 Following installation of the force main, the pipeline shall be filled with clean water; open ends shall be securely capped and braced; and the pipeline pressure tested. The CONTRACTOR shall be responsible for supplying water and providing whatever means necessary to fill the pipeline, release air from dead-end sections, install temporary kickers, and perform the pressure test.

13.2 Force mains shall be tested at a pressure equal to the rated working pressure of the pipe for a period of 4 hours. Line segments between gate valves shall be tested separately. During the duration of the test, the line segment shall display leakage not exceeding 10 gallons per day per inch of pipe diameter per mile of pipeline. This rate of leakage is given below for 1,000 feet of pipeline and various diameters of pipe:

TABLE 2.1

MAXIMUM LEAKAGE RATE AT RATED PRESSURE
FOR SIZE OF FORCE MAIN INDICATED

Pipe Diameter		Max. Leakage in 4-hrs. for 1,000-Feet of Pipe
2"		0.63 gallons
3"		0.95 gallons
4"		1.26 gallons
6"		1.89 gallons
8"		2.53 gallons
10"		3.16 gallons
12"		3.79 gallons

13.3 Lines which fail to meet these criteria shall be repaired and retested as necessary until requirements are met. Pressure tests shall be performed only after all appurtenances are installed.

13.4 The pressure gauge and/or recorder used for testing pipelines will be supplied by the OWNER. The CONTRACTOR shall supply the necessary taps, connections, water meter, etc., for testing.

14. Testing Gravity Sewer Mains

14.1. Air Testing

14.1.1 Each gravity sewer line section shall be tested between manholes. The line section being tested shall be sealed at each end. The seal at one end shall have an orifice through which to pass air into the pipe. An air supply shall be connected to the orifice at one end of the line. The air supply line shall contain an ON-OFF gas valve and a pressure gauge having a range of from 0 to 5 psi. The gauge shall have minimum divisions of .10 psi and shall have an accuracy of ±.04 psi.

14.1.2 The pipe section under test shall be pressurized to 4 psig. The line shall be allowed to stabilize between 4 psig and 3.5 psig for a period of no less than 5 minutes. If necessary, air shall be added to the line to maintain the pressure above 3.5 psig. After the stabilization period, the gas valve shall be closed. When the line pressure drops to 3.5 psig, timing shall commence with a stopwatch. The stopwatch shall be allowed to run until such time as the line pressure drops to 2.5 psig. Then the watch should be stopped and the time lapse compared with the allowable time lapse shown below in Table A for the pipe size and length of pipe under test. If the time lapse is greater than that specified, the section undergoing test shall have passed, and the test may be discontinued at that time. If the time is less than that specified, the line shall not have passed and the CONTRACTOR will be required to repair the line and retest.

TABLE 2.2

TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015*

Pipe Dia. (in.)	Minimum Time (min:sec)	Length for Minimum Time (ft.)	Time for Longer Length (sec)	Specified Minimum for Length Shown (min:sec)							
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46
42	39:48	57	41.883 L	69:48	104:42	139:37	174:30	209:24	244:19	279:13	314:07
48	45:34	50	54.705 L	91:10	136:45	182:21	227:55	273:31	319:06	364:42	410:17

* Q is the allowable leakage rate in cubic feet per min per square foot of inside surface area of pipe.

14.1.3 If the pipeline to be tested is beneath the ground water level, the test pressure shall be increased .433 psi for each foot the ground water level is above the invert of the pipe, or as directed by the ENGINEER.

14.1.4 The pressure gauge and/or recorder used for testing pipelines will be supplied by the OWNER. The CONTRACTOR shall supply all other equipment necessary to perform the test. All test equipment shall be subject to the approval of the ENGINEER.

14.1.5 If any subsequent tests reveal defects that require repairs, air testing as described above shall be repeated on the repaired section.

14.2. Deflection Testing

Thirty days after completion of backfilling or when in the opinion of the ENGINEER, adequate consolidation of backfill material has occurred, the pipeline shall be tested for deflection. A deflection of more than 5 percent of the inside diameter shall be cause for rejection and the line will be removed and replaced at the CONTRACTOR's expense. A Go, No-Go deflection testing Mandrel shall be used. The Mandrel design shall be approved by the ENGINEER.

14.3. Alignment Inspection

14.3.1 After successful deflection testing, the pipeline shall be visually inspected for proper grade (vertical) and horizontal alignment. Each section of pipeline shall be "lamped" between manholes to determine construction defects and/or if any displacement of pipe has occurred.

14.3.2 Prior to alignment inspection, the pipeline shall be thoroughly flushed with clean water. A visible "full moon" shall be required for grade alignment. A visible "half moon," or greater, shall be required for horizontal alignment. Any significant "ponding" of water in the pipeline or manholes in the opinion of the ENGINEER shall constitute a failure of the alignment inspection. Poor alignment, displaced pipe, significant ponding of water, or other discovered construction defects shall be repaired at the CONTRACTOR's expense.

15. Testing Manholes

15.1 All manholes shall be subject to vacuum testing in accordance with ASTM C1244. Vacuum testing shall be conducted in the presence of the ENGINEER or the ENGINEER's representative after Chimney Seal installation. Manholes shall be capable of holding a vacuum of 5 psi (10 inches of Mercury) without dropping more than 0.5 psi (1 inch of Mercury) for the times stated below:

TABLE 2.3

MINIMUM TEST TIMES FOR TYPICAL WCWD MANHOLES

Depth of Manhole (ft)	≤8	10	12	14	16	18	20	22	24	26	28	30
Time (sec)	20	25	30	35	40	45	50	55	59	64	69	74

15.2 Vacuum testing of manholes exceeding 15-feet in depth shall take groundwater into consideration and the vacuum pressure for testing shall be reduced by 0.5 psi (1 inch of Mercury) for every 5-feet of groundwater depth above the outgoing pipe. The CONTRACTOR shall determine the groundwater elevation immediately prior to vacuum testing. Manholes that do not pass the initial vacuum test shall be repaired and retested at no cost to the OWNER. A 100 percent pass rate shall be achieved.

15.3 The vacuum gauge and/or recorder used for testing pipelines will be supplied by the OWNER. The CONTRACTOR shall supply all other equipment necessary to perform the test. All test equipment shall be subject to the approval of the ENGINEER.

SECTION 3
WATER LINES AND WATER SERVICES

1. Scope of Work

The work to be accomplished under this section of the Specifications consists of the furnishing of all materials and labor necessary for the construction of water lines, including all services, meters, fittings, blow-offs, valves, accessories, and appurtenances in strict accordance with the Specifications and the applicable Drawings.

2. Location of Water Lines

2.1 The approximate location of water lines in relation to the limits of rights-of-way, pavement, etc. is shown on the Drawings but is not guaranteed. The location shown was chosen to minimize the overall project cost with respect to rock excavation, pavement replacement, crushed stone for traffic bound roadway, customer water services, etc. Water lines shall generally be constructed in easements on private property parallel to and within 10 feet of highway rights-of-way.

2.2 The final location (as constructed) may be varied upon approval by the ENGINEER, provided: (1) the proposed location is approved by the Kentucky Department of Transportation (Bureau of Highways), the County Highway Department, or other agency, legal entity or property owner having jurisdiction, and (2) the effect reduces the project cost. The final location may be varied by necessity due to construction conditions at the direction of the ENGINEER, or due to the requirements of the Kentucky Department of Transportation (Bureau of Highways), the County Highway Department, or other agency, legal entity or property owner having jurisdiction. The construction of pipelines in the highway, road, or street right of way will not be allowed except where shown on the Drawings.

3. Excavation of Pipeline Trenches

3.1 **Unless otherwise directed by the ENGINEER or as shown on the Drawings, trenches in which pipes 12 inches or less in diameter are to be laid shall be excavated in open cut to a depth which will allow a minimum of 2 feet 6 inches of cover above the top of the pipe or 2 feet 6 inches below the elevation of the proposed roadway, whichever is lower.** The roadway based elevation provision is excluded in residential lawns. For pipes greater than 12 inches in diameter, the trenches shall be excavated in open cut to a depth which will allow a minimum of 4 feet of cover above the top of the pipe. The diameter of the pipe, proper bedding and construction of bell holes must be considered in determining the depth of excavation. Extra depth excavation may be required by the Kentucky Department of Transportation (Bureau of Highways) or as shown on

the Drawings.

3.2 **Topsoil shall be stripped from the top of the trench and placed to the side for reuse during the final layer of backfill to facilitate productive growth of lawns, crops, and other vegetation.** Trenches shall be of sufficient width to provide free working space on each side of the pipe and to permit proper backfilling around the pipe, but unless specifically authorized by the ENGINEER, trenches shall in no case be excavated or permitted to become wider (as measured at the top of the pipe) than 2 feet plus the nominal diameter of the pipe. The desired width shall be the nominal diameter of the pipe plus 16 inches. The minimum allowable trench width in rock excavation shall be the nominal diameter of the pipe plus 12 inches. The minimum allowable trench width in earth excavation shall be the nominal diameter of the pipe plus 6 inches. Trenching equipment that cannot maintain these minimum widths will not be allowed for use on the project.

3.3 Trench excavation shall proceed far enough ahead of pipe laying to reveal any obstructions that might necessitate changing the line or grade of the pipeline. The trench shall be reasonably straight and uniform in grade. Trenches shall be kept free of water during the construction of the pipeline and removal of water shall be at the CONTRACTOR's expense. Trench excavation shall proceed in a continuous manner from the beginning of the pipeline to the end.

3.4 Unless specifically authorized by the ENGINEER, no skipping by obstacles such as rock, road crossings, existing utilities, etc. shall be permitted. If skips are authorized by the ENGINEER and the CONTRACTOR does not close the resulting gaps in the pipeline in a timely manner, the ENGINEER may require the CONTRACTOR to discontinue all other operations until the gaps are closed.

3.5 Unless specifically directed otherwise by the ENGINEER, not more than 500 feet of trench shall be opened ahead of the pipe laying, and not more than 500 feet of open ditch shall be left behind the pipe laying. All barricades, lanterns, watchmen, and other such signs and signals as may be necessary to warn the public of the dangers in connection with open trenches, excavations, and other obstructions, shall be provided by and at the expense of the CONTRACTOR.

3.6 At the close of each working day all trenches that have been excavated shall be refilled unless exceptions are granted by the ENGINEER. All public or private drives shall be promptly backfilled or bridged at the direction of the ENGINEER.

3.7 All excavation shall be "unclassified" and therefore there will be no separate payment for rock excavation. The cost of all excavation should be merged into the cost of constructing the water line.

4. Blasting

4.1. General

4.1.1 All blasting operations shall conform to Kentucky Department of Mines and Minerals code for explosive disintegration of rock. CONTRACTOR shall obtain permits from local authorities having jurisdiction before explosives are brought to site or drilling is started.

4.1.2 The CONTRACTOR shall keep explosives on the site only in such quantity as may be needed for the Work under way and only during such time as they are being used. He shall notify the ENGINEER, in advance, of his intention to store and use explosives. Explosives shall be stored in a secure manner and separate from all tools. Caps or detonators shall be safely stored at a point over 100 feet distance from the explosives. When the need for explosives has ended, all such materials remaining on the Work shall be promptly removed from the premises.

4.1.3 The CONTRACTOR shall observe all state, federal and municipal laws, ordinances and regulations relating to the transportation, storage, handling and use of explosives. In the event that any of the above-mentioned laws, ordinances or regulations require a licensed blaster to perform or supervise the Work of blasting, said licensed blaster shall, at all times have his license on the Work and shall permit examination thereof by the ENGINEER or other officials having jurisdiction.

4.1.4 No explosives shall be used within 20 feet of buildings and/or structures existing, constructed or under construction; or underground and/or overhead utilities whether existing or partially constructed.

4.1.5 Permission for any deviation from the restriction set forth above shall be secured from the ENGINEER, in writing; however, permission for any such deviations shall not relieve the CONTRACTOR from any responsibility in the event of damage to buildings, structures or utilities.

4.1.6 All operations involving explosives shall be conducted with all possible care to avoid injury to persons and property. Blasting shall be done only with such quantities and strengths of explosives and in such a manner as will break the rock approximately to the intended lines and grades and yet will leave the rock not to be excavated in an un-shattered condition. Care shall be taken to avoid excessive cracking of the rock upon or against which any structure will be built, and to prevent injury to existing pipes or other structures and property above or below ground. Rock shall be well covered with logs or mats, or both, where required. Sufficient warning shall be given to all persons in the vicinity of the Work before a charge is exploded.

4.1.7 The CONTRACTOR shall be solely responsible for his blasting operations. The CONTRACTOR shall not hold the OWNER and/or the

ENGINEER liable for any damages resulting from his blasting operations on this project.

4.1.8 Blasting will not be permitted under or on CSXT's right-of-way.

4.2. Pre-blast Structure Survey

4.2.1 CONTRACTOR shall perform a pre-blast survey to determine and document with pictures the condition of adjacent structures, utilities, wells, buried cables, and other features within a minimum of 400 ft. of the blast area unless otherwise required by applicable regulatory authorities. Determine safe distances to structures or other facilities according to NFPA 495, Appendix B. Where facilities are closer than these distances, and natural barriers are not present, or when the amount of explosive cannot be reduced economically, blasting mats shall be used. Provide mats to protect environmentally sensitive areas, trees within 20 feet from the blasting area, streams, and rock formations from throw rock.

4.2.2 Purpose of survey is to document existing condition of structures prior to blasting, and is intended to be used as evidence in ascertaining whether and to what extent damage may have occurred as result of blasting. Survey shall be conducted prior to start blasting operations.

4.2.3 CONTRACTOR shall record information for each structure surveyed including:

4.2.3.1 Age and type of construction.
4.2.3.2 Location and character of cracks.
4.2.3.3 Evidence of settlement and leakage.
4.2.3.4 Other pertinent information.

4.2.4 Record pre-blast survey information on forms prepared specifically for pre-blast surveys. Supplement written records with photographs or videotape recordings. Submit copies of written records and photographs or videotapes to OWNER, and ENGINEER, prior to start of blasting.

4.3. Blast Design

4.3.1 Design each blast to avoid damage to existing facilities, adjacent property, and completed Work. Consider effects of blast-induced vibrations, air blast, and fly rock potential in design of each blast.

4.3.2 Establish appropriate maximum limit for vibration for each structure or facility that is adjacent to or near blast sites. Base maximum limits on expected sensitivity of each structure or facility to vibration, and federal, state, or local regulatory requirements, but not to exceed 1.25 in/sec. Whenever peak particle velocity exceeds vibration limits, change design of subsequent blasts, as necessary to reduce peak particle velocity to within

limits established by Blaster-in-charge (BIC).

4.3.3 Establish appropriate maximum limit for air blast for each structure or facility that is adjacent to or near blast sites. Base maximum limits on expected sensitivity of each structure or facility to air blast, and federal, state, or local regulatory requirements, but not to exceed 0.015 psi peak overpressure (133 decibels). Whenever air blast exceeds limits, change design of subsequent blasts or provide controls necessary to reduce air blast to within specified limits.

4.4. Fly Rock Containment

Where fly rock may damage existing facilities, adjacent property, or completed Work, cover area to be blasted with blasting mats or provide other means that will contain and prevent scattering of blast debris.

4.5. Vibration and Air-Blast Monitoring

4.5.1 Monitor and record blast-induced vibrations and air blast using suitable sensors and recording equipment for each blast.

4.5.2 CONTRACTOR shall provide two (2) seismographs during blasting operations capable of the following:

4.5.2.1 Designed for monitoring blast-induced vibrations and air blast. Capable of recording particle velocity in three mutually perpendicular directions in range from 0 to 6 inches per second.
4.5.2.2 Flat vibration frequency response between 4 and 200-Hz.
4.5.2.3 Capable of recording air-blast overpressure up to 140 decibels.
4.5.2.4 Flat air-blast frequency response between 2- and 500-Hz.

4.5.3 Monitor on, or at, structures or other facilities that are closest to point of blasting. Monitoring more distant facilities that are expected to be sensitive to blast-induced vibrations and air blast.

4.5.4 BIC shall supervise establishment of monitoring programs and initial operation of equipment; review interpretation of records and recommend revisions of blast designs.

4.5.5 Include following information in blasting plan:

4.5.5.1 Vibration and air-blast limits as recommended by BIC.
4.5.5.2 Name of qualified BIC who will be responsible for monitoring program and interpretation of records.
4.5.5.3 Types and models of equipment proposed for monitoring.
4.5.5.4 Numbers and locations of proposed monitoring stations.
4.5.5.5 Procedures to be used for coordinating recording of each

blast.
4.5.5.6 Steps to be taken if blasting vibrations or air blast exceed limits.

4.6. Blasting Records

4.6.1 For each blast, document the following:

4.6.1.1 Location of blast in relation to Project stationing or state plane coordinate system and elevation.
4.6.1.2 Date and times of loading and detonation of blast.
4.6.1.3 Name of person in responsible charge of loading and firing.
4.6.1.4 Details of blast design, as previously specified.
4.6.1.5 Vibration records including location and distance of seismograph geophones to blast and to nearest structure, and measured peak particle velocity. Report peak particle velocity in units of inches per second.
4.6.1.6 Air-blast records. Report peak air blast values in units of pounds per square inch overpressure above atmospheric or in decibels at linear response.
4.6.1.7 Comments by BIC regarding damage to existing facilities, adjacent property, or completed Work, misfires, fly rock occurrences, unusual results, or unusual effects as required.

4.7. Suspension of Blasting

4.7.1 In event damage to existing facilities, adjacent property, or completed Work occurs due to blasting, immediately suspend blasting and report damage to ENGINEER and OWNER. CONTRACTOR shall be responsible for all costs of repairs or replacement due to damage from blasting.

4.7.2 Before resuming blasting operations, adjust design of subsequent blasts, or take other appropriate measures to control effects of blasting, and submit complete description of proposed changes for reducing potential for future damage.

4.7.3 Do not resume blasting until authorized by OWNER and applicable regulatory authorities.

5. Pipe Bedding and Initial Backfill

For all pipe 14 inches in diameter and larger, or where rock excavation is encountered or in rocky soil as directed by the ENGINEER, the pipe shall be bedded with six (6) inches of crushed stone under the pipe. Crushed stone shall be used in the initial backfill from the bottom of the pipe to the centerline of the pipe. Initial backfill material shall be placed and thoroughly compacted by hand

tamping. Initial backfill material shall be deposited in the trench for its full width on each side of pipe, fittings and appurtenances simultaneously. Care must be taken to compact fill along the sides of the pipe and appurtenances adjacent to pipe wall. Crushed stone shall be No. 9-M or #57 as described in the *Standard Specifications for Road and Bridge Construction* as published by the Kentucky Department of Transportation, Bureau of Highways. In certain cases the CONTRACTOR may be required to move earth of good quality from previous trench excavation for use as bedding material.

6. Pipe Laying

6.1. General

6.1.1 The CONTRACTOR shall notify the ENGINEER as to the date and time of all pipe deliveries and shall not unload any pipe except in the presence of the Inspector. Pipe shall be transported and handled in strict conformance with the manufacturer's recommendations.

