



**SISLER-MAGGARD ENGINEERING, PLLC**

220 EAST REYNOLDS ROAD, SUITE A3

LEXINGTON, KY 40517

(859) 271-2978

Fax (859) 271-5670

**Email:** [smeng@alltel.net](mailto:smeng@alltel.net)

**April 6, 2009**

Public Service Commission  
211 Sower Boulevard  
P.O. Box 615  
Frankfort, KY 40602-0615

RECEIVED

APR 07 2009

PUBLIC SERVICE  
COMMISSION

Attn: Ryan Gatewood, Director Division of Filings

**In re: Nicholas County Water District  
Water System Improvements  
PSC Case # 2009-00126  
SME # 05001**

Mr. Gatewood:

Please find enclosed 2 sets of plans and specifications, per your request.

If you have any questions, please call.

Sincerely,

Michael K. Maggard  
Project engineer

Enclosures

CC: Georgia Livingood, Manager NCWD w/enclosure



**SPECIFICATIONS AND CONTRACT DOCUMENTS**

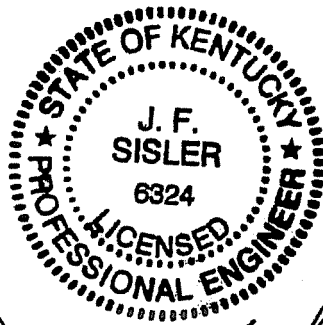
**FOR**

**NICHOLAS COUNTY WATER DISTRICT**

**CARLISLE, KENTUCKY**

**PHASE IX – CONTRACT NO. 9**

**WATER SYSTEM IMPROVEMENTS**



*Joseph F. Sisler*

**FOR CONSTRUCTION**

**SEPTEMBER 2008**

**SME PROJECT CODE: 05001**

**SISLER-MAGGARD ENGINEERING, PLLC**

ENGINEERING • SURVEYING  
220 EAST REYNOLDS ROAD, SUITE A3  
LEXINGTON, KENTUCKY 40517  
(859) 271-2978 FAX (859) 271-5670



SPECIFICATIONS AND CONTRACT DOCUMENTS

NICHOLAS COUNTY WATER DISTRICT

CONTRACT NO. 9 – WATER SYSTEM IMPROVEMENTS

BID OPENING: JUNE 24, 2008, 4:00 P.M. LOCAL TIME

**ADDENDUM NO. 1**

June 11, 2008

**SPECIFICATIONS**

**Section 6 – Technical Specifications**

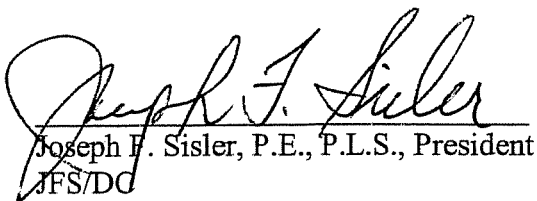
Section 01740 – Basis of Payment – Revised copy attached – 4 pages

**Section 8 – Bid Forms and Bid Bonds**

Revised Bid Form enclosed – 8 pages

**Bidders for this Contract must acknowledge this Addendum No. 1 on the bid documents.**

Sisler – Maggard Engineering, PLLC

  
Joseph F. Sisler, P.E., P.L.S., President  
JFS/DC

w/enclosures



SPECIFICATIONS AND CONTRACT DOCUMENTS

NICHOLAS COUNTY WATER DISTRICT

CONTRACT NO. 9 – WATER SYSTEM IMPROVEMENTS

BID OPENING: JUNE 24, 2008, 4:00 P.M. LOCAL TIME

**ADDENDUM NO. 2**

June 18, 2008

**SPECIFICATIONS**

**Section 3 – Rural Development General Conditions & Supplemental Conditions**

Revised Page 2 of 4 of the Supplemental Conditions attached

**Section 6 – Technical Specifications**

Section 01580 – Project Identification and Sign – 3 pages

Section 01740 – Basis of Payment – Revised copy attached – 4 pages

**Section 7 – Contract and Bond Forms**

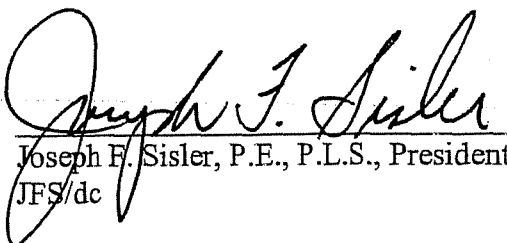
Agreement – Bid Items will be adjusted to match bid form upon award.