6.1.2 The CONTRACTOR will be required to stockpile all pipe in central locations. Pipe strung along the route of the pipeline, shall be limited to the current day's expected production.

6.1.3 Pipe laying shall be in strict accordance with the manufacturer's recommended practice. Special tools, lubricant and equipment for proper laying shall be provided by the manufacturer. If the CONTRACTOR proposes a method of installation not covered by the manufacturer's recommended procedures, the CONTRACTOR shall obtain written certification from the manufacturer that installation by this proposed method will in no way affect the manufacturer's warranty of the pipe.

6.1.4 Pipe shall not be rolled, or dropped, into the trench.

6.1.5 All angles or bends in the pipe lines, either vertical or horizontal shall be satisfactorily braced or anchored against the tendency of movement with concrete anchors to the satisfaction of the ENGINEER.

6.1.6 Open ends of unfinished pipelines shall be securely plugged or closed at the end of each day's work, or when the line is left temporarily at any other time.

6.2. Ductile Iron Pipe

6.2.1 The trench shall be excavated to the required depth and width, bell holes and/or joint holes shall be dug in advance of the pipe laying.

6.2.2 The beds of each piece of pipe shall be prepared carefully so that each individual piece of pipe shall have a uniform bearing. Pipe shall be laid in a straight line and grade without kinks or sags, and shall be laid in a

workmanlike manner. Bell holes and/or jointing holes shall be large enough so that the bell or hub will clear the ground and leave ample room for making and inspection of joints.

6.2.3 Before each piece of pipe is lowered into the trench, it shall be swabbed out thoroughly to insure its being clean. Each piece of pipe shall be lowered into the trench separately.

6.2.4 Care shall be taken to prevent injury to the pipe coating both inside and outside. No piece of pipe or fitting which is known to be defective shall be laid or placed in the lines. If any defective pipe or fittings shall be discovered after the pipe line is laid, they shall be removed and replaced with a satisfactory pipe or fitting without additional charge. In case a length of pipe is cut to fit in a line, it shall be so cut as to leave a smooth end at right angles to the longitudinal axis of the pipe.

6.3. Plastic Pipe

6.3.1 Plastic pipe shall be installed in accordance with manufacturer's recommendations. A representative who is a direct employee of the pipe manufacturer shall conduct training sessions for CONTRACTOR's personnel regarding proper pipe installation. The manufacturer's representative shall certify to the ENGINEER the names of CONTRACTOR's personnel who have attended such training. Pipe laying and assembly work shall be performed only by personnel who appear on the manufacturer's certified list.

6.3.2 Backfilling shall be done in accordance with Paragraph 7, Backfilling Pipeline Trenches, where not in conflict with manufacturer's recommendations.

7. Backfilling Pipeline Trenches

7.1 Backfilling shall be conducted at all times in a manner to prevent damage to the pipe and the exterior protection on the pipe. Placing of backfill shall be done only in the presence of the ENGINEER after his final inspection and acceptance of the pipe in place. If material for backfilling is not available at the construction site, the CONTRACTOR shall "import" earth of good quality from a site approved by the ENGINEER. This will not be a separate pay item.

7.2 In areas of earth excavation of the pipeline trench, earthen material reasonably free from rock and acceptable to the ENGINEER shall be used in the backfilling of the trench. Backfill material free of rock over one inch in diameter shall be placed around the pipe up to the point where the pipe is thoroughly covered with at least one foot of material. Walking or working on the completed pipe (except as may be necessary in backfilling) shall not be permitted until the trench has been backfilled to a height of at least one foot above the top of the pipe. The filling of the trench shall be carried on simultaneously on both sides of the pipe

in such a manner that the completed pipeline will not be disturbed and injurious side pressures do not occur.

7.3 In areas of rock excavation of the pipeline trench, crushed stone as used for bedding shall be used as backfill material to a level 6 inches above the top of the pipe. Placement of this backfill material shall be performed as described above. In certain cases in lieu of or in addition to the crushed stone backfill the CONTRACTOR may be required to use earth of good quality as backfill material to a depth of 12 inches above the pipe as described above.

7.4 In filling the remainder of the trench above the initial backfill described above, whether in earth or rock excavation, earth backfill material reasonably free of rock may be shoved into the trench without compacting and heaped over, then compacted by rolling with the wheel of a grader or front-end loader. Earth backfill material containing rocks greater than 6 inches in diameter shall not be acceptable.

7.5 The final step in the backfill operation shall be to windrow good quality earthen material over the top of the ditch. The windrow shall be no higher than one foot and no wider than the width of the ditch plus 4 feet. All other excavated material except that required for the above described windrow shall be considered excess and shall be disposed of as described hereinafter.

7.6 Where street, driveway and highway crossings are made and where streets or highways are proposed, the CONTRACTOR will be required to tamp all backfill as described hereinafter and backfill the trench with No. 9-M crushed stone or flowable fill, as indicated on plans.

7.7 Where tamping is required, the backfilling shall all be done in layers not exceeding 6 inches and firmly tamped into place by tampers or rammers. The ENGINEER may permit puddling of ditches to compact the backfill in lieu of tamping with mechanical tampers except where street paving is to be replaced immediately after the backfilling is completed. The ENGINEER may also require puddling where (in his opinion) it is necessary for proper compaction.

8. Disposition of Excess Excavated Material

Excavated materials not used for backfill including "shot rock" and boulders shall be disposed of within one week of the adjacent trench being backfilled. Disposal of excavated material shall be performed so as to cause the least interference with the completed pipeline and operations of the OWNER, property owners, etc. and in a manner satisfactory to the ENGINEER.

9. Replacing Streets and Roadways

9.1 The CONTRACTOR shall replace all streets, alleys, driveways, and roadways which may be removed, disturbed, or damaged in connection with his operations under this Contract. CONTRACTOR shall reconstruct same to the satisfaction of the Kentucky Department of Transportation, the County Highway

Department, or other legal entity or property owner having jurisdiction. The reuse of materials removed in making excavations will be permitted, provided said materials are in good condition and acceptable to the ENGINEER.

9.2 The CONTRACTOR will be paid for street replacement only where the line is constructed within the paved surfaces. Care shall be exercised to minimize damage to graveled shoulders and paved surfaces.

9.3 Gravel, crushed limestone, bituminous materials, or other materials used in the resurfacing of streets, shall meet the current requirements of the Kentucky Department of Transportation (Bureau of Highways) Specifications.

9.4. Traffic-Bound Base Course

9.4.1 On all trenches where replacing streets or drives is required, it shall be handled in the following manner:

9.4.2 After the backfill has been compacted (by mechanical tamping) and brought up to approximately finish grade, the CONTRACTOR then shall place crushed stone when and as directed by the ENGINEER as a traffic-bound base course, at the proper elevation to allow for settlement but not in such a way as to prevent traffic from using it. Crushed stone shall be Kentucky Department of Transportation, dense graded aggregate.

9.4.3 The CONTRACTOR may be required by the ENGINEER to maintain the traffic-bound base course (by adding crushed stone as specified hereinbefore) in a safe and passable condition for a period of 60 days (or until such time as sufficient settlement has taken place in the opinion of the ENGINEER) and the trenches are ready for final resurfacing. Crushed stone will be paid for at the unit bid price specified in the Contract.

9.5. Subgrade for Final Resurfacing

9.5.1 The traffic-bound course hereinbefore described shall comprise the base course for all types of resurfacing.

9.5.2 When, in the opinion of the ENGINEER, the trench has reached a condition of settlement satisfactory for final resurfacing, the CONTRACTOR shall first strip the base course or backfill with crushed stone (size as specified hereinbefore) to obtain the proper subgrade elevation. The subgrade then shall be rolled with an approved type roller or tamped until thoroughly compacted. Any depressions shall be filled with crushed stone (as specified hereinbefore) and the process of rolling or tamping continued until the subgrade has a smooth and uniform surface.

9.6. Portland Cement Concrete Pavement

Where Portland Cement Concrete Pavement is to be replaced, or is

required under bituminous pavement replacement, it shall conform to the existing pavement and/or the ENGINEER'S instructions (not less than 6 inches thickness), and the type concrete required by the Kentucky Department of Transportation shall be used.

9.7. Asphaltic Concrete Pavement

9.7.1 Where asphaltic concrete pavement is to be replaced, the subgrade shall be prepared as hereinbefore specified, and this subgrade shall comprise the base course upon which the concrete subslab and/or the bituminous pavement shall be laid. Asphaltic concrete shall be as required by the Kentucky Department of Transportation.

9.7.2 Where no Portland cement concrete subslab is required, the subgrade or base shall be cleaned and broomed thoroughly and a prime coat of medium tar shall be applied uniformly at the rate of 0.20 to 0.25 gallons per square yard. Where Portland cement concrete subslab is required, the prime shall be applied at the rate of approximately 0.05 gallons per square yard. The prime shall be applied by a pressure distributor or other approved pressure spray method.

9.8. Bituminous Surfacing (Surface Treatment)

9.8.1 Where bituminous surfacing is to be replaced as shown on the Drawings, or as directed by the ENGINEER, the traffic-bound base shall comprise the subgrade upon which the bituminous surfacing shall be constructed. After the subgrade or base has been prepared, thoroughly cleaned and broomed, a prime coat of medium tar shall be applied at the rate of 0.30 to 0.35 gallons per square yard.

9.8.2 When the prime coat has become tacky but not hard, the bituminous material (asphalt of the grade directed by the ENGINEER) shall be applied in two applications at the rate of 0.35 to 0.45 gallons per square yard for each application. The CONTRACTOR shall apply approximately 50 pounds of crushed stone chips per square yard between the two applications of bituminous material, and 35 to 40 pounds of chips per square yard after the final application of bituminous materials.

9.9. Untreated Surface

9.9.1 Where the existing surface is untreated gravel or stone, the CONTRACTOR shall reuse all native materials possible using crushed stone as required, replacing the surfacing that is disturbed or removed with crushed stone equal to the grade present prior to construction.

9.9.2 Prior to final acceptance, the CONTRACTOR shall fill in all depressions with crushed stone as hereinbefore specified, and shall thoroughly roll and grade to the existing surface.

9.10. General

The CONTRACTOR shall be held responsible for any and all damage occurring to street and road paving due to his operations outside the actual limits of his work, and shall replace any such damage to as good, or better, condition than that which existed prior to the CONTRACTOR's operations and at no additional expense to the OWNER.

10. Concrete Kickers, Anchors, Cradles, and/or Encasement

10.1 Concrete kickers, anchors, cradles, and/or encasement of water lines shall be placed where and as shown on the Drawings, or as directed by the ENGINEER.

10.2 Concrete for anchors, kickers, cradle, and/or encasement shall be 2,500 psi concrete and shall be mixed sufficiently wet to permit it to flow under the pipe to form a continuous bed. In tamping concrete, care shall be taken not to disturb the grade or line of the pipe, or to injure the joints. Concrete placed outside the specified limits or without authorization from the ENGINEER will not be subject to payment.

10.3 Thrust blocks shall be provided in accordance with details shown on Drawings and must bear against an undisturbed trench face. Thrust blocks must be used even when special locked-joint fittings, anchoring fittings, or pipe clamps with tie rods are employed. Fitting bolts shall be protected from the concrete being poured for thrust blocks by using plastic sheeting to cover the area of the bolts.

11. Pipe and Fittings for Water Lines

11.1. General

Pipe for water mains shall be nominal diameter and material indicated on the Drawings. The pipe shall be as specified herein and shall be either PVC or ductile iron.

11.2. Fittings

11.2.1 Ductile iron mechanical joint fittings shall be required for all sizes of PVC and ductile iron pipe. Ductile iron mechanical joint fittings shall conform to AWWA specification C 153 and shall have a rated working pressure of 350 psi up to 24-inch diameter and 250 psi above 24-inch. Ductile iron fittings shall be furnished with a bituminous coating outside in accordance with AWWA specification C 153 and shall be cement mortar lined inside in accordance with AWWA specification C 104.

11.2.2 Only high strength low alloy steel T-bolts shall be used with all mechanical joints including fittings, valves, etc. All glands, T-bolts and other accessories shall be manufactured and provided by the same manufacturer as the fittings on which the accessories are used.

11.2.3 Fittings used in pipeline sections noted on the Drawings to be restrained shall be slip joint type fittings that incorporate the specified type of restraining system used with ductile iron pipe or mechanical joint type fittings with approved restraining devices listed below.

11.2.4 Fittings shown on the Drawings are intended to convey the general configuration only. The CONTRACTOR shall be required to furnish fittings at each abrupt change (vertical or horizontal) in the pipeline alignment, as determined by the ENGINEER. The CONTRACTOR shall also be required to furnish any special gaskets, adaptors, etc. necessary for construction.

11.2.5 All vertical bends and all bends greater than 12 inches in diameter shall include approved restraining devices. Approved restraining devices are Megalug by EBBA Iron, Inc., GripRing by Romac Industries, Inc., or approved equal.

11.2.6 **Fittings and accessories shall be Union/Tyler, ACIPCO, U.S. Pipe, or approved equal.**

11.3. Ductile Iron Pipe

11.3.1 Ductile iron pipe shall conform to AWWA specifications C 150 and C 151 with a rated working pressure of 350 psi for 4-inch through 12-inch diameter pipe and 250 psi for pipe14-inch and larger, under the laying conditions and depth of cover specified herein.

11.3.2 Ductile iron pipe shall be furnished with an outside bituminous coating approximately one mil thick and shall be cement mortar lined inside according to AWWA specification C 104.

11.3.3 The joints for ductile iron pipe shall be in accordance with AWWA specification C 111 and shall be the "push-on" type. The allowable deflection in each joint shall be a minimum of 3 degrees and gasket lubricant shall be used as recommended by the pipe manufacturer.

11.3.4 Ductile iron pipe shall be "Fastite" as manufactured by American, "Super Bell-tite" as manufactured by Clow Corp., "Tyton" as manufactured by U.S. Pipe Corp., or approved equal.

11.3.5 In certain locations as described herein, ductile iron pipe and fittings shall be provided and installed with restrained joints. The restrained joint system for pipe shall be similar to "Flex-Grip" by American Ductile Iron Pipe, "Field-Lok" by U.S. Pipe or approved equal. If mechanical joint fittings are used in lieu of push-on-joints, joint restraint shall be accomplished as specified in the preceding subsection.

11.3.6 The locations where restrained joints are required are as follows:

11.3.6.1 All ductile iron carrier pipes used in casing pipe for road crossings. Restrained joints shall be used between and include the adjacent fitting on each side of the crossing.

11.3.6.2 At all fittings used in the ductile iron water line, fittings, and joints shall be restrained to result in the following restrained footage each side of the fitting, as specified herein.

TABLE 3.1

MINIMUM RESTRAINED LENGTH
EACH SIDE OF DUCTILE IRON PIPE

Fitting	Restrained Pipe Length
90° Bend	87 LF
45° Bend	36 LF
22 ½° Bend	17 LF
11 ¼° Bend	17 LF
Tee	64 LF
Dead End	65 LF

11.4. Plastic (PVC) Pipe

11.4.1 Plastic pipe shall be polyvinyl chloride (PVC) and shall meet the requirements set forth by ASTM D1784 for Type 1, Grade 1. All plastic pipe shall bear the National Sanitation Foundation Testing Laboratory seal for potable water. All plastic pipe shall be certified in accordance with NSF/ANSI 14 – 2012. The pipe shall also meet the requirements of ASTM D-2241, ASTM D-3139, and all other specifications referred to therein.

11.4.2 In general and unless indicated otherwise on the Drawings, PVC pipe shall be Class 200 (SDR-21). However, in certain areas Class 250 (SDR-17) PVC pipe may be required.

11.4.3 Provision shall be made for contraction and expansion at each joint with either twin gasketed couplings or integral bell joints. Gasket systems shall be Reiber or other locked-in type as approved by the ENGINEER. Twin gasketed couplings shall be rated for working pressure equal to that of pipe and shall be as manufactured by the pipe manufacturer.

11.4.4 PVC pipe shall be manufactured by a company that has made pipe in accordance with ASTM D-2241 under the brand name to be supplied on this project continuously over the previous five (5) year period. Pipe shall be manufactured at a plant that has been owned, operated and controlled by the same manufacturing company and has produced PVC pipe in accordance with ASTM D-2241 as a routine standard procedure for the last three (3) years. The plant shall be certified in accordance with NSF/ANSI 14 – 2012 for the PVC pipe specified. PVC pipe shall be Vulcan, National, Royal, Pipelife-Jetstream, or North American.

11.4.5 Pipe manufactured with Molecular Oriented Poly (vinyl Chloride), PVC (MO), may be substituted for the PVC pipe described above. PVC (MO) pipe shall conform to ASTM F1483 and shall be Ultra-Blue as manufactured by JM Eagle, Inc.

11.4.6 Note special PVC and PVC (MO) pipe testing requirements, Section 2 Paragraph 13.

12. Gate Valves, Butterfly Valves, and Boxes

12.1 Gate valves shall comply with AWWA specification C 509 and shall be of the resilient wedge type, epoxy coated, iron body, non-rising stem and fully bronze mounted. Valves shall be suitable for water working pressures of 250 psi. Valves shall be of standard manufacture and of the highest quality both as to materials and workmanship. Gate valves shall be either the A-2360 series by Mueller Company, Style A067 by M & H Valve Company, or US Pipe equivalent.

12.2 All gate valves shall have the name or monogram of the manufacturer, the year the valve casting was made, the size of the valve, and the working water pressure cast on the body of the valve. Unless otherwise indicated on the Drawings, all gate valves shall be provided with a 2-inch square operating nut and shall open by turning counterclockwise.

12.3 Butterfly valves shall be Muller Lineseal III, M&H #4500, or #1450 Class 150B meeting the requirements of AWWA C504. They shall have mechanical joint connections with a 2-inch square operating nut and shall be suitable in all respects for underground service.

12.4 All gate valves and butterfly valves installed in Ductile Iron water mains shall be restrained against movement by either rodding the valve to adjacent fittings or use of "Megalugs" or equal.

12.5 Valve boxes shall be cast iron, two piece, screw type 24-inch to 36-inch extension with drop covers marked "WATER" and they shall be set vertically, properly adjusted so that the cover will be in the same plane as the finished surface of the street or ground. The box shall have a 5 1/4-inch shaft. Valve boxes shall be as manufactured by Mueller, Clow, M & H, or an approved equal.

12.6 **Any valve that is installed at a depth to the operating nut greater than 3 feet below the final elevation of the valve box top shall be fitted with a valve operator extension**. The length of the extension shall place the operating nut 12 to 24 inches from the valve box top. The extension shall be secured to the valve nut with a set screw. The extension shall include a 1-inch solid steel shaft, 2-inch square top nut, and centering ring near the top. Valve operator extensions shall be manufactured by an entity regularly engaged in the manufacture of such equipment, and be Water Key Model VE-XX, or approved equal.

13. Tapping Sleeves and Valves

13.1 Tapping sleeves for cast iron or ductile iron pipe shall be mechanical joint and shall be Mueller H615 or M & H Style 1174. Tapping sleeves for A.C. pipe shall be mechanical joint and shall be Mueller H-619 or approved equal. Tapping sleeves for 4-inch through 8-inch PVC pipe shall be Mueller H-304 or Smith Blair No. 622. Tapping sleeves for 10-inch and 12-inch PVC pipe shall be Smith-Blair No. 622 fabricated steel sleeves, epoxy coated with stainless steel bolts and nuts.

13.2 Tapping valves shall meet the same general specifications as described herein for gate valves.

14. Blowoffs

Blowoff valves and appurtenances shall be constructed where shown on the Drawings and as detailed on the standard detail sheet. Gate valves as specified hereinbefore and the meter boxes described below shall be used in the blowoff assembly. Bends used in blowoff assemblies may be PVC with gasketed joints, as approved by the ENGINEER.

15. Fire Hydrants

15.1 Fire hydrants shall be "dry barrel," cast iron bodied, fully bronze mounted, suitable for a working pressure of 150 psi, and shall meet all requirements of the latest AWWA C502 specifications. Each hydrant shall be given a 300 psi hydrostatic test in the shop. Hydrants shall be Mueller Model A-423.

15.2 The waterways of hydrants shall be as free as possible of obstructions, sharp turns, corners, or other causes for resistance. The base of the hydrant shall have a bell connection to admit a proper connection with a standard mechanical joint. Bury depth shall be 3 feet 6 inches minimum or as required to bring the hydrant to the proper grade.

15.3 Hydrants shall have a 6-inch connection to 6-inch and larger mains, 2 1/2-inch brass nozzles with threads for steamer couplings, together with caps fastened securely to each hydrant and threaded to fit nozzles. The main valve of the hydrant shall be not less than 5 1/4 inches in diameter with 7-inch inside diameter riser barrel. All connection threads shall comply with standard specifications of the National Board of Fire Underwriters.

15.4 The hydrant main valve shall be of the compression type, closing with pressure. The valve shall be faced with heavy impregnated waterproof balata or other approved material. The main valve of the hydrant shall be not less than 5 1/4 inches in diameter when installed on 6-inch or larger mains and 4 1/2 inches in diameter on 4-inch mains.

15.5 Hydrants shall have a safety "breakable flange" section located above the ground line. The distance from the ground line of the hydrant to the top of the

hydrant head shall be not less than 30 inches. A maximum of one section of vertical riser shall be accepted. Vertical riser, if required, shall be incidental to hydrant installation. In most situations the CONTRACTOR shall be required to turn the hydrant top 180 degrees so that the pumper nozzle will face the street.

15.6 **Hydrants shall be supplied with factory applied paint. The color shall be Safety Yellow.** The factory applied paint shall be protected during transport and installation. Any hydrants which have excessive chips, scratches, or other abrasions, in the opinion of the ENGINEER, shall be subject to rejection. After installation, exposed surfaces of hydrants shall be painted with two (2) coats of the paint indicated below. The bonnets of the hydrants shall be painted with two (2) coats of a contrasting color to indicate potential flow rate as directed by the ENGINEER. The paint shall be Rust-oleum 9800 System DTM Mastic. Barrel color shall be Safety Yellow. Bonnet colors shall be Safety Red, Safety Orange, Safety Green, or Safety Blue.

16. Meters, Meter Boxes and Meter Equipment

16.1. General

16.1.1 Where shown on the Drawings, existing water meters shall be relocated in new meter settings. The CONTRACTOR shall install on the new mains entire new meter settings as shown on the standard detail sheet and as specified herein. When all new meter settings are installed and pressure testing, disinfection and bacteriological testing is completed, the water meters which are in existing settings shall be removed and installed in the new settings. (In special situations where new meters are required in a particular location, it shall be so noted on the Drawings.)

16.1.2 At the time the water meter is relocated the CONTRACTOR shall also connect the new meter setting to the existing customer=s service line which is between the meter and the house or business. Pipe used in making this connection shall be of the same size, material, and type as the existing customer service line, unless otherwise indicated on the Drawings, but in general will be either Sch 40 PVC pipe or P.E. tubing to match existing customer service line. The connection at the meter setting to the new customer service line shall be made with a galvanized or brass compression coupling on a brass nipple which is to be threaded into the yoke. The method and materials used to connect new customer service pipe to existing customer service pipe shall be Style 65 Dresser couplings, or as approved by the ENGINEER. The work of relocating existing meter installations shall be performed in such a way that interruptions of service to each customer are minimized.

16.2. Meter Boxes

16.2.1 Meter boxes shall be cylindrical with a height of 24 inches. The

meter box diameter for 3/4 inch services shall be 18 inches. Boxes with a diameter of 20 inches shall be used for all 1-inch and regulated 3/4-inch services.

16.2.2 Boxes shall be a PVC "shell" meter box manufactured from SDR 51 PVC irrigation pipe as manufactured by Mueller Company.

16.2.3 Meter box covers shall be cast iron with locking lid using "large" pentagon bolts. Covers shall have an 18-inch or 20-inch inside diameter as required and an 11 1/2-inch lid opening. The lid shall be marked "Water Meter". Meter box covers shall be Type A32-LB or Type A3-LB as manufactured by the Ford Meter Box Company.

16.2.4 Meter boxes and covers for meters larger than 1-inch shall be as shown on the standard detail sheet.

16.3. Meter Fittings

16.3.1 The necessary corporation stops, curb valves, and all other fittings and accessories shall be furnished as indicated on the Drawings. Service saddles shall be Mueller Series H-134 for PVC pipe and Mueller Series BR-1-B for ductile iron pipe. Corporation stops shall be Mueller # H-15008.

16.3.2 Service saddles for 2-inch taps shall be Mueller, Smith Blair, or approved equal, double strap type with 1.P threads for use with a 2-inch by 4-inch brass nipple. A 2-inch Mueller A-2360 gate valve, or approved equal, with threaded connections shall be used in lieu of a cooperation stop.

16.3.3 For 3/4-inch services, yokes shall be Mueller #H-1404-2 except where a regulator is required and then yokes shall be Mueller #H-1404-012. All 1-inch yokes shall be Mueller #H-1404-2 (See the Standard Detail Sheet). All yokes shall include a lock wing stop and check valve. Inlet connections shall be either Mueller #H-14227 or #H-14222 as required by the particular situation and all outlet connections shall be #H-14222. See the standard detail sheet for additional information regarding fittings for services.

16.3.4 Pressure regulators, where required, shall be Wilkins 600DM-HR, or approved equal for 3/4-inch services and Watts 223HP-Z3, or approved equal for 1-inch services. The adjusting screw on pressure regulators shall remain at the factory setting.

16.4. Service Connection Tubing

16.4.1 Service connection tubing shall be 3/4-inch or 1-inch plastic tubing of the length necessary to run a direct and continuous line from the main to the meter at property line. The service tubing shall be manufactured from very high molecular weight polyethylene as PE 4710; the material cell

classification shall be 445574E as defined by ASTM D-3350; and it shall bear the name of the National Sanitation Foundation Testing Laboratory Seal for potable water. Tubing dimensions shall be copper tubing size in accordance with the provisions of ASTM D-2737. Tubing shall be SDR 9, rated for 200 psi working pressure and shall be covered by a lifetime warranty. The service tubing shall be Endopure PE-4710 by Endot Industries, Inc. Special care shall be taken to protect the service tubing (with earthen materials) from sharp and/or hard objects. Cover is to be at least 30 inches at all points. Rigid liners (inserts) shall be used with PE tubing where compression connections are made. Liners shall be stainless steel as manufactured by Mueller Co., Part #504281 or #504385.

16.4.2 Where indicated on the Drawings, copper or brass service line shall be utilized. Service line tubing for 1-inch copper connections shall be Type K. Service line for 1 1/2- and 2-inch connections shall be stick brass, field threaded to appropriate lengths.

16.4.3 Where it is necessary to cross a street, highway, or railroad, the CONTRACTOR shall install service tubing under said street, highway, or railroad by the method indicated on the Drawings and the Bid Form. Such service line shall be installed at least 4 feet under the surface. Road crossings for both 5/8-inch x 3/4-inch and 1-inch meters shall be made with 1-inch tubing as shown on the standard detail sheet.

17. Highway and/or Railroad Crossings (Water Mains)

17.1 All water line crossings of County, State and United States Highways, and/or railroads, shall be in smooth wall steel casing pipe (0.25-inch minimum wall thickness). Joints in casing pipe shall be welded continuously all around. The minimum depth of cover shall be 42 inches for highway and road crossings, as measured from the top of the casing pipe to the low point of the crossing cross section. The minimum depth of cover shall be 48 inches, as measured from the top of the casing pipe to the low point of the crossing cross section and 66 inches as measured from the top of the casing pipe to the bottom of the rails for railroad crossings. Carrier pipe used inside steel casing shall generally be the material shown on the Drawings and the Bid Schedule. Where PVC carrier pipe is used, and for bores beneath railroads the carrier pipe shall be supported on casing spacers (Advance, Calpico, CCI, or approved equal) inside the casing at intervals that are in accordance with the spacer manufacturer's recommendations. Casing spacers for ductile iron pipe shall be Advance Model SI.

17.2 The spacer manufacturer shall be supplied the following information when ordering the spacers: carrier pipe O.D., carrier pipe bell O.D., casing pipe I.D., type of pipe being used and SDR information. All carrier pipe shall be centered with maximum clearance of 1-inch between spacer runner and casing. For PVC carrier, the spacer shall be a polyethylene spacer and for DIP carrier the spacer shall be a stainless steel spacer. The CONTRACTOR shall also supply end seals for all

steel casings. End seals may be pull-on or wrap around types with stainless steel bands.

17.3 Split casing for ductile iron pipe shall be sized to match existing casing. The two sides of the split casing shall be field butt welded one to the other and to existing casing to provide a water-tight seal. Lugs shall be provided as required to provide for proper pipe alignment. All appurtenances shall be provided as indicated above.

18. Air Release Stations

18.1 Automatic air release stations shall be located and constructed as shown on the Drawings and the Standard Detail Sheet. The Air Release Stations shall include an Apco Model 200A, or approved equal. The valve shall be supplied with a 2-inch NPT inlet, 5/32-inch orifice, and be complete with a blow-off valve. Inlet valve shall be a 2-inch ball valve as specified below.

18.2 Manual air release stations shall include a 2-inch ball valve and 10-feet of polybutylene tubing. The tubing shall be connected to the ball valve by a Mueller IP x PE Adaptor. Ball valves shall be Apollo, or approved equal, with bronze body and 316 stainless steel ball and stem.

18.3 All piping, nipples and fittings used in air release stations shall be brass. Saddles shall be Power Seal model 3416AS.

19. Inspection of the Lines

Before the CONTRACTOR backfills any of the lines, they first shall be inspected by the ENGINEER's Representative and the ENGINEER's Representative shall give the CONTRACTOR permission to proceed with the backfilling. If any joints, pipes, fittings, or materials or workmanship are found to be defective, they shall be removed and replaced by the CONTRACTOR without any additional compensation.

20. Connecting to the Existing Lines

20.1 Work under this item shall include the connecting of new water lines to the existing water lines in the manner shown on the Drawings, and as directed by the ENGINEER. The work of connecting new lines to existing lines is not a separate pay item under this Contract.

20.2 Where such a connection will result in an interruption of service, the CONTRACTOR shall propose the schedule for such a connection to the ENGINEER several days in advance. The ENGINEER will present the proposal to the OWNER for approval. The interest of the OWNER in regards to service to existing customers shall take precedence over the new construction. The CONTRACTOR's schedule shall permit the OWNER to provide notification to customers at least 24 hours before the suspension of service.

21. Disinfection and Flushing of the Lines

21.1 The new water lines shall not be placed in service either temporarily or permanently until they have been disinfected thoroughly in accordance with the following requirements to the satisfaction of the ENGINEER.

21.2 After pressure testing procedures have been completed, the CONTRACTOR shall flush the line thoroughly, removing all foreign material, dirt, etc. Then a solution of hypochlorite using HTH or equal, sufficient to insure a chlorine dosage of at least 50 parts per million through the entire length of the line, shall be introduced into the line.

21.3 The chlorine solution shall remain in the line for 24 hours and a residual of at least 25 parts per million should be present in the pipe at the end of the 24-hour period. The line shall be flushed until 2 parts per million chlorine residual remains, then bacteriological samples taken. One sample shall be taken per mile of pipeline with a minimum of 2 samples per line. Each sample shall be collected from a different point along the line. If negative samples are obtained, the lines may be put into service. If a positive sample is obtained however, the disinfection procedure shall be repeated until negative samples are obtained. Bacteriological test costs shall be paid by the CONTRACTOR.

21.4 Disinfection, pressure testing, other required testing and flushing are not pay items. The CONTRACTOR shall pay for all water used for testing, disinfection, and flushing, except the amount required to fill the pipelines twice. This amount will be computed and deducted from the total amount metered.

21.5 The CONTRACTOR shall install a temporary bypass with a meter around a valve at the point of connection to the existing water system. This meter will be for the purpose of measuring water used by the CONTRACTOR for flushing, testing, and disinfecting the new water lines. The meter shall be large enough to pass the required flows. It shall be tested for accuracy before being installed.

22. Rough Grade Work and Cleanup

22.1 Rough Grade Work and Cleanup (Rough Cleanup) shall be defined to include the final backfill and windrowing of the ditch line, disposal of excess excavated material, level grading of the disturbed areas adjacent to the ditch line, filling and leveling street and driveway cuts, cleaning up and removal of rubbish, repair of fences and structures, and any other such work that may be required to result in a neat, orderly project area. Rough Cleanup shall be performed as other construction progresses and must be completed within one week of the adjacent pipeline construction.

22.2 Rough Cleanup is not a separate pay item. The cost for this work shall be included in the unit bid price for water lines. If Rough Cleanup is not performed as specified, the OWNER will require deductions from partial payment estimates in accordance with the Supplemental General Conditions, Sections 3.3 and 18.

23. Final Cleanup (Also See Basis of Payment)

23.1 Final cleanup, grade work and seeding shall be performed on each line when backfilled trenches have had adequate time to settle, but at least within 2 months from the date each line is constructed. Final grade work and seeding on Kentucky Bureau of Highways rights-of-way shall be done in accordance with said Bureau's specifications and the permit granted to the OWNER specifically for this project.

23.2 Where work was performed on private property in lawns, earth of good quality, free from rock shall be spread over the disturbed area and graded and compacted to match adjacent ground contours. The previously removed topsoil shall be used for the final layer of backfill to facilitate productive growth of lawns, crops, and other vegetation. The graded area shall be hand raked until smooth and free from rock, potholes, and humps. The disturbed area shall then be seeded with the seed variety used on the original lawn (e.g., a bluegrass lawn shall be reseeded with bluegrass seed) and the seed raked in lightly. The seeded area shall be fertilized and then uniformly covered with straw to a depth of approximately 1 1/2 inches. **Final Cleanup in lawns must be completed within 2 weeks after Rough Cleanup.**

23.3 Where work was performed on private property and not in lawns the trench line shall be graded and filled if necessary to match adjacent contours. All rock larger than 1 1/2 inches in diameter shall be removed from the disturbed area. The previously removed topsoil shall be used for the final layer of backfill to facilitate productive growth of lawns, crops, and other vegetation. In general, pasture and fallow land shall be fertilized and seeded with Kentucky 31 Fescue and plowed fields shall be left unseeded, however, the desire of each property owner shall govern regarding seeding. Disturbed areas not in lawns are not required to be strawed unless erosion problems are anticipated by the ENGINEER.

23.4 In all cases on private property the rate of seed and fertilizer application shall be that recommended by the University of Kentucky Cooperative Extension Service for new plantings of the variety of grass seed used.

23.5 If the trench line settles following final grade work or if grass seed fails to germinate within a reasonable time, the CONTRACTOR shall regrade or reseed the area in question as specified above and as directed by the ENGINEER.

23.6 Final cleanup is a separate pay item (not applicable for water lines included in lump sum pay item).

SECTION 4
PUMP STATION - MECHANICAL

1. Scope of Work

1.1 The **contractor shall furnish** and install one (1) - factory built, factory delivered, below-ground water booster pump station, in a modular equipment capsule with base frame with all necessary internal piping, valves, fittings, supports, meter, pumps, motors, controls and other necessary appurtenances as shown on the plans and specified herein.

1.2 The station **shall be complete when delivered and will not require internal contractor construction except to install the power service through the service conduit provided for that purpose and to connect the main water service to the required points** and other work as may be listed in the Section for **Contractor Installation Requirements**.

1.3 The above-ground water booster pump station shall be manufactured Engineering Fluid, Inc. (EFI), Centralia, Illinois, or pre-approved equal.

2. Contractor Installation Requirements

The **contractor shall be required** to set the station on the foundation designed by the engineer shown in the plan set, following all manufacturer specifications. **The foundation shall be built by the contractor and as directed by the engineer. Following setting of the station, the contractor will be required to anchor the station to the foundation. The contractor shall supply the anchor bolts. Additionally, contractor shall install & connect telemetry remote terminal unit (RTU). OWNER will assist contractor with terminal connections.**

3. Manufacturer's Responsibility for Performance

The Specifications and Drawings for the Factory-built equipment do not necessarily include all the details for the design and fabrication for the factory-built equipment. The Drawings are generally schematic but the specifications do call out strict requirements to known methods, components and assemblies that must be in a full, complete and functional pumping station. As such, the Manufacturer shall accept and hold complete responsibility for the functionality of the pump station and its workings.

4. Post Bid Submittal

4.1 Equipment submittals shall be bound and in a minimum of two (2) hard paper copy bound and electronic copy. The submittals shall contain a minimum of two (2) full size drawings, size 24" x 36"; one (1) each covering the booster pump station and the electrical control schematic.

The booster pump station drawing shall be specific to this project, in at least three (3) different views, be to scale and illustrate the National Electrical Code (NEC) clearances per Section 110-26 of the Code. The submittal booklets will be complete with data sheets covering all major components that make up the booster pump station and the UL/ETL file number under which the manufacturer is listed, service department personnel statement as detailed in the specifications and be complete with the manufacturer's formal warranty policy.

4.2 Two (2) submittal reviews of this item will be accomplished at no cost to the submitting **contractor**. However, all subsequent reviews will be charged to the submitting **contractor** at the design engineer's standard hourly billing rate.

5. Quality Assurance

The equipment furnished shall be designed, constructed, and installed in accordance with the best practices and methods and shall operate satisfactorily when installed as shown on the contract drawings and operated per manufacturer's recommendations.

6. Third Party Inspection Listing (Stations 600V Max.)

The station manufacturer shall be required to affix to the station an UNDERWRITERS LABORATORIES (UL) LABEL attesting to the compliance of the station equipment under the PACKAGED PUMPING SYSTEMS (QCZJ) UL Listing Category and/or INTERTEK TESTING SERVICES (ETL) LABEL attesting to the compliance of the station equipment under PACKAGED PUMPING SYSTEMS. The ETL label shall state the station conforms to UL STD 778 and is certified to CAN/CSA STD C22.2 NO. 108.

7. Shipping and Delivery

7.1 The specified equipment shall be delivered by the manufacturer FOB DESTINATION and thereby the station manufacturer shall hold the full responsibility for the condition and completeness of the equipment upon its delivery. The Engineer shall hold the right to inspect the equipment prior to unloading and setting so as to assure the quality and condition of the equipment is in no way deficient. If in the view of the Engineer or Engineer’s inspector, the equipment is deficient when delivered, delivery shall be refused.

7.2 The **installing contractor** shall follow all station manufacturer specifications for proper unloading and installation of station.

8. Factory Start-up and Training Service

8.1 Without exception, the station manufacturer is directly responsible for

station start-up and operator training. Third party contractors, agents or representatives are not to be allowed to start up the station nor the equipment therein. As such;

8.2 Start-up Factory Service Technician shall be a regular employee of the station manufacturer.

8.3 The manufacturer shall provide three (3) hard copies and an electronic copy of the complete Operation & Maintenance Manual.

9. Manufacturer's Warranty

9.1 The warranty is the sole responsibility of the station manufacturer and that manufacturer's warranty shall be provided in written form, being placed in both the Submittal documents covering the specified equipment and the O&M manuals provided with that equipment.

9.2 It is required the station warranty provide the Owner with a single source responsibility for all components specified herein and the system as a whole. That single source shall be none other than the station manufacturer. Third party suppliers, service contractors, "Pass-through" warranties and service by the representative are not acceptable. Said manufacturer's warranty shall at a minimum cover:

9.2.1 A period of one (1) year commencing upon successful start-up, after authorized manufacturer's start-up, not to exceed eighteen (18) months from the date of shipment.

9.2.2 The warranty period shall be inviolate regardless of any component manufacturer's warranty for equipment and components within the station.

9.2.3 The manufacturer's warranty shall cover all equipment, components and systems provided in or with the station by the manufacturer of the station, exclusive of those components supplied by and/or installed by others independent of the manufacturer of record for this station.

9.2.4 The warranty shall provide for the station manufacturer to bear the full cost of labor and materials for replacement and/or repair of faulty or defective components so there shall be no cost incurred by the Owner for this work during the warranty period.

9.2.5 The manufacturer's warranty policy is amended only by the items considered consumable, i.e., light bulbs, pump seals, pump packing, lubricants and other maintenance items consumed by usage.

9.2.6 No assumption of contingent liabilities for any component failure during manufacturer's warranty is made.

9.2.7 The warranty pertains only where the equipment has been operated in strict accordance with the manufacturer’s instructions and requirements. Evidence of misuse or modification to the equipment voids the warranty.

10. General Liability Insurance

The water distribution station manufacturer shall furnish premises/operations and products/completed operations general liability insurance from an insurance company with a rating of A-V according to the most recent Best's Key Rating Guide, in an amount equal to $10,000,000 per occurrence. The insurance certificate must be included with the manufacturer's submittal. The coverage must be provided by an insurance carrier licensed and admitted in the state of manufacture.

11. Equipment Capsule Design Criteria

11.1 The plate steel employed throughout the equipment capsule shall meet or exceed the requirements for ASTM-283, Grade D. The structural shall meet or exceed the requirements for A-36. The design of all members shall be in accordance with the recommended practice for design as specified in the MANUAL OF STEEL CONSTRUCTION, published by the American Institute of Steel Construction, Inc.

11.2 The equipment capsule shall be one completed unit when delivered. Field welding to complete the structure or attach the entrance tube will not be allowed. Steel plate of 1/4" minimum thickness will be used throughout the equipment capsule walls, top and bottom.

11.3 The plate forming the top and bottom of the equipment capsule will be knuckle radiused prior to assembly so as to form a lap joint with the wall. The average lap dimension will be 1 inches measured center of the internal weld to the center of the exterior weld at both the top and bottom joints. The lap joint will be continuously welded on the interior by hand and the exterior by machine to form an airtight seal.

11.4 All equipment capsule joints shall be welded both inside and outside. Any ferrous metal device passing through the equipment capsule wall will be welded fully along its circumference or length on both sides of the capsule wall.

11.5 The equipment capsule after installation of all components and completion of all penetrations shall be subject to an air test to assure the watertight integrity of the weld system. A test pressure of 3 psi shall be

maintained while a soap solution is applied to all welded joints on the exterior of the equipment capsule. The test pressure shall be measured by means of a tested and properly calibrated pressure gauge. Openings in the capsule shall be sealed against leakage.

11.6 All welds found to be defective shall be repaired and the capsule shall be retested. Six certified copies of a report covering each test shall be prepared by the Contractor and delivered to the ENGINEER not less than 10 days prior to shipment of the package pumping station, at the ENGINEER'S request.

11.7 The equipment capsule shall be a rolled, vertical cylinder with dimensions shown on the plans.

11.8 The bottom of the equipment capsule shall be reinforced by two (2) 8-inch channels in parallel. There shall also be three (3) 6-inch channels in parallel, placed perpendicularly to the 8-inch channels. The top of the equipment capsule shall be reinforced by a minimum of five (5) 4-inch by 4-inch by 1/4-inch angles.

11.9 Four (4) lifting plates of 3/8 inch minimum thickness shall be placed about the perimeter of the equipment capsule to facilitate the lifting and handling of the station. These lifting plates shall be so located as to insure proper balance of the entire pumping station during the setting operation. Interior lifting eyes shall be placed over each piece of equipment in excess of 60 pounds in weight.

11.10 The equipment capsule entrance manway shall be a prefabricated metal roof scuttle, rectangular in shape with a minimum clear inside opening of thirty (30) inches by fifty-four (54) inches. The scuttle cover shall be made of 11 gauge aluminum on the exterior with a three (3) inch beaded, vertical flange, neatly welded and sized to cover the scuttle riser section. The scuttle cover shall be insulated with a minimum of one (1) inch of fiberglass insulation, covered and protected by an 18 gauge aluminum liner. The scuttle riser section shall be formed with an integral 3-inch flange with holes provided for securing the entrance manway to the angle framing on the top of the equipment capsule. The scuttle riser shall be provided with an integral metal cap-flashing of the same gauge and material as the riser, full welded at the corners for absolute weather tightness.

11.11 The scuttle shall be completely assembled with heavy pintle hinges, compression spring operators, enclosed in telescopic tubes and a full perimeter, foam draft seal. The cover shall be equipped with an automatic hold open arm complete with red vinyl grip handle to permit easy, one hand release. When the scuttle cover is in the open position, the hold open arm will engage a lock-open device to prevent accidental

closing of the scuttle cover. All entrance manway hardware shall be zinc plated with the exception of the entrance lock which shall be brass.

11.12 The entrance manway shall be connected to the top of the equipment capsule by an attachment system. Neither factory nor field welding of the entrance manway will be permitted. The attachment system shall include but not be limited to ten (10) 3/8" diameter flange bolts with nuts and two (2) flat washers each, bedding compound sealant, 4504 Scotch polyfoam, single side adhesive coated 1/4" by 3" gasket material and four (4) each 3x2x3/16" flange reinforcement cap angles.

11.13 The entrance manway attachment system shall whenever possible be factory installed. If because of shipping restrictions the entrance manway cannot be factory installed, field attachment is permitted only if performed by factory personnel.

11.14 The entrance manway shall be provided with keyed entry. The entry lock shall be flush mounted, in the scuttle riser, in position to be protected from the elements by the cover skirt. The lock will be of the pin tumbler type as manufactured by Ilco, P/N 7016Y8-25-KA2, dead bolt, with an inside safety release. Two (2) keys will be provided, on a key ring complete with the manufacturer's identification. Locking mechanism shall be lockable from the outside by only closing the hatch.

11.15 Data sheets detailing the entrance manway and the attachment system are to be included in the manufacturer`s equipment submittal.

11.16 An all-aluminum access ladder will be provided. The ladder will meet UL and OSHA approval under the Type I, Heavy Duty Specifications. The ladder will have 1-1/4" diameter, tempered, and serrated rungs with 3" by 1-1/8" full I-Beam side rails. The uppermost ends of the side rails will be protected by plastic caps bolted into place. The complete access ladder will be bolted into place, at a minimum of two (2) points both top and bottom, so as to be easily removable of facilitate equipment maintenance.

11.17 The equipment capsule will be complete with a sump to accommodate the automatic sump pump specified elsewhere herein. The sump shall be a minimum of eighteen (18) inches in diameter by eight (8) inches deep and shall be fabricated of plate 1/4 inch minimum thickness. The sump shall be located so as to insure proper and complete drainage of the equipment capsule floor.

11.18 The equipment capsule floor walkway area shall be covered with a ridged, neoprene floor mat. The floor mat shall not be glued to the floor surface.

12. Pump Operating Conditions – Pump Station

The pump station shall be capable of delivering the fluid medium at the following capacities and heads. The pumps shall be Close Coupled End Suction by Grundfos Paco Model 15959 LC or approved equal.

PUMP(S) #1, #2:

Design Point: 250 GPM @ 249 feet TDH;
Pump Efficiency at Design Point: 72%
Pump Power: 30 HP
Motor Speed: 3550 rpm nominal.

13. Pumps – Close Coupled Horizontal End Suction, Centrifugal

13.1 The pumps employed within the pump station shall be of the close coupled, horizontal end suction, centrifugal configuration.

13.2 The pumps shall be of close grain cast iron construction complete with Bronze trim. The pumps shall conform to the detailed specifications as set forth below:

13.3 The pumps shall be Volute style with the pump casing bolted to adapter, with recessed lock fit to insure alignment. No stud or bolt holes are tapped through casing to liquid ways. Tapping openings provided for priming, venting, draining and suction and discharge gauge connections. Piping connection are to be as shown on the pump data sheets.

13.4 Impellers are to be single suction type, cast in one piece. All impellers are to be statically balanced to insure smooth operation, also hydraulically balanced except in some small sizes where end thrust is but a minor factor.

13.5 Wearing rings shall be renewable, be set on both the impeller and body and be set maintain proper running clearance with impeller hubs to minimize leakage between the suction and discharge.

13.6 Shaft sleeves shall be shouldered onto the shaft near impeller to cover the full length of shaft from impeller hub to motor end bracket by being in compression over the shaft protecting shaft from contact with liquid.

13.7 The stuffing box shall be cast integral with the pump casing. The stuffing box shall contain a single face type mechanical seal. The seal shall have a carbon rotating head against a Ni-Resist stationary face and be complete with a Buna-N boot with stainless steel spring and spring retainer.

13.8 The motor adaptor shall maintain a rigid, bolted, registered assembly between motor and the casing by a machined lock between adapter and motor end bracket keeping the adapter and casing in permanent alignment with motor and motor shaft.

13.9 Motor configuration shall be as a close-coupled assembled as an integral part of the complete units. The extended motor shaft carries the impeller and shaft sleeve. Motor bearings are ball bearing type, designed to carry all radial and thrust loads, and are installed in sealed housings which retain lubricant and exclude dirt and moisture.

14. Pump/Motor Vibration Isolation Pads

The pump/motor assembly shall be mounted to a fabricated steel base built specifically for the pump/motor to be mounted. Each mounting or attachment point shall be complete with a vibration isolation pad. The pad will be in two (2) parts, a 1/4" base layer followed by a 5/8" upper layer and be a nominal 2" x 2" square size for pump/motor combinations weighing up to 1500 pounds.

15. Pump Support Stands

The pump support stands shall be weld fabricated of structural and plate steel with double “H” configuration of solid, continuous legs and double webbing between the legs for rigidity. The base of the legs shall be flanged and continuously welded to the steel floor. The upper end of the legs shall be flanged and continuously welded to a 3/8” thick pump motor leg bolt-down plate.

16. Pump Motor Configuration

16.1 The pump driver shall be a NEMA Design B, three phase, alternating current, (squirrel cage) induction motor, continuous duty rated, with motor insulation as Class F for Class B Heat Rise.

16.2 Motor efficiencies shall be Premium Efficient as stated in NEMA MG 1, 2011 Part 12, Table 12-12 for the motor enclosure, open or closed.

16.3 Motor Service factor shall be 1.15 on the nameplate, reduced to 1.0 when used with variable frequency drives per NEMA MG 1 – 2011, Part 31.3.7.

16.4 The motor enclosure shall be Open Drip Proof.

16.5 Motors of 600 volts or less shall meet the requirements of NEMA MG 1 2011 Part 31.4.4.2 for ability to sustain voltage spikes when used with variable frequency drives under usual conditions

16.6 These motors are for use with variable frequency drives.

17. Piping - Transmission

17.1 Piping shall be steel and conform to material specification ASTM A-53(CW) for nominal pipe size four (4) inch and smaller and ASTM A-53(ERW) Grade B for nominal pipe size five (5) inches and larger. Steel butt-welding fittings shall conform to material specification ASTM A-234 Grade WPB and to the dimensions and tolerances of ANSI Standards B16.9 and B16.28 respectively.

17.2 Forged steel flanges shall conform to material specification ASTM A-105 Class 60 and/or ASTM A-181 for carbon steel forgings and to the dimensions and tolerances of ANSI Standards B16.5 as amended in 1992 for Class 150 and Class 300 flanges.

17.3 The piping sizes shall be as shown on the drawing.
17.3.1 Size 10 inch and below - Schedule 40
17.3.2 Size 12 inch thru 20 inch - Standard weight (.375" wall)
17.3.3 Size 24 inch and above - Standard weight (.500" wall)

18. Pipe Welding Certification

18.1 All pipe welds shall be performed by certified welders employed by the pump station manufacturer. As part of the equipment submittal, the pump station manufacturer shall provide copies of the welding certificates of the employees who are to perform the pipe welds.

18.2 Shop welders shall be certified in accordance with ASME BPVC Section IX or AWS D1.1. Certification shall be done by an independent testing laboratory giving certification for the weld positions for which the tests were performed.

19. Pipe Surface Preparation

All piping inside and outside surfaces shall be prepared by grit blasting, or other abrasive blasting, prior to any welds taking place to minimum SP-6 finish.

20. Pipe Cutting

20.1 Piping of 4" diameter and smaller may be cut by saw.

20.2 Piping of 6" diameter and larger shall be bevel cut, and Oxyfuel or Plasma-arc cutting techniques shall be used to assure and facilitate bevel pipe cuts.

21. Saddle Cuts and Welds

Saddle cuts in pipe made in preparation for a saddle weld of a pipe at an angle to

a pipe shall be made with numerically controlled, plasma cutting machines. Similarly, saddle end cuts to pipes to make a saddle mating piece shall be done with the same numerically controlled plasma cutting equipment. When the two saddle cut pieces are mated and welded with the MIG process, the internal finished weld shall be smooth and free of inclusions, crevices and other corrosion sites.

22. Pipe Welding Techniques

22.1 Pipe welds shall be performed by metal added, inert gas shielded arc welding (MIG) techniques wherein the weld heat settings, the wire feed speed and the traverse speed of the work below the welding are numerically set to assure proper weld fusion and penetration and repeatable welds.

22.2 In all cases, short circuit transfer, spray transfer or pulse-arc transfer modes of the gas metal arc welding process shall be used.

22.3 When utilizing the short circuit mode, shielding gas consisting of 50% carbon dioxide and 50% argon gas shall be used. When utilizing the spray or pulse-arc transfer modes, a shielding gas consisting of 5% carbon dioxide and 95% argon shall be used.

22.4 In all cases, welding wire with a minimum tensile strength of 70,000 psi shall be employed.

22.5 All flange welds and butt welds of equal size pipe shall be a single continuous nonstop weld around the complete circumference of the pipe. Whenever possible, vertical up weld passes will be applied to all pipe welds. No vertical down weld passes will be allowed.

22.6 Completed pipe welded assemblies shall create no internal obstruction, restriction or create any unintended sources of water deflection.

22.7 Piping of six (6) inch diameter and larger shall require a minimum of two (2) weld passes to complete each weld. The first pass, or root pass, shall be applied at the bottom of the bevel cut using the short circuit transfer welding mode, and the second pass, or cap pass, shall be applied over the root pass using the spray or pulse arc transfer welding modes to insure that at a minimum the total weld thickness shall be equal to thinnest of the two pieces being welded together.

22.8 The pipe shall be sand blasted, as specified elsewhere, before pipe weld and after pipe weld, before fusion bonded epoxy is applied.

23. Weld Standoffs

No welding shall be performed on fusion bonded coated piping after the coating

process has been performed. Where any piping is to be welded after the application of fusion bonded epoxy coating to the inside of the pipe, at the point of the weld, a weld standoff must be welded to the pipe prior to the coating. The weld shall be made to the standoff and not onto the pipe.

24. Pipe Supports

24.1 Pipe supports by minimum sizing for:

24.1.1 8" and smaller piping shall be 2" x 3" x 3/16" wall rectangular tubing;

24.1.2 10" and larger piping shall be 3" x 4" x 1/4" wall rectangular tubing;

24.1.3 6" and larger piping shall be provided with "kick" bracing projecting fully from the underside of the pipe to the floor at an angle of no less than 15E from vertical out at a right angle to the run of the pipe being supported. These "kick" braces shall be in addition to the vertical pipe supports called out above.

24.2 Pipe supports are to be fully welded at both end points to the pipe and steel floor where required.

24.3 Where components are to be supported and may require disassembly at some time, the supports for these components shall be welded at the bottom and bolted at the top by use of a bolt yoke welded to the top of the support and bolted into the flange connection picking up at least three bolts.

25. Fusion Bonded Epoxy Internal Pipe Coating

25.1 The internal surfaces of piping to be fusion bonded coated shall be grit blasted to an SP-10 finish with the finish profile required by the coating material manufacturer.

25.2 The internal, wetted surfaces of the steel transmission piping shall have applied to it a Fusion Bonded Epoxy Coating on the interior pipe surface. The coating shall be applied and meet the testing requirements of Table 1 and Table 2 with the exception of Table 2 section 7 per AWWA C-213.

25.3 The powder coating product shall be National Sanitation Foundation (NSF) Standard 61 certified material.

25.4 The epoxy powder coating shall be Powdura NSF-61 ELS8-80003 from Sherwin Williams.

25.5 Prior to shipment of the station, the station manufacturer shall provide in writing to the Engineer certification that the fusion bonded epoxy coating

has been applied to all internal surfaces of the steel piping using the proper method. Said certification shall show under the station manufacturer's letterhead:

25.5.1 Date of application;
25.5.2 Material manufacturer and product designation including a product data sheet for the coating;
25.5.3 Applier of the fusion bonded coating, name, address and phone number;
25.5.4 Notarized signature of an officer of the station manufacturing company stating the fusion bonded epoxy coating was applied to AWWA Standard C213-91 or the latest revision.

26. Corrosion Protection

26.1 All interior and exterior surfaces of the exposed steel structure, transmission piping, and fittings shall be gritblasted equal to commercial blast cleaning (SSPC-SP6). Following fabrication all exposed surfaces of the station, interior and exterior, shall be coated according to the following requirements.

26.2 *Weldment Prime Coating:* All weldments will be pretreated by hand to provide additional corrosion protection using the same product as the base coat. Following the pretreatment full coating application shall take place.

26.3 *Base Coating:* The base coating shall take place immediately after surface preparation. The protective coating shall consist of a two-component, high solids, high build, fast drying epoxy system for protection and finishing of steel and having excellent corrosion resistant properties. The epoxy system shall be self-priming and require no intermediate coatings.

26.4 *Top Coating:* Following the base coating application, a full finish coating application shall take place. The protective coating shall consist of a two-component, high solids, high build, fast drying epoxy system for protection and finishing of steel and having excellent corrosion resistant properties. The epoxy system shall be self-priming and require no intermediate coatings. The base and finish coats shall provide a total dry mil thickness of 8.0 mils.

26.5 *Post-Assembly Coating:* Following assembly and just prior to shipping, there shall take place a thorough cleaning of the floor of the station followed by a rolled on coating of the two part epoxy coating to cover over any scuffing or scaring that might have occurred during assembly.

26.6 *Cathodic Protection:* The station manufacturer shall furnish four (4) seventeen (17) pound packaged magnesium anodes for cathodic

protection. The anodes shall be buried equally spaced around the station and connected by heavy copper wire to lugs on the station provided for that purpose.

27. Service Connections on Internal Piping

All plumbed devices within the station eventually requiring service, such as meters, control valves, pumps and like equipment, shall be easily removed from the piping by the presence of appropriately placed and sufficient quantity of adaptors and couplings as shown on the drawings; no less than the quantity of couplings and adaptors shown shall be allowed.

28. Restraining Points

The main inlet and outlet piping to the station shall each be provided with two (2) or four (4) restraining points as welded on "eyes" or similar device welded to the capsule or framing to facilitate the attachment of joint restraint tie rods or other device to be used in retarding any pipe movement at the connections.

29. Compression Couplings

29.1 The station piping shall include a variety of compression type, flexible coupling to prevent binding and facilitate removal of associated equipment. These couplings are to be where shown on the plans. In lieu of a compression coupling, a flanged coupling adapter (FCA) may be used. FCA shall be Smith-Blair 912 or approved equal. Refer to drawings restraint requirements.

29.2 Grooved fittings may not be used under any circumstance.

29.3 Compression couplings or flanged coupling adapters (FCA), and flexible connectors/expansion joints shall include a minimum of two (2) zinc coated steel threaded rods across the joint with appropriate bolted restraining points as shown on drawings.

30. Elastomer Pipe Connector

30.1 The inlet side of each booster pump shall include an elastomer connector to help isolate vibration and noise in the piping system. The elastomer connector shall be of single sphere design, constructed of neoprene and nylon with bias-ply tire reinforcing cord to provide a 225 psi working pressure rating to a minimum of 120 degrees F. The elastomer connector shall pass through the plate steel flanges designed to grip the connector so the connector seals without gaskets when the flange bolts are drawn up.

30.2 A control joint limiting pipe connector movement shall be supplied with

each pipe connector.

31. Line Pressure Gauges

31.1 Combination pressure gauges shall have a built-in pressure snubber and have 4-1/2" minimum diameter faces and turret style case, black fiberglass-reinforced thermoplastic with a clear acrylic window with Buna-N gasket. The movement shall be rotary; the bourdon tube shall be copper alloy C-type. The gauge shall have a 1/4" MNPT lower mount process connection and contain a 0.6mm copper alloy restrictor. Combination pressure gauge range and scale graduations shall be in psi and feet of water as follows:

31.2 Gauge ranges shall be established by the Engineer for each of the suction and discharge gauges for each pump station.

31.3 All gauges will be panel mounted off the pipeline and be connected to their respective sensing point. The gauge trim tubing shall be complete with both isolating and vent valves and the tubing shall be so arranged as to easily vent air and facilitate gauge removal. Gauges mounted directly to the pipeline or at the sensing point will not be accepted.

31.3 Gauge ranges, markings and gauge location shall be identified in the submittal documents.

31.4 Additionally, 1/4” PE tubing for both suction and discharge shall be plumbed to proposed RTU location.

32. Static and Sensing Lines

32.1 All gauge, switch and transmitter sensing lines shall be minimum 1/4” OD white polypropylene tubing run from the sensing point and a ball valve to the point of device mounting.

32.2 The pilot tubing shall be run in a workmanlike manner with elastomeric/stainless steel mounting straps to securely hold the tubing to be free of stress and vibration. The alignment and organization of the sensing lines shall be continuously rising.

33. Sample Tap

A single, right angle outlet, smooth nose, brass sample tap shall be affixed to a manual vent ball valve.

34. Hose Bibb with Vacuum Breaker

There shall be provided a standard hose bibb with valve and vacuum breaker on the suction piping. The hose bibb connection shall be through a pressure

regulator if the header pressure would exceed 60 psi.

35. Ball Valves

The ball valves will be 2-piece, full-port design with blow-out proof stem. The seats, packing and seal shall be PTFE. Ball valves shall be provided with an adjustable stem packing nut. The body and retainer shall be lead free brass (DZR). The ball shall be lead free brass (DZR), chrome plated for sizes ¼”-1” and 316SS for sizes 1-1/4”-4”. The handle shall have a distinctive white “lead free” handle grip and blue “lead free” hanging tag. The valves will be NPTxNPT threaded pattern. Maximum working pressure shall be 600 psi up to 2” and 400 PSI for sizes 2-1/2” to 4”.

36. Butterfly Valves

36.1 Valve body shall be one-piece wafer or lug design with extended neck to allow for 2" of piping insulation. Flange locating holes shall be provided on wafer bodies to allow for quick and precise alignment during valve installation. Flange hole drilling per international flange standard as specified. A non-corrosive bushing and a self-adjusting stem seal shall be provided. No field adjustment shall be necessary to maintain optimum field performance.

36.2 The disc edge and hub on metal discs shall be spherically machined and hand polished for torque and maximum sealing capability. Disc shall be Nylon 11 coated ductile iron.

36.3 The stem shall be one-piece design. Disc to stem connection shall be and internal double "D" design with no possible leak paths in the disc-to-stem connection. External disc-to-stem connections such as discscrews or pins are not allowed. Stem shall be mechanically retained in the body neck and no part of the stem shall be exposed to the line media.

36.4 The seat shall be tongue-and-groove seat with a primary hub seal and a molded flange O-ring for weld-neck and slip-on flanges. The seat shall totally encapsulate the body isolating it from the line media and no flange gaskets shall be required.

36.5 The valve shall be rated for bubble-tight shut-off at pressures of 175 PSI for 2"-12" and 150 PSI for 14"-20".

36.6 Valve manufacturer:
36.6.1 DeZURIK
36.6.2 Keystone

37. Manual Valve Actuators

37.1 Manually operated butterfly valves size 6” and smaller shall be equipped with lever style operators capable of withstanding 450 ft. lbs. of input torque and mounted to the valve trunnion with 4 bolts.

37.2 Manually operated butterfly valves size 8” and larger shall be equipped with travelling nut style handwheel operators capable of withstanding 450 ft. lbs. of input torque and mounted to the valve trunnion with 4 bolts.

38. Check Valve

38.1 Check valves shall be Apco Model 600 series, Val-matic or approved equal, globe style silent check valve with bronze seat and plug, stainless steel helical spring. The valve plug shall be center guided at both ends through an integral shaft.

39. Isolating Gate Valve

39.1 The isolating valve as shown shall be a full ported gate valve meeting the requirements of AWWA C-515. The body, bonnet, wedge and seal plate shall be ductile iron in accordance with ASTM A536. The wedge shall be totally encapsulated in rubber. The rubber coating shall be permanently bonded to the ductile iron wedge casting and shall meet ASTM D429 tests for rubber to metal bonding. No paint shall be allowed in the wedge and the wedge must not be hollow. All gaskets shall be O-ring seals. All fasteners are to be 304 stainless steel. The body, bonnet and seal plate shall be epoxy coated in accordance with ANSI/AWWA C550 certified to NSF 61. The coating shall be on the interior and exterior of the valve.

39.2 The valves are to be non-rising stem with handwheel operator, opening left.

39.3 The valve body shall be flanged and drilled to ANSI B16.1, Class 125.

39.4 Valve maximum working pressure rating shall be 250 psi.

39.5 Valve manufacturer:

39.5.1 M&H 4067-02
39.5.2 Mueller A-2360-6

40. Flow Meter

Flow Meter shall be a 4” Endress-Hauser Promag W400 Mag Meter.

41. Pressure Testing

41.1 When the station plumbing is completed, the pressure piping within the station (including valves, pumps, control valves, and fittings), connections as make up the entire system shall be hydrostatically tested at a pressure of 150 psi or a pressure equal to the lowest test pressure rating of the equipment within the tested system, whichever is lesser pressure. The test pressure shall be applied for a minimum of 20 minutes, during which time all joints, connections and seams shall be checked for leaking. Any deficiencies found shall be repaired and the system shall be retested.

41.2 The results of this testing shall be transmitted in writing to the Engineer prior to shipment of the station and shall note test pressure, time at full pressure and be signed by the Quality Control Manager or test technician.

42. Peripheral Equipment

42.1 Exhaust Fan

42.1.1 There shall be included in the equipment capsule one (1) exhaust fan, flange mounted to the exhaust air piping as near the equipment capsule roof as is practical. The fan capacity shall be 232 cfm at 0.2 inch static pressure (inches of water). The fan shall feature a shaded pole motor with a squirrel cage blower. The blower wheel shall be statically balanced to assure quiet performance and maximum air delivery.

42.1.2 The fan motor will be complete with a conduit box. The exhaust fan shall operate on an independent 120 volt, single phase A.C. power source with single pole, 15 amp circuit breaker protection, hard wired in conduit to conduit box on motor. Automatic control of the exhaust fan shall be by thermostat, air conditioning type (make on the rise) wired in parallel with a three (3) position maintained (H-O-A) selector switch located on the face of the main control panel. The exhaust fan control equipment shall be wall mounted, in a receptacle box expressly designated for that purpose and in a location convenient for the use intended. Also included shall be a limit switch installed at the hatch to activate exhaust fan whenever the entrance hatch is open.

42.1.3 The exhaust air piping system shall be size three (3) inch and be welded through the roof and terminate at a point sixteen (16) inches above the roof. The cold air return piping system shall also be size three (3) inch and on the exterior begin sixteen (16) inches above the capsule roof and terminate on the interior as near the equipment capsule floor as is practical. Both exterior air system pipes will be complete with white, PVC 180 degree return

bends that are equipped with removable aluminum wire mesh insect screening. The cold air return pipe will be complete on the interior with a white, PVC 180 degree bend at its lower terminus. The purpose of this lower return bend is to prevent incidental condensation from entering the station via the return air system. Exhaust and return air piping must be rigid and permanently fixed. Flexible, spiral wound, cloth ducts will not be accepted.

42.2 Dehumidifier

A packaged dehumidifier with a sealed refrigeration type compressor rated at 1/5 horsepower, 4.7 full load amps and 430 watts shall be wall mounted within the equipment capsule in such a manner that the condensate shall discharge to the sump through tubing provided for that purpose. The dehumidifier shall operate on a 120 volt, single phase A.C. power source and be provided with a safety protected power cord of UL approved three wire construction with three spade plug. The dehumidifier shall be capable of removing twenty-seven (27) pints of water in twenty-four (24) hours when the room temperature is 80 degrees Fahrenheit and at 60 percent relative humidity. (AHAM Standard DH-1) The dehumidifier shall be actuated by a dial-controlled adjustable humidistat which will automatically cycle the unit at pre-selected moisture levels. The humidistat shall also have "Off" and "Continuous Run" positions. The dehumidifier shall be listed by Underwriters Laboratories.

42.3 Heater

42.3.1 The equipment capsule will be provided with an electric heater. The heater will have a rating of 3,000 watts, 10,240 BTU/HR output when operating on a 240 volt, single phase A.C. power source. The heater will be equipped with a 600 rpm low speed axial vane blower designed to deliver 175 cfm of down flow air and be driven by a four (4) pole motor. The heating element shall be of the sealed tubular type with large parallel steel fins for quick heat transfer. The heater will be complete with a thermal overload cut off and a built-in thermostat calibrated to provide a range of 55 degrees Fahrenheit to 85 degrees Fahrenheit.

42.3.2 The heater shall be wall mounted, hard wired and complete with an individual 240-volt circuit, protected by a 2 pole, 30 amp circuit breaker. The heater will be listed with Underwriters Laboratories, NEMA Standard 3-9-1967, HE2-2-02 Type I.

42.4 Sump Pump

42.4.1 One (1) automatic submersible sump pump, with a rate capacity of nineteen (19) gpm at fifteen (15) feet TDH shall be installed in the equipment capsule sump. The sump pump shall be complete

with a fractional horsepower motor, oil filled and hermetically sealed, designed to operate at 1,550 rpm, on a 120 volt, single phase, A.C. power source and draw no more than 7.7 amps. A carbon and ceramic shaft seal shall prohibit the pumped fluid from entering the motor housing. The switch cap, pump and motor housing shall be made of cast iron, the impeller shall be glass filled Valox and the base and strainer plate shall be glass filled polypropylene. A safety protected power cord of UL approved three (3) wire construction with 3 spade plug will be provided. The actuating float switch shall be NEMA 6 rated, replaceable without removing the pump or motor and adjustable so as to operate within a six (6) inch differential.

42.4.2 The sump pump discharge piping within the equipment capsule shall be size 1 ½ inch below the vertical check valve and size 1 1/4 inch above the check valve to the coupling in the equipment capsule side sheet. The sump pump discharge piping material will be Schedule 40 PVC, grey in color with solvent weld connections. The discharge piping system will be complete with a vertical check valve that employs a union on both upper and lower connection points. The vertical check shall have a resilient seat, designed to be easily field replaceable. An optional dewatering drain system for freeze protection shall be designed into the sump pump discharge piping system. The dewatering line shall be included with the equipment and will be field installed, if required, by the start-up technician.

43. Site Work and Installation

43.1 **Contractor is responsible for preparing site for installation of package pump station** including excavation, grading, providing site access and constructing a station foundation meeting manufacturer & OWNER specifications and requirements.

43.2 **Contractor shall install Permanent Access drive** as shown on plans and directed by the Engineer. Access drive shall be graded as needed and include filter fabric, 6” of compacted Dense Graded Aggregate (DGA) and culvert at ditch as needed.

43.3 **Contractor shall perform excavation, grading and final cleanup in a manner similar to that described in Section 3, hereinbefore**. Surplus excavation material shall be removed from the site and disposed of in a manner satisfactory to the ENGINEER. Removal of water from excavations shall be at the Contractor's expense. Blasting shall conform to requirements of applicable paragraphs of Detailed Specifications – Section 3.

43.4 **Contractor shall conform to applicable paragraphs of Section 3** for all items of work related to underground water line construction (outside piping) on the pumping station sites.

43.5 **Contractor shall follow all manufacturer guidelines** for all package pump station installation procedures.

SECTION 5
PUMP STATION - ELECTRICAL AND CONTROLS

1. Scope of the Work

The work to be accomplished under this section of the Specifications consists of the furnishing of labor, materials, equipment, and services associated with the electrical and control work for a Water Booster Pump Station. This work is described more fully on the Drawings and specified herein.

2. General

2.1 **It is recommended that BIDDERs visit the site and contact Warren Rural Electric Cooperative Corp. (WRECC) for any utility requirements that might arise from the electrical Drawings included with these Specifications**. The service entrances are to be provided with adequate capacity for the operation of motors, controls, and other facilities, including future operations as applicable.

2.2 **All work shall be done in a neat workmanlike manner. Electrical codes of the utility involved, as well as the NEC shall be observed. All materials and equipment installed shall be guaranteed for a period of one year.** Replacement of any such items that fail to operate properly in this period of time shall be replaced at no added cost to the OWNER.

2.3 **The CONTRACTOR shall be responsible for installing all equipment as shown on the Drawings. The CONTRACTOR shall mount the provided RTU as shown on the Drawings and shall install all required interconnect wiring. The CONTRACTOR shall also install the antenna as shown on the Drawings including antenna riser, coax cable and suppressor to RTU.**

3. Control & Power Distribution Panel

3.1 The pump station control & power distribution panel shall be sized and wired to accommodate power distribution, controls, and auxiliary circuits for two (2) high performance 30 HP pumps. All components incorporated into the station control panel shall be Square D or as specified hereinafter, or approved equal. All control work shall conform to the NEC and only U.L. listed devices shall be used. The front panel layout shall be as shown at the end of this section.

3.2 The electrical service provided to this station shall be 240-volt, 3-phase, 60-cycle, 4-wire and sized for all noted equipment required.

3.3 Enclosure

3.3.1 The enclosure used to house all station control components shall be a Hoffman NEMA 12, continuous hinge enclosure, or approved equal, and shall be service entrance rated. The CONTRACTOR shall furnish the enclosure with all components mounted onto a separate back plate onto which din rails and wire ways are to be installed. The enclosure shall be sized to accommodate all required components with reasonable additional space for future control relays.

3.3.2 The enclosure shall incorporate four (4) mounting tabs that are factory welded to the enclosure. The mounting tabs shall allow for the mounting of the panel flush with the wall. Alternatively, the enclosure may be floor mounted with matching legs.

3.4 Power Distribution

3.4.1 The station control panel shall contain circuit breakers as shown on the schematic. Three phase breakers shall be Square D, or approved equal. The main circuit breaker shall be service entrance rated. Single phase breakers shall be Square D Type QO, or approved equal.

3.4.2 Separate neutrals shall be provided for each circuit.

3.4.3 A phase monitor shall be supplied to protect three-phase equipment against phase loss, undervoltage and phase reversal conditions. When a fault is detected, the monitor output relay opens within two seconds or less to turn the equipment off. Both Delta and Wye systems may be monitored. The monitor shall have an automatic reset and shall also include an adjustable voltage delay. The monitor shall have an indicator LED (glows when all conditions are normal and shall monitor phase sequence: ABC operate (will not operate CBA). The phase monitor shall be UL approved and CSA certified. The relay shall be The phase loss relay shall be Diversified Electronics SLA-230-ASA, or approved equal.

3.4.4 The Transient Voltage Surge Suppressor (TVSS) shall provide 100 kA of surge suppression and be complete with EMI/RFI filtering. The TVSS shall be Sycom Model SYC-240-3D or approved equal.

3.5 Control Components

3.5.1 **Control relays shall be Square D Class 8501 Type KP or approved equal. Timer relays shall be Square D 9050 Type JCK70V20 or approved equal.**

3.5.2 Selector switches shall be Square D Type K, 120 VAC, 30 mm, Class 9001, black, maintained, non-illuminated selector switches. 3-position selector switches: P/N KS43BH13 (NO/NC, as applicable); 2-postion selector switch: P/N KS88BH13 (NO/NC, as applicable). Each selector switch base shall have auxiliary contacts for the connection of the selector switches to the RTU.

3.5.3 Pushbuttons

3.5.3.1 The station control panel shall be equipped with three (3) momentary pushbuttons to act as resets for the Control Valve and Pump Fail pilot lights. The momentary pushbuttons shall be located as detailed on the pump control panel drawing. Pushbuttons shall be Square D Type 9001 KR1, 120 VAC, non-illuminated.

3.5.3.2 The station control panel shall be equipped with a single E-Stop button, 2 1/4-inch mushroom head, pull to reset. The E-stop button shall be located as detailed on the station control panel drawing.

3.5.4 Pilot Lights

3.5.4.1 Pilot lights shall be located on the station control panel as detailed on the control panel drawing. Pilot lights shall be Square D Type 9001 KP with fresnel lenses operating at 120 VAC. Red: P/N KP1R31, Green: P/N KP1G31, and Amber: P/N KP1A31.

3.5.4.2 The station control panel shall be equipped with pilot lights for the following:

3.5.4.2.1 Pump 1 Call – Amber
3.5.4.2.2 Pump 2 Call – Amber
3.5.4.2.3 Pump 1 Run – Green
3.5.4.2.4 Pump 2 Run – Green
3.5.4.2.5 Pump 1 Motor Fail – Red
3.5.4.2.6 Pump 2 Motor Fail – Red
3.5.4.2.7 Low Suction Lockout Alarm – Red
3.5.4.2.8 High Discharge Lockout Alarm – Red

3.6 A running time meter shall be supplied for each pump to show the number of hours of operation. The meter shall be enclosed in a dust and moisture proof molded plastic case, suitable for flush mounting on the main control panel. The meter dial shall register in hours and tenths of hours up to 99999.9 hours before repeating. The meter shall be suitable for operation from a 115 volt, 60 cycle supply.

3.7 Indicator lights switches shall be identified with engraved, mechanically attached nameplates.

3.8 The station control panel shall incorporate a terminal strip to allow for the interconnection of the station control panel to the RTU. Terminal strip connections shall be as shown on the station control panel schematic.

4. Control Panel Wiring

4.1 Station control panel wiring shall conform to high quality assembly standards. All components shall be UL listed where available.

4.2 Panel wiring shall conform to standard color-coding practices for easy identification. Color coding scheme shall be clearly stated on system drawings.

4.3 All internal back plate wiring shall be in slotted wire way. Duct shall be neatly installed in vertical and horizontal runs. Duct installed at angles other than vertical or horizontal shall not be accepted. Exposed wiring shall only be acceptable where wiring transitions to the intended device or termination point. All exposed wiring crossing door panels or similar transitions shall be wrapped in plastic wire wrap or flexible duct.

4.4 Proper grounding practice for personnel and equipment protection shall apply.

4.5 All field wiring shall terminate at DIN rail mounted terminal strips. Direct field termination to RTU devices shall not be allowed. Terminal strips shall be feed through type rated @ 600 V/ 20 Amp.

4.6 All terminals and wiring shall be clearly marked using machine printed permanent making labels. Wires shall be clearly identified on both ends of termination points and clearly identified on system drawings.

5. Variable Speed Drives

Variable speed AC drives shall be supplied in a NEMA 1 (or equivalent) enclosure. The drive shall be rated for 30 HP with input voltage of 240. Class A EMC filtering shall be provided. Keypad shall be LCD type. Variable speed drives shall be Square D ATV630, or approved equal, and shall include all associated accessories for a complete installation, including conduit kit.

6. Convenience Receptacles

Convenience receptacles shall be installed in appropriate & required locations, and as noted on the drawings. Receptacles shall be 20 amp and commercial grade.

7. Lighting

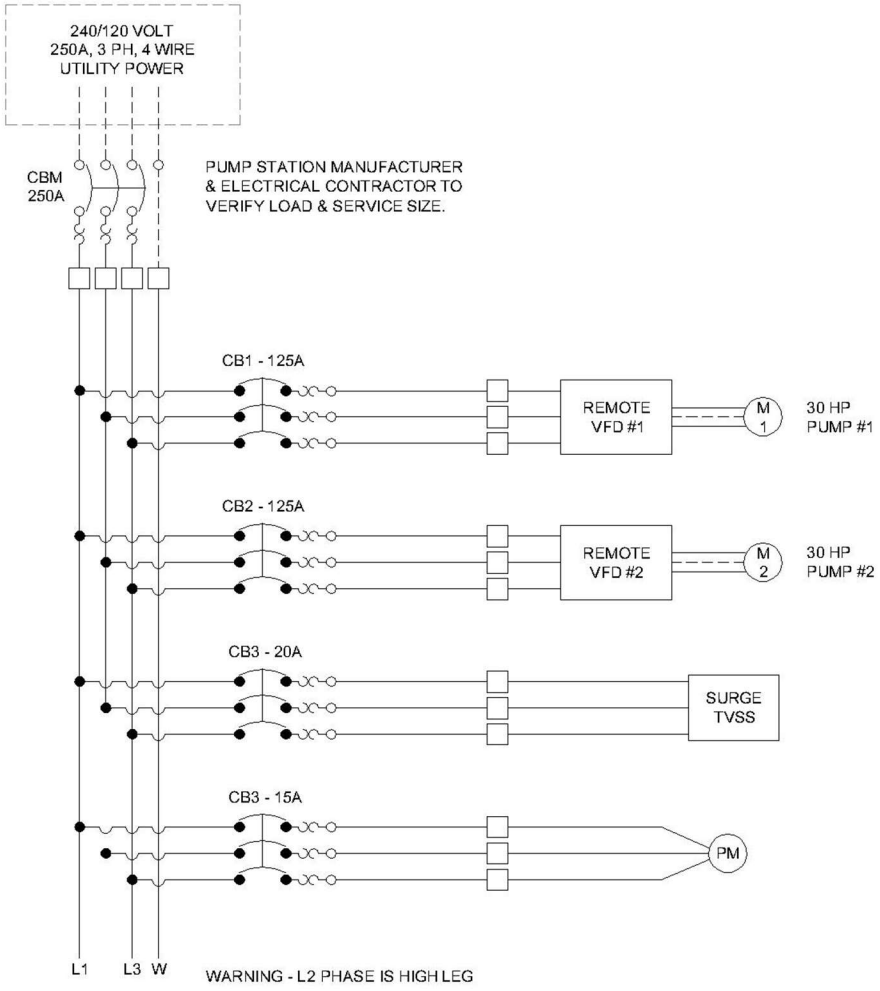
7.1 Indoor Lights - There shall be one or more vapor-tight LED light fixtures as shown on the drawing. The fixture shall have reinforced fiberglass housing with a full metal fixture liner, high impact diffuser and be a minimum of forty-eight (48) inch in length. Also to include an internal prismatic lens/15%/DR High impact additive, 4000K LED lamps and rated for wet location. The output is to be a minimum of 6000 lumens. The light switch shall be of the night glow type and be located conveniently adjacent to the door.

8. SCADA Remote Terminal Unit **(WCWD / SCWD Generation 2.0)**

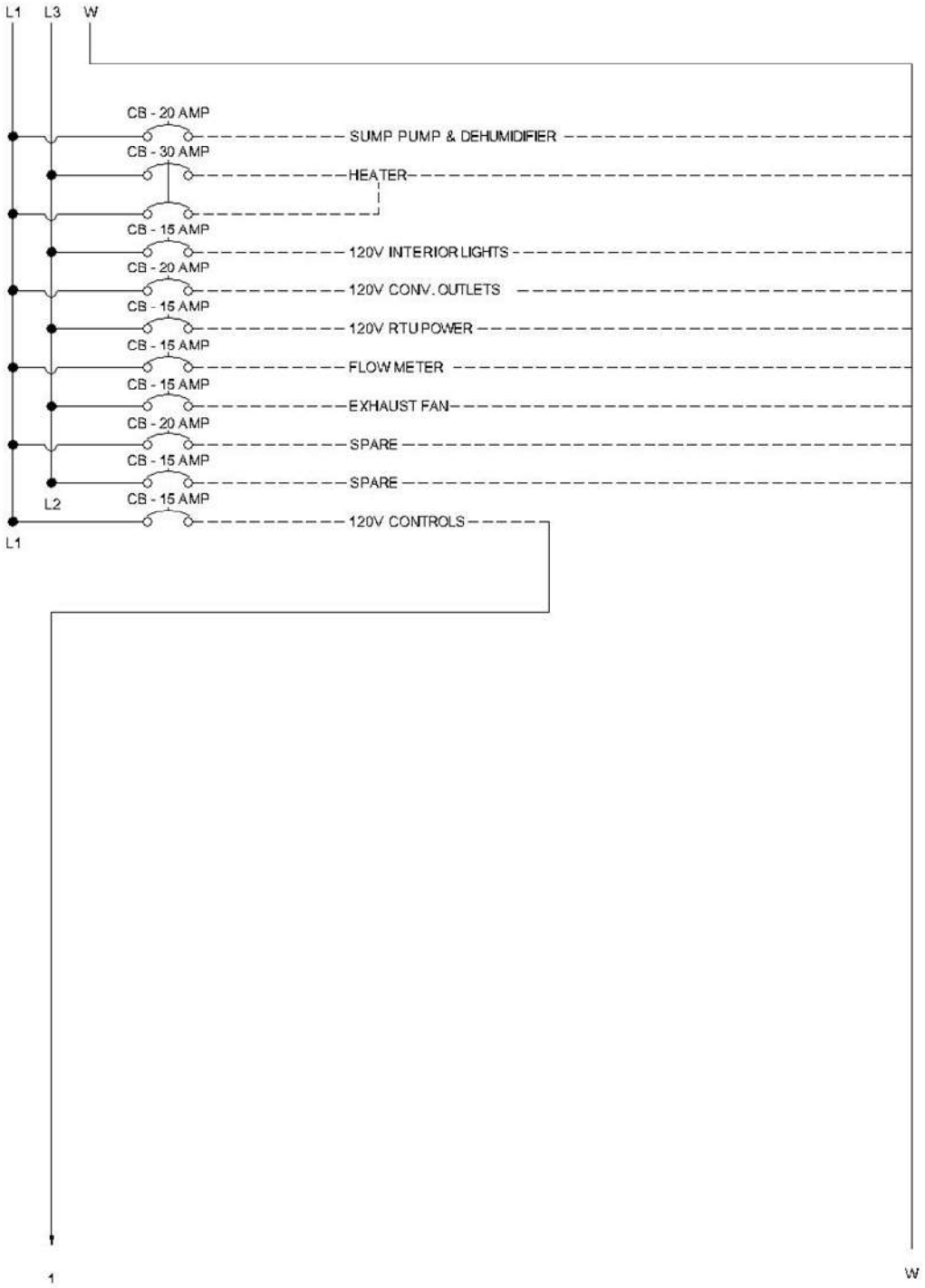
The CONTRACTOR shall furnish the Remote Terminal Unit (RTU) for mounting and power wiring. The on-site electrical contractor shall complete the wiring of the system with the assistance of the OWNER. The RTU shall be as manufactured by HTI, Inc. of Horse Branch, Kentucky, or approved equal. Contact information for HTI, Inc. is as follows:

HTI, Inc.
Attn: Jeff Morris
9560 Hwy 62 E.
Horse Branch, KY 42349
Phone: 270-274-4632
Fax: 270-274-9885

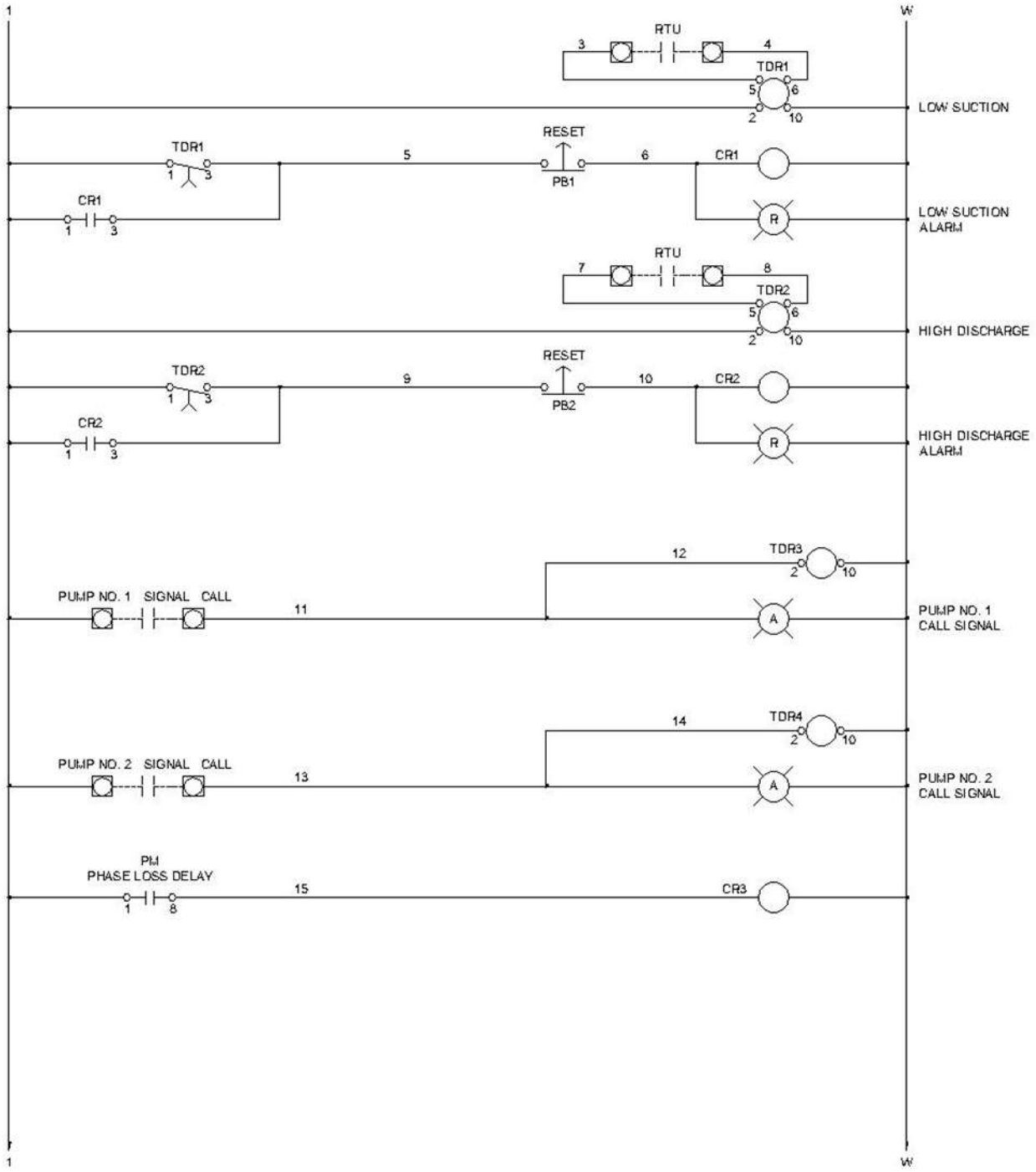
CONTROL PANEL & POWER DISTRIBUTION SCHEMATIC



CONTROL PANEL & POWER DISTRIBUTION SCHEMATIC (CONTINUED)



CONTROL PANEL & POWER DISTRIBUTION SCHEMATIC (CONTINUED)



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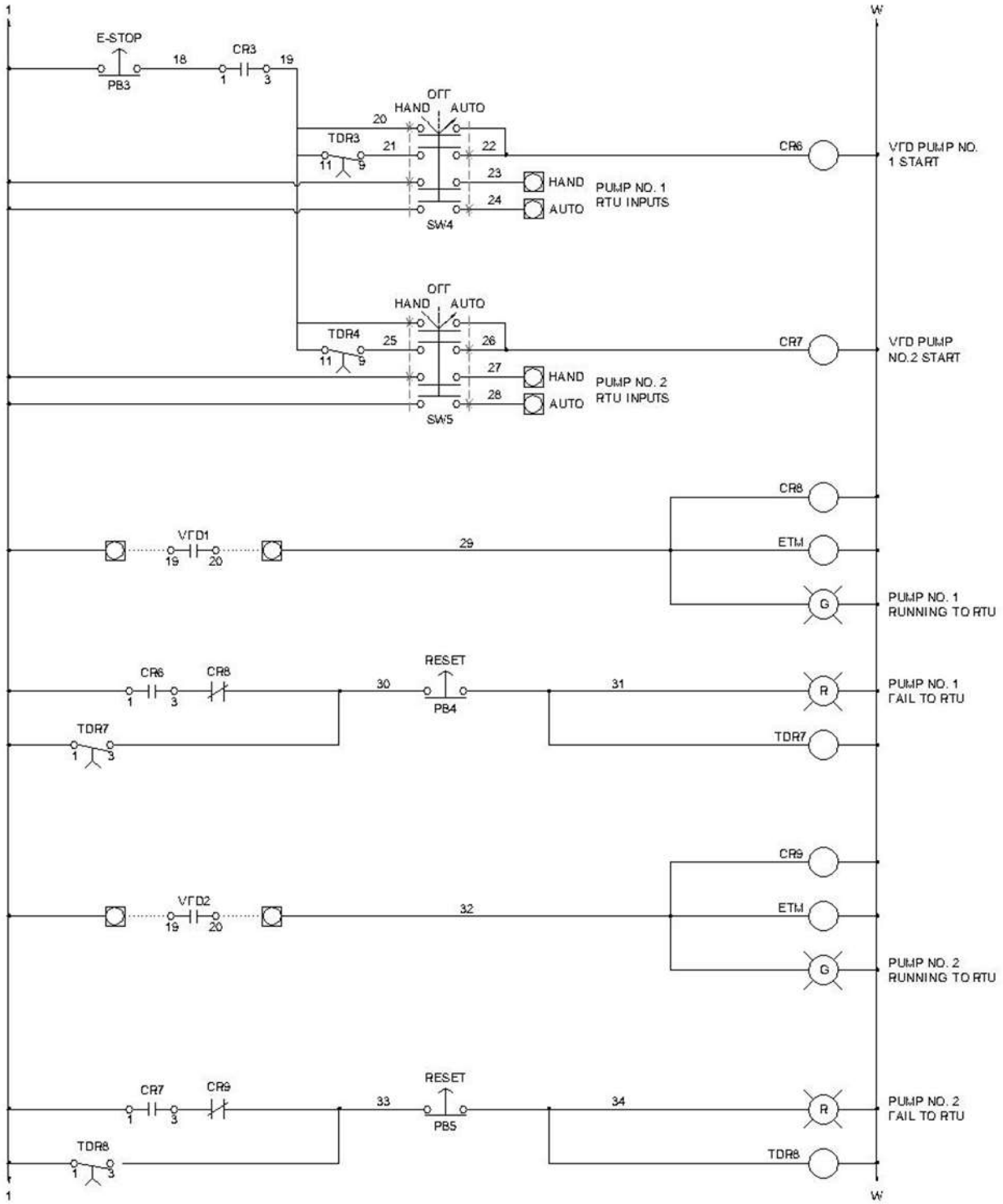
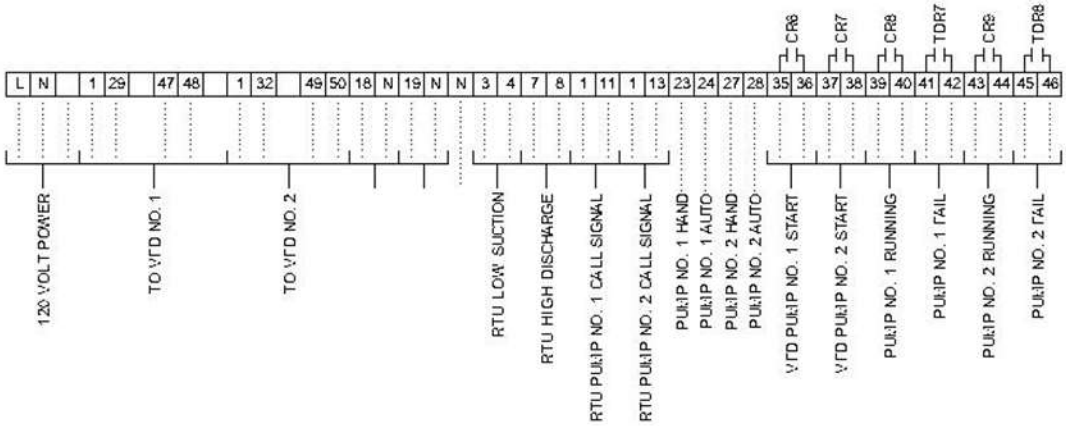
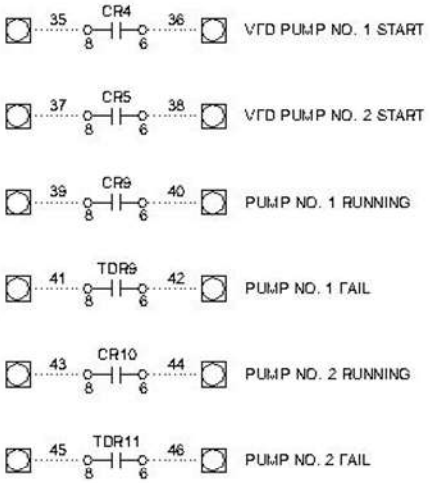


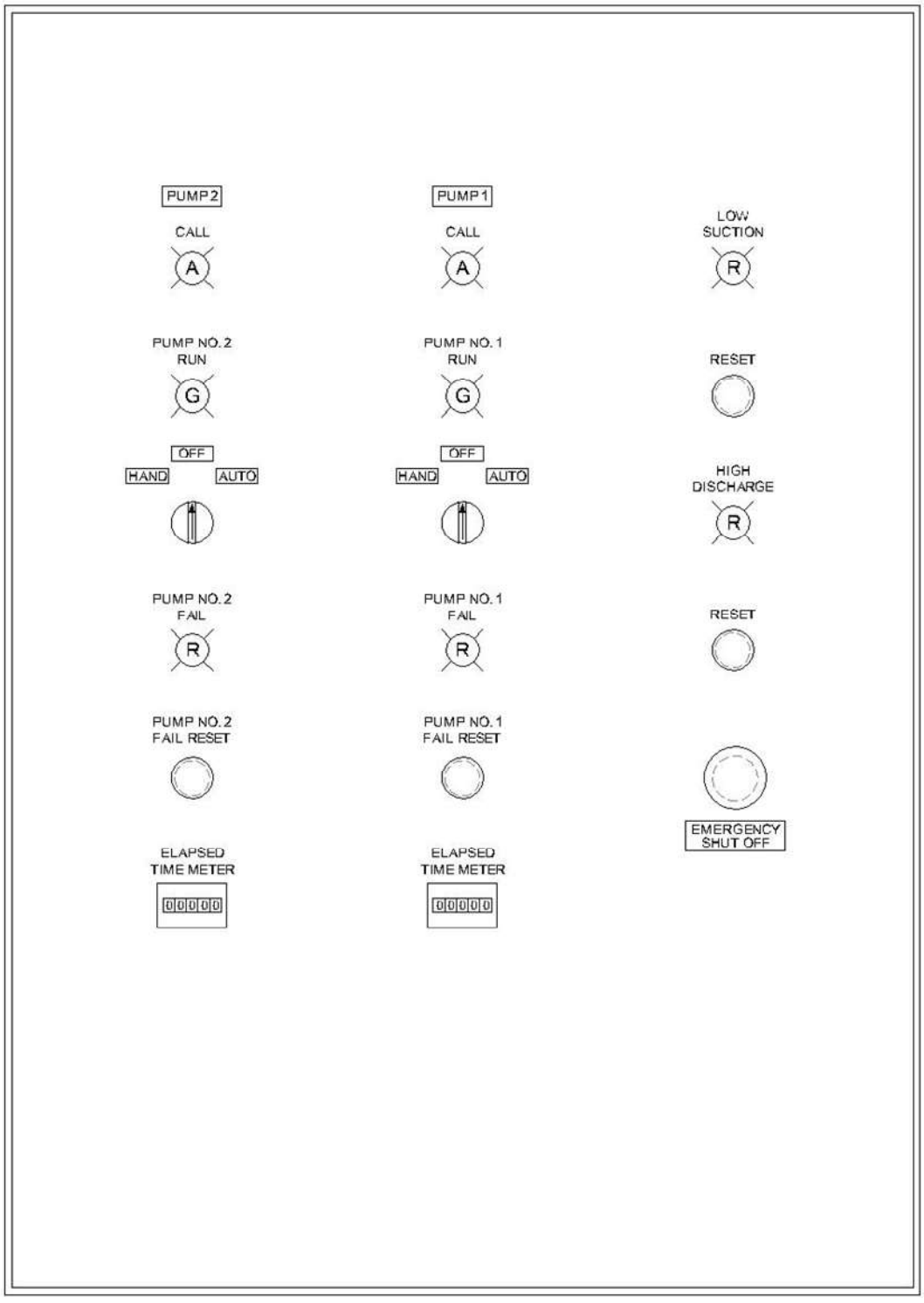
CONTROL PANEL & POWER DISTRIBUTION SCHEMATIC (CONTINUED)





NOTES:
1.) PANEL GROUND TERMINAL MUST BE CONNECTED TO EARTH GROUND PER NEC.
2.) FACTORY WIRING SHOWN:
FIELD WIRING SHOWN:
3.) RECOMMENDED TIGHTENING TORQUES FOR TERMINALS 120 VOLT POWER: 35 POUND INCHES. 120 VOLT CONTROL & LOW VOLTAGE: 18 POUND INCHES.
4.) THIS CIRCUIT DIAGRAM IS DRAWN WITH NO ELECTRICAL POWER, THAT IS, WITH ALL COMPONENTS IN A DE-ENERGIZED STATE.
5.) HASP & STAPLE PROVIDED ON OUTER DOOR OF ENCLOSURE FOR PADLOCK.
6.) WARNING LABEL TO BE YELLOW BACKGROUND, WITH BLACK LETTERS. "WARNING - LOCK OUT ELECTRICAL SERVICE TO THIS ENCLOSURE BEFORE OPENING DOOR OR SERVICING EQUIPMENT."

CONTROL PANEL LAYOUT



SECTION 6 - COMMUNICATIONS BUILDING & VALVE VAULT

SECTION 1 – GENERAL

1.1 WORK INCLUDED

Contractor shall furnish a precast concrete transportable building to be delivered and placed on owner-prepared crushed stone foundation in accordance with manufacturer's recommendations. Precast building to be EASI-SET® brand Model 1216 as manufactured by a *licensed producer of Easi-Set Buildings*, or approved equal. Building shall be provided by manufacturer with all necessary openings as specified by contractor in conformance with manufacturer's structural requirements.

1.2 REFERENCES

A. ACI-318-11: Building Code Requirements for Structural Concrete and Commentary

B. ASCE/SEI 7-10: Minimum Design Loads for Buildings and Other Structures

C. IBC 2012: International Building Code

D. PCI Design Handbook, 7th Edition

E. Concrete Reinforcing Institute, Manual of Standard Practice

F. UL-752 (Test Method level 5) for bullet resistance certified by a military approved laboratory.

1.3 SYSTEM DESCRIPTION

DESIGN REQUIREMENTS

A. Approximate Building Dimensions, slight deviation allowed with prior approval by owner:

Exterior: 12' x 16' x 9'-11"

Interior: 11'-6" x 15'-6" x 7'-6 ½"

Design case to be selected to correspond to the design criteria indicated in the aforementioned codes for the geographical location of the project or as specified.

CASE 1: Typical

B. Design Loads:

1. Seismic Design Category 'C', Risk Design Category II
2. Roof Live Load (Snow) – 30 PSF
3. Floor Live Load – 150 PSF
4. Wind Loading* – 115 MPH

*Design loads relate to precast components only, not accessories (i.e. doors, windows, vents, etc.)

CASE 2: Heavy

C. Design Loads:

1. Seismic Design Category 'D', Risk Design Category III
2. Roof Live Load (Snow) – 60 PSF
3. Floor Live Load – 250 PSF
4. Wind Loading* – 165 MPH

*Design loads relate to precast components only, not accessories (i.e. doors, windows, vents, etc.)

D. Roof: Roof panel shall slope approximately 24" from left to right in the 12' direction. The roof shall extend a minimum of 6" beyond the wall panel all around. An optional turndown feature is available where the design extends ½" below the top edge of the wall panels to further prevent water migration into the building along top of wall panels. Available with broom finish or top surface applied finishes

E. Roof, floor, and wall panels must each be produced as single component monolithic panels. No roof, floor, or vertical wall joints will be allowed, except at corners, peak of the roof and along perimeter. Wall panels shall be set on top of floor panel.

F. Floor panel must have ½" step-down around the entire perimeter to prevent water migration into the building along the bottom of wall panels.

1.4 SUBMITTALS

A. Engineering calculations that are designed and sealed by a professional engineer, licensed to practice in the state where the project is located, shall be submitted for approval.

B. Manufacturers' product literature shall be provided for any plumbing, electrical, and miscellaneous installed fixtures demonstrating compliance with these specifications.

1.5 QUALITY ASSURANCE

A. The precast concrete building producer shall be a plant-certified member of either the National Precast Concrete Association (NPCA), The Precast/Prestressed Concrete Institute (PCI), or equal.

B. The precast concrete building producer shall demonstrate product knowledge and must have a minimum of 5 years experience manufacturing and setting precast concrete.

C. The manufacturer must be a licensed producer of Easi-Set Buildings, or approved equal.

D. No alternate building designs to the pre-engineered EASI-SET® building, or approved equal, will be allowed unless pre-approved by the owner 10 days prior to the bid date.

SECTION 2 – PRODUCTS

2.1 MATERIALS

A. Concrete: Steel-reinforced, 5000 PSI minimum 28-day compressive strength, air-entrained (ASTM C260).

B. Reinforcing Steel: ASTM A615, grade 60 unless otherwise specified.
Welded Wire Fabric: ASTM 185, Grade 65

C. Post-tensioning Strand: 41K Polystrand CP50, ½" 270 KSI Seven-Wire strand, enclosed within a greased plastic sheath (ASTM A416). Roof and floor each shall be post-tensioned by a proprietary, second generation design using a single, continuous tendon. Said tendon is placed in the concrete slab to form a perimeter loop starting from one corner of the slab to a point where the cable entered the slab. The tendon then turns 90 degrees and follows the cable member(s) in the periphery to a point midway along the "X" axis of the concrete building panel and then turns 90 degrees along the "Y" axis of the concrete building panel. This bisects the concrete building panel and crosses the opposite parallel portion of the cable member and exits from an adjacent side of the concrete building panel. This creates a cable pattern with no less than 2.5 parallel cables in any direction. To ensure a watertight design, no alternate methods shall be substituted for the post-tensioning.

D. Sealant: All joints between panels shall be caulked on the exterior and interior surface of the joints. Caulking shall be DOW CORNING 790 silicone sealant or equal. Exterior caulk reveal to be 3/8"x 3/4" deep so that sides of the joint are parallel for proper caulk adhesion. Back of the joint to be taped with bond breaking tape to ensure adhesion of caulk to parallel sides of joint and not the back.

E. Vents: Two screened aluminum vents to be cast in rear wall. Vents shall be SUNVENT INDUSTRIES Model FL-164 or equal.

F. Panel Connections: Roof-to-wall connections (at eaves) shall be securely fastened together utilizing cast-in carbon steel embeds complying with ASTM A36 and welded in conformance with AWS, Structural Welding Code. All other panel connections shall be securely fastened together with 3/8" thick steel brackets. Steel is to be of structural quality, hot-rolled carbon complying with ASTM A36 and hot dipped galvanized after fabrication. All fasteners to be ½" diameter bolts complying with ASTM A325 for carbon steel bolts. Cast-in anchors used for panel connections to be Dayton-Superior F-63 coil inserts, or equal. All inserts for corner connections must be secured directly to form before casting panels. No floating-in of connection inserts shall be allowed.

2.2 ACCESSORIES

A. Doors and Frames: Shall comply with Steel Door Institute "Recommended Specifications for Standard Steel Doors and Frames" (SDI-100) and as herein specified. All door and frame galvanizing shall be in accordance with ASTM A924 and A653, A60 minimum coating thickness.

1. The buildings shall be equipped with double 3'-0" x 6'-8" x 1-3/4" thick insulated, 18 gauge, metal doors with 16-gauge frames (to meet wall thickness). Doors to have flush top cap. 12 gauge flat astragals shall be applied to the active leaf to protect against the elements or forced opening. Doors and frames shall be factory bonderized and painted with one coat of rust inhibitive primer and one finish coat of enamel paint; color to be BOLT BROWN unless specified otherwise.
2. Doors and frames shall meet SDI standard Level 2, 1¾" heavy duty.
Approved manufacturers: Republic, Steelcraft, Ceco, Black Mountain, Pioneer, Curries, Mesker, MPI, Door components or equal
Approved distributor: Integrated Entry Systems

B. Door Hardware:

1. Pull Handle: Shall meet requirements of ANSI A156.2. Shall be thru bolt attached and constructed of a minimum ¾" diameter stainless pull handle sized 8" center to center with a stainless backer plate, minimum 0.053" on both sides.

Approved manufacturers: Design Hardware, Don-Jo, or equal

2. Hinges: Shall comply with ANSI A156.1 and be of the ball bearing, non-removable pin type (3 per door minimum). Hinges shall be 4 ½" x 4 ½" US26D (652) brushed chrome finish. Manufacturer shall provide a lifetime limited warranty.
Approved manufacturers: Design Hardware, or equal

3. Deadbolt: Commercial Grade Deadbolt conforming to ANSI 156.5 furnished with a 2 ¼" face plate and a 1" projecting deadbolt with hardened steel pins. Dead bolts shall be UL and ADA approved. Finish shall be US26D (626) brushed chrome finish. Manufacturer shall provide a lifetime limited warranty.
Approved manufacturers: Design Hardware, Dorma, or equal

4. Surface Bolt: 8" Surface bolt UL listed. Finish US26D (626) brushed chrome finish. (2 per inactive leaf)
Approved manufacturers: Don-Jo, Design Hardware, or equal

6. Threshold: Bumper Seal type threshold with a maximum 1" rise to prevent water intrusion. Thresholds shall be approved for UL 10B suitable for use with fire doors rated up to three hours.
Approved manufacturers: National Guard Products or equal

7. Overhead Door Holder: Heavy duty surface mounted hold open device with hold open/stop angle of 85 to 110 degrees. Construction shall be stainless steel. Finish US32D (630) satin stainless steel finish.
Approved manufacturers: ABH, Rockwood, or equal

8. Drip Cap: Aluminum drip cap with minimum projection of 2 ½" shall be furnished.
Approved Manufacturers: Design Hardware, National Guard Products, or equal

9. Door Stop: ANSI 156.16 approved wall mounted door stop with keeper constructed of a corrosion resistant cast brass material. Finish US26D (626) brushed chrome finish.
Approved manufacturers: Don-Jo, Rockwood, or equal

2.3 FINISHES

A. Interior of Building: Smooth form finish on all interior panel surfaces unless exterior finish is produced using a form liner, then smooth hand-troweled finish.

B. Exterior of Building: (Standard) Architectural precast concrete brick finish: Finish must be imprinted in top face of panel while in form using an open grid impression tool similar to EASI-BRICK®, or approved equal. Finished brick size shall be 2 3/8" x 7 5/8" with vertical steel float or light broom finish. Joints between each brick must be 3/8" wide x 3/8" deep. Back of joint shall be concave to simulate a hand-tooled joint. Each brick face shall be coated with the following water-based acrylic, water repellent penetrating concrete stain: 1) Canyon Tone stain by United Coatings, 2) Sherwin Williams (H&C concrete stain) or equal. Stain shall be applied per manufacturer's recommendation. Joints shall be kept substantially free of stain to maintain a gray concrete color. Stain color shall be BRICK RED unless specified otherwise.

SECTION 3 – EXECUTION

3.1 SITE PREPARATION (MANUFACTURER'S RECOMMENDATION)

Work under this section relates to placement of the building by Easi-Set licensed producer, or approved equal, on the customer's prepared foundation and site.

A. EASI-SET® building, or approved equal, shall bear fully on a crushed stone base that is at least two feet larger in length and width than the building.

B. Stone shall be a minimum of 4" thick and down to firm subgrade. The vertical soil capacity under stone shall be compacted to have minimum bearing of 1,500 pounds per square foot. Stone shall be 3/8" or smaller and must be screeded level within ¼" in both directions. Stone shall be placed within a perimeter form with flat and level top edge for screeding. Forming material shall remain around stone until after the building is set.

C. The crushed stone base shall be kept within the confines of the soil or perimeter form. Do not allow the base to become unconfined so that it may wash, erode, or otherwise be undermined.

OR

If building is placed on pavement or a concrete slab, substrate below pavement or slab must have a vertical soil capacity of 1,500 pounds per square foot. Ensure bearing surface for building is flat and level. As required, place adequate material (stone or sand) to 1" above highest point of area where building will be placed and at least 1'-0" wide all around the building footprint. Retain stone or sand with a perimeter form to prevent the material from washing out.

D. Provide positive drainage for the fill, pad or slab as required.

3.2 SITE ACCESS

Contractor must provide a level, unobstructed area large enough for a crane and a tractor-trailer to park adjacent to the pad. Crane must be able to place outriggers within 5'-0" of edge of pad; truck and crane must be able to get side by side under their own power. No overhead lines may be within 75' radius of center of pad. Firm roadbed with turns that allow 65' lowbed tractor-trailer must be provided directly to site. No building shall be placed closer than 2'-0" to an existing structure unless specifically permitted.

SECTION 4 – VALVE VAULT

4.1 The vaults shall be precast according to the Drawings and these Specifications. All concrete used in precast structures shall be designed for a minimum 28-day comprehensive strength of 4,000 psi. Penetration seals shall be used at the inlets and outlets of the structures and the devices shall be approved by the ENGINEER. Precast reinforced concrete sections shall conform with ASTM C-913 "Standard Specification for Precast Concrete Water and Wastewater Structures", ASTM C-890 "Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures", and ACI 318 "Structural Concrete".

4.2 Joints between precast sections shall be sealed with butyl resin sealant, ConSeal CS-202 or equal Following placement of precast section, non-shrink grout shall be spread in joint spaces and other irregularities inside wetwells and vaults and troweled smooth.

4.3 Bottoms shall be constructed of concrete and shall form a smooth section as shown on the Drawings. The bottom shall be precast or otherwise constructed when the vaults are being built. The vault floor shall be sloped to provide positive drain as required. Base shall be provided for valves.

4.4 Wetwell and valve vault penetration seals shall be modular, mechanical seal, consisting of rubber links shaped to continuously fill the annular space between the pipe and the wall opening. Hardware shall be 316 Stainless Steel. Penetration seals shall be Link-Seal S-316 as manufactured by Pipeline Seal & Insulator, Inc., or approved equal.

4.4 Access hatch shall be USF APD 36"x60", or approved equal, and centered in top of vault.

SECTION 7
COMMUNICATION BUILDING & VALVE VAULT - ELECTRICAL

1. Scope of the Work

The work to be accomplished under this section of the Specifications consists of the furnishing of labor, materials, equipment, and services associated with the electrical and control work for a Communications Building & Water Storage Tank site. This work is described more fully on the Drawings and specified herein.

2. General

2.1 **It is recommended that BIDDERs visit the site and contact Warren Rural Electric Cooperative Corp. (WRECC) for any utility requirements that might arise from the electrical Drawings included with these Specifications**. The service entrances are to be provided with adequate capacity for the operation of motors, controls, and other facilities, including future operations as applicable.

2.2 **All work shall be done in a neat workmanlike manner. Electrical codes of the utility involved, as well as the NEC shall be observed. All materials and equipment installed shall be guaranteed for a period of one year.** Replacement of any such items that fail to operate properly in this period of time shall be replaced at no added cost to the OWNER.

2.3 **The CONTRACTOR shall be responsible for installing all equipment as shown on the Drawings. The CONTRACTOR shall mount the provided RTU as shown on the Drawings and shall install all required interconnect wiring with the assistance of the owner. The CONTRACTOR shall also install the antenna as shown on the Drawings including antenna riser, coax cable and suppressor to RTU.**

3. Electrical Service

3.2 The electrical service provided to this site shall be 240-volt, 100-amp, single-phase, 60-cycle, 4-wire service.

3.3 The service pole and meter base shall be located outside of the fenced area around the water storage tank to allow for access by the power company. The location should be outside of required radius noted in specifications for the water storage tank and communication building to avoid interference with overhead lines.

4. Power Distribution

4.1 The power distribution panel shall contain circuit breakers adequate for providing power to RTU, receptacles, HVAC unit(s) and lighting as described below and / or indicated on plans. The main circuit breaker shall be service entrance rated. Single phase breakers shall be Square D Type QO, or approved equal.

4.2 Separate neutrals shall be provided for each circuit.

4.3 The Transient Voltage Surge Suppressor (TVSS) shall provide 100 kA of surge suppression and be complete with EMI/RFI filtering. The TVSS shall be Sycom Model SYC-240-3D, or approved equal.

5. Convenience Receptacles

Convenience receptacles shall be located in appropriate locations, as noted on the drawings. Receptacles shall be 20 amp and commercial grade. Installation shall meet all necessary code requirements.

6. Lighting

6.1 Indoor Lights - There shall be one or more vapor-tight LED light fixtures as shown on the drawing. The fixture shall have reinforced fiberglass housing with a full metal fixture liner, high impact diffuser and be a minimum of forty-eight (48) inch in length. Also to include an internal prismatic lens/15%/DR High impact additive, 4000K LED lamps and rated for wet location. The output is to be a minimum of 6000 lumens. The light switch shall be of the night glow type and be located conveniently adjacent to the door.

6.2 Outdoor Lights - An exterior light shall be provided as located on the drawing. The light shall be 50 watt metal halide. Housing shall be one piece, injection molded, bronze polycarbonate. A button type photo control shall be provided.

7. Mini-Split HVAC

7.1 The CONTRACTOR shall supply and install two (2) packaged single zone mini-split heat pump systems (230 volts, single-phase @ 60HZ). The mini-split HVAC system shall be corrosion resistant with cooling BtuH 22,400, EER 12.5, heating at 27,600 BtuH; COP 3.4 @ 47°F. The mini-split package shall include outdoor unit, indoor unit, wall-mount thermostat and all necessary accessory components for complete operational package. The package shall be Mitsubishi Models MUZ-GL24NA-U1 (Outdoor), MSZ-GL24NA-U1 (Indoor) and PAC-US444CN-1 (Thermostat), or pre-approved equal meeting all required specifications.

7.2 The mini-split HVAC packages shall be installed in accordance with all manufacturer specifications and following all standard code regulations.

8. SCADA Remote Terminal Unit

The OWNER shall furnish the Remote Terminal Unit (RTU) for mounting and power wiring. The on-site electrical contractor shall complete the wiring of the system with the assistance of the OWNER.

SECTION 8
PRV SPECIFICATIONS

1.01 PRESSURE REDUCING VALVE

A. Supply valves as shown and sized on drawings. Singer Model 106–PR Pressure Reducing Control Valve shall be used for valves smaller than 3". Singer Model 206-PR Pressure Reducing Control Valve shall be used for valves larger than 3".
B. Function: The valve shall be a pilot operated pressure reducing valve which will reduce a high inlet pressure to a low outlet pressure. The valve shall maintain a relatively constant downstream pressure regardless of fluctuations in supply pressure or flow rate.
C. Operation: The pilot shall be a normally open Singer Model 160 Pressure Reducing Pilot that reacts to small changes in downstream pressure which acts to modulate the main valve bonnet pressure to hydraulically adjust the inner valve assembly position to maintain a constant downstream pressure.

1.02 Quality Assurance

A. The control valve shall be tested prior to shipment. The standard test shall include a functional stroke, pressure and leak test of valve body, seat, fitted pilots and accessories.
B. The control valve shall be covered by a minimum three (3) year warranty against defects in materials and workmanship. The AISI 316 stainless steel seat ring shall be covered by a lifetime guarantee.
C. All control valve maintenance and repairs shall be possible without removing the main valve body from the line, when installed in accordance with manufacturer's recommendations.

1.03 Main Valve

A. The main valve shall be a Singer 106/206-PG single chamber, diaphragm actuated *reduced* port model.
B. The main valve, bonnet and removable stem cap shall be constructed of ASTM A536 (Grade 65/45/12) ductile iron.
C. Main valves of 2.5" (65mm) and larger shall have a removable stem cap for access to the main valve stem for alignment check, spring installation and ease of service and assembly.
D. The main valve bonnet shall be located using two or more locating guide pins to maintain the inner valve assembly alignment and for ease of maintenance.
E. The main valve trim, consisting of seat ring and stem shall be constructed of AISI 316 stainless steel. The valve stem shall have wrench flats for ease of maintenance.
F. The main valve shall provide a drip-tight seal using a mechanically retained resilient disc, having a rectangular cross section, against the stationary AISI 316 stainless steel seat ring.
G. The stationary AISI 316 stainless steel seat ring of main valves 2.5" (65mm) and larger shall be held in place using Spiralock® self locking screws and seat ring retainers.
H. All internal and external ferrous components, including all mating surfaces, shall be coated with an NSF-61 approved fusion bonded epoxy to a minimum of 10 mils DFT-Dry Film Thickness.
I. The main valve elastomers: diaphragm, resilient disc and seals, shall be of EPDM or Buna-N.
J. All main valve fasteners (bolts, nuts, studs, cap screws) shall be supplied as AISI 18-8 or 304 stainless steel. All bonnet bolts shall be fitted with stainless steel washers to prevent damage to the bonnet coating.
K. Valve shall have flanged, threaded or grooved end connections. Flanged connections shall be *ANSI/ASME B16.42 Class 150#* flange drilled, faced and rated. Threaded connections shall be *NPT*.

L. Due to the potential for noise, vibration and erosion damage from cavitation, the valve manufacturer shall provide, upon request, a computerized sizing and cavitation analysis, using independent third party software. Cavitation analysis shall provide the status of cavitation based on customer supplied parameters as to valve size, flow rate requirements and pressure conditions. The cavitation analysis shall also provide information as to Cv factor, percent of valve lift, cavitation index and noise level.
M. The valve manufacturer shall be able to supply cavitation control trim which shall be engineered to be optimized to the actual operating parameters of the control valve application and warranted to perform correctly and prevent main valve cavitation damage under the stated conditions. Orifice plates or other non-engineered cavitation control devices shall not be used to prevent or minimize valve cavitation.

1.04 Pilot Controls

A. The pressure reducing pilot shall be a Singer Model 160 normally open pilot with a spring to adjust the pressure setting. The pilot shall be self-cleaning and self-flushing with the outlet of the pilot located at the bottom of the pilot flow with the pilot stem out of the waterway and guide free from any debris build-up.
B. The pilot trim, consisting of a seat ring, stem and yoke shall be constructed of AISI 316 stainless steel.
C. The pilot elastomers: diaphragm, inner valve and seals, shall be of EPDM or Buna-N.
D. The adjustable pilot spring range shall be supplied with a spring range of *20 to 200psi*. The pilot shall be factory preset at *50* psi. Final settings to be adjusted as determined by OWNER.
E. The pilot body and spring casing shall be constructed of *ASTM B62 bronze*.
F. A fixed restriction shall be supplied as AISI 303 stainless steel with an orifice bore selected by the manufacturer based on the valve size and operation.
G. The adjustable flow stabilizer shall be a Singer Model 26 self-cleaning opening speed control, supplied as a stainless steel assembly. Optional for main valve sizes 10” (250mm) and larger.
H. The pilot fittings shall be supplied as *ASTM B16 brass.*
I. The pilot tubing shall be supplied as *ASTM B280 seamless copper.*
J. For valves 4” (100mm) and larger, (3) pilot isolation ball valves shall be supplied as standard. Pilot isolation ball valve(s) shall be constructed of *B16 brass* with stainless steel handle operator.
K. For valves 4” (100mm) and larger, a pilot strainer shall be supplied as standard. Strainer material to be ASTM A351 CF8M stainless steel with a 40-mesh or 80-mesh 316 stainless steel screen. The external pilot strainer shall have a removable plug for easy maintenance access to the pilot screen and have provision for installation of a ball valve for pilot screen flushing.

SECTION 9
BASIS OF PAYMENT

1. General

The CONTRACTOR shall furnish all necessary labor, machinery, tools, apparatus, materials, equipment, services, and other necessary supplies and do and perform all Work including all excavation and backfilling (without additional compensation except where specifically set out in these Specifications) at the unit or lump sum prices for the following items.

2. Tapping Sleeves, Valves and Boxes

Payment for furnishing and installing tapping sleeves, valves, and boxes of the sizes shown on the Bid Form will be made at the Contract unit price per sleeve and valve complete in place. This item shall also include the valve appurtenances shown on the Standard Detail Sheet and tapping existing lines.

3. Service Saddles, Valves and Boxes

Payment for furnishing and installing service saddles, valves, and boxes of the sizes shown on the Bid Form will be made at the Contract unit price per sleeve and valve complete in place. This item shall also include the valve appurtenances shown on the Standard Detail Sheet or other details and tapping existing lines.

4. Valves and Boxes

Payment for furnishing and installing gate and/or butterfly valves and boxes in the pipelines of the sizes shown on the Bid Form will be made at the Contract unit price per valve and box, complete in place, as shown on the Standard Detail Sheet.

5. 4” Pressure Regulating Valve Station

Payment for furnishing and installing the 4” Pressure Regulating Valve will be made per unit price, complete in place, including all items as shown in detail on drawings and / or required to complete the assembly to Owner specifications. Vault shall be pre-cast concrete meeting same requirements as Valve Vault in Section 7.

6. 2” Pressure Regulating Valve Station

Payment for furnishing and installing the 2” Pressure Regulating Valve will be made per unit price, complete in place, including all items as shown in detail on drawings and / or required to complete the assembly to Owner specifications. Meter box shall be installed in accordance with Section 3 specifications and drawing detail.

7. Blow-off Valve Assembly

Payment for blow-offs (side outlet or at end of line) will be made at the Contract unit price per blow-off complete in place including the tee (if necessary), the auxiliary gate valve with box, and the meter box as shown on the Standard Detail Sheet.

8. Fire Hydrants or Relocation of Existing Fire Hydrants

8.1 Payment for fire hydrant installations will be made at the Contract unit price per fire hydrant, complete in place, including the tee or tapping sleeve and valve (as applicable), the 6-inch auxiliary gate valve with box, up to 20 feet of 6" piping and the new fire hydrant as shown on the Standard Detail Sheet.

8.2 Where the relocation of an existing fire hydrant is shown on the Drawings, it is intended that a new fire hydrant be installed and the existing hydrant shall not actually be moved. The existing fire hydrant shall be removed once the new fire hydrant is in service. The existing fire hydrant shall remain property of the OWNER.

9. Standard & Epoxy Coated Ductile Iron Fittings

9.1 Payment for ductile iron fittings will be made at the Contract unit price per pound, complete in place, and shall constitute compensation in full for furnishing and installing the fittings together with all incidental and related work.

9.2 Payment for pipe fittings for water mains will be based in the manufacture's published weight tables as approved by the ENGINEER. Weights of fittings shall be inclusive of bolts, gaskets, or other appurtenances and shall be as shown in the approved weight tables rather than invoice weights.

9.3 The bid price for fittings shall apply to both mechanical joint and restrained joint fittings.

10. Crushed Stone for Bedding, Backfill, and Surfacing

The crushed stone specified herein for bedding, backfill, and surfacing for water line construction will be paid for at the Contract unit price per ton of material furnished and placed as specified. The CONTRACTOR shall furnish the ENGINEER with a duplicate weigh slip for all such materials delivered on the job, but the pay quantities may be computed at the discretion of the ENGINEER using unit weight of crushed stone and the following trench cross-section. Payment for crushed stone for water line installation shall be limited to a cross-section having a width of 16 inches plus the nominal pipe diameter and a depth of 12 inches plus the nominal pipe diameter, minus the area of the pipe. The density of crushed stone shall be assumed to be 120 lb. per cubic foot.

11. Concrete Cradles, Surface, Anchors, and Kickers

Concrete as specified for cradles, surface, anchors, and kickers shall be paid for at the Contract unit price per cubic yard complete in place.

12. Asphaltic Concrete Pavement

Asphaltic concrete pavement shall be paid for at the Contract unit price per ton, complete in place, including primer. The CONTRACTOR shall furnish the ENGINEER with a duplicate weigh slip for all such material delivered at the job, but the pay quantities may be computed at the discretion of the ENGINEER using unit weight of asphalt and the following pavement cross-section. Payment for asphaltic concrete shall be limited to a maximum cross-section having a width of one-half the trench depth and a thickness equal to the existing pavement being replaced

13. Cased Highway and Railroad Crossings

Payment for furnishing and installing (by bore or open cut), as shown on the Bid Schedule, casing pipe for highway and railroad crossings will be made at the Contract unit price per linear foot, complete in place, and shall include the carrier pipe for the crossings as shown on the Drawings and on the Bid Form.

14. Thread Water Line through Existing Casing

Payment for threading water line, as shown on the Bid Schedule, through an existing casing pipe for highway and railroad crossings will be made at the Contract unit price per linear foot, complete in place, and shall include the cost of the carrier pipe for the crossings as shown on the Drawings and on the Bid Form.

15. Uncased Driveway Bores

Payment for uncased driveway bores, as shown on the Bid Schedule, will be made at the Contract unit price per linear foot, complete in place, and shall include the carrier pipe for the crossings as shown on the Drawings and on the Bid Form.

16. Water Lines

16.1 Payment for the construction of new water lines of the sizes and materials shown on the Bid Form shall be made at the Contract unit price per linear foot, complete in place and in operating condition, including testing, and rough cleanup work.

16.2 **The cost of the specified crushed stone and / or flowable fill bedding and / or backfill is a separate pay item and shall NOT be included in the Contract unit price for water lines.**

17. Relocate Water Meters

Payment for the relocation of existing water meters will be made at the Contract unit price per each complete in place. This item includes tapping the main and furnishing new meter boxes, meter yoke, and all fittings required for both the connection to the new or existing main and for the connection of the new meter installations to the existing customer service line to the house or business where applicable. Service line shall be the only separate pay item. This item shall also include removing the existing yoke, meter box and lid and backfilling the excavation. Any salvaged yokes and lids shall remain the property of the OWNER. The CONTRACTOR shall dispose of the old meter boxes. Distinction will be made on the Bid Form for meter relocations with and/or without pressure regulators.

18. Reconnect Water Meters

Payment for the reconnection of existing water meters will be made at the Contract unit price per each complete in place. This item includes tapping the main and furnishing all fittings required for the connection to the main and reconnection to the existing meter yoke. Service line shall be the only separate pay item.

19. Customer Service Line

Payment for furnishing and installing any new customer service line required from the new meter (of the sizes shown in the Bid Form and the materials specified) to existing customer service line will be made at the Contract unit price per linear foot, complete in place, **including all cleanup & connection fittings**.

20. Water Service Line

Payment for furnishing and installing service line from the main to the meter (of the sizes shown in the Bid Form and the materials specified) will be made at the Contract unit price per linear foot, complete in place, **including all cleanup**.

21. Booster Pump Station – Glen Lily Rd.

Payment for the McElwain Pump Station, complete in place and in full operating condition, shall be made at the Contract lump sum price, including all piping, valves, fittings, pumps, building, site grading, electrical, painting, driveway, and all other work required to result in a complete installation as shown on the Drawings and specified herein.

22. Valve Vault – Water Storage Tank Site

Payment for valve vault, complete in place and in full operating condition, shall be made at the Contract lump sum price, including the valves, piping, fittings, complete vault, drain & blowoff lines with splash pads, cleanup, and all other work required to result in a complete, fully operational installation as shown on the Drawings and specified herein.

23. Communication Building

Payment for precast concrete Communication Building will be made at the Contract lump sum price, complete in place, which will include compensation for building meeting required specifications, site preparation for delivery of building, and installation of building.

24. Tank Site Fence & 12' Gate

Payment for chain link fence surrounding tank site, complete in place, as shown and indicated on drawings.

25. Cut & Plug Existing Lines / Abandon Existing Lines

Payment for plugging existing valves and / or fittings of the sizes shown on the drawings form will be made at the contract unit price per plug, complete in place including all required restraints.

26. Silt Fence

Payment for furnishing, installing, maintaining and removing silt fencing as shown on the Bid Form will be made at the Contract unit price per linear foot, complete in place, as shown on the Drawings and specified herein.

27. Rip-Rap Check Dam

Payment for furnishing, installing, maintaining and removing rip rap check dams as shown on the Bid Form will be made at the Contract unit price per ton, complete in place, as shown on the Drawings and specified herein.

28. Final Cleanup

28.1 Payment for the performance of final cleanup work shall be made at the Contract unit price per linear foot as specified on the Bid Form. However, quantities for final cleanup shall be added to partial payment estimates only after final cleanup work is totally completed for an entire water line. Payment for final cleanup shall not be made where the water line is constructed in paved streets, driveways, sidewalks, or other areas where final cleanup is not performed.

28.2 The unit price specified on the Bid Form is an assigned allotment for the work specified in Detailed Specifications, Section 3.23, “Final Cleanup”. The BIDDER shall not modify either the unit price or extended total for this item and modification of these figures may be cause for rejection of the Bid. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER that the assigned allotment for final cleanup work is a reasonable amount for the work to be performed.

29. Summary

The above items, 2 through 28 inclusive, refer to and are the same items as listed on the Bid Form, and constitute all of the pay items for this Contract. Any other items of work listed in the Specifications, or shown on the Drawings, shall be considered to be incidental to the above or other items listed in the proposal.