**Section 8 – Bid Forms and Bid Bonds**

Revised Bid Form enclosed – 7 pages

**Bidders for this Contract must acknowledge this Addendum No. 2 on the bid documents.**

Sisler – Maggard Engineering, PLLC



Joseph F. Sisler, P.E., P.L.S., President  
JFS/dc

w/enclosures





**NICHOLAS COUNTY WATER DISTRICT**  
**CONTRACT NO. 9 – WATER SYSTEM IMPROVEMENTS**

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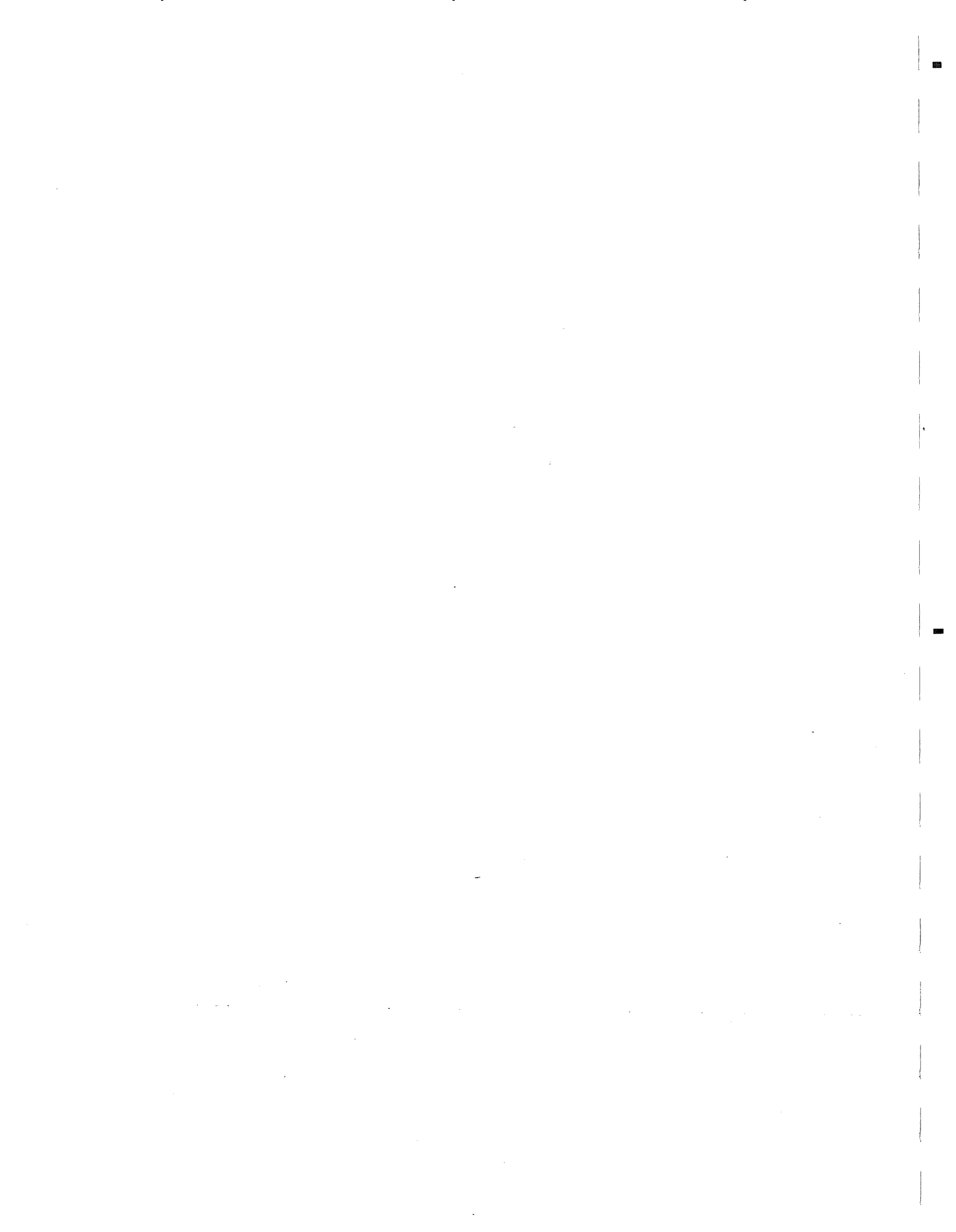
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**SECTION 1**

**ADVERTISEMENT FOR BIDS**



## ADVERTISEMENT FOR BIDS

1. INVITATION: Separate sealed bids for the construction of the following water system improvements will be received by the Nicholas County Water District, 1639 Old Paris Road, Carlisle, Kentucky 40311, until 4:00 PM, local time June 24, 2008 for furnishing all labor and materials and performing all work as set forth by this advertisement, conditions (general, supplemental, and special), specifications, and/or the drawings prepared by Sisler-Maggard Engineering, PLLC., 220 East Reynolds Road, Suite A3, Lexington, Kentucky 40517. Bids will be publicly opened and read at above time.
2. PROJECT DESCRIPTION: The project includes but is not limited to the following:

CONTRACT NO. 9 – WATER SYSTEM IMPROVEMENTS

a.)	34,000	L.F.	6" CL 250/ CL200 PVC Waterline
b.)	27,000	L.F.	3", 2" CL 250/ CL 200 PVC Waterline
c.)	36	EA	4", 3", 2" Gate Valves
d.)	6	EA	Fire Hydrants
e.)	865	L.F.	12", 10", 9" Bore and Jack
f.)	16	EA	Blowoff Valve Assemblies

CONTRACT NO. 10 – 150,000 GALLON ELEVATED WATER TANK

a.)	150,000	Gallon elevated water tank with site grading, fencing, electrical service, yard piping and misc. appurtenances
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3. OBTAINING PLANS, SPECIFICATIONS AND BID DOCUMENTS:

Contract documents may be reviewed and obtained at the following locations:

Lynn Imaging	(859) 255-1021
328 Old Vine Street	(800) 888-0693
Lexington, KY 40507	(859) 233-1558 fax

A **non-refundable** deposit will be required for **each** set of documents as follows:

Contract No. 9 – Water System Improvements:	<u>\$150.00</u>
Contract No. 10 – 150,000 Gallon Elevated Water Tank:	<u>\$75.00</u>

Deposit includes standard UPS shipping. Partial sets of plans or specifications will **not** be issued.

Contract Documents may also be reviewed at the following locations:

Sisler-Maggard Engineering, PLLC	AGC/McGraw-Hill Dodge
220 East Reynolds Road, Suite A3	950 Contract Street, Suite 100
Lexington, Kentucky 40517	Lexington, Kentucky 40505
(859) 271-2978	

Nicholas County Water District  
1639 Old Paris Road (SR 32)  
Carlisle, KY 40311  
(859) 289-3157

4. METHOD OF RECEIVING BIDS: Bids will be submitted in the manner and subject to the conditions as set forth and described in the Instructions to Bidders and Contract Documents.
5. METHOD OF AWARD: The Contracts will be awarded by the Owner to the low responsive, responsible, best and qualified Bidder.
6. BID WITHDRAWAL: No Bidder may withdraw his bid for a period of ninety (90) calendar days after receipt of bids. Errors and omissions will not be the cause for withdrawal of bid without forfeit of bid bond. Bids may be withdrawn in person prior to the closing time for receipt of bids.
7. WAGE RATES: State Prevailing wage rates **will** apply to both contracts of this project.
8. FUNDING: This project is being funded with RD and GOLD funds.
9. BID SECURITY: Bidders shall furnish (with bid) bid security equal to 5% of bid. A bid bond on Kentucky Resident insurance carrier or certified check is acceptable.
10. PERFORMANCE AND PAYMENT BOND: A Performance and Payment Bond each in the amount of 100 percent of the Contract Price issued by a responsible surety will be required of the successful Bidders.
11. RIGHT TO REJECT: Owner reserves the right to reject any and all bids and to waive all informalities and/or technicalities should it be in the best interest of the Owner.
12. Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract, and E.O. 11246 and Title VI Minority bidders are encouraged to bid.

"EQUAL EMPLOYMENT OPPORTUNITY"

OWNER: Nicholas County Water District

By: Mary Jo McCord, Chairperson

**SECTION 2**  
**INSTRUCTIONS TO BIDDERS**





## INSTRUCTIONS TO BIDDERS

1. Defined Terms: Terms used in these Instructions to Bidders which are defined in RD General and Supplemental General Conditions, or Special Conditions of the Construction Contract and have the meanings assigned to them in the said Conditions.
2. Receipt and Openings of Bids: The Nicholas County Water District, (herein called the "Owner"), invites bids on the forms attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at the Nicholas County Water District, 1639 Old Paris Road, Carlisle, Kentucky 40311 until 4:00 PM, local time, June 24, 2008 and then at said office publicly opened and read aloud. The envelopes containing the bids must be sealed, addressed to Nicholas County Water District designated as bid for Contract No. 9 – Water System Improvements or Contract No. 10 - 150,000 Gallon Elevated Water Tank.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informality 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 90 (ninety) days after the actual date of the opening thereof.

3. Preparation of Bid: Each bid must be submitted on the prescribed forms accompanied by the following items which will constitute the submittal documents necessary for a **complete bid package**:
  - a) Bid Form including subcontractor's list and manufacturers list.
  - b) Bid Bond with Power of Attorney.
  - c) Compliance Statement (Form FmHA 400-6)
  - d) Certificate of Bidder Regarding Equal Employment Opportunity
  - e) Certificate of Bidder concerning labor standards and prevailing wage requirements
  - f) Certificate regarding debarment, suspension, and other responsibilities
  - g) Bidder's Qualifications Statement

All blank spaces for bid prices must be filled in, in ink or typewritten, in both words and figures, and the foregoing Certifications must be fully completed and executed when submitted.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, their address, and the name of the project with contract name and number for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the bid forms.

Before submitting their Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize themselves with local conditions that may in any manner affect performance of the Work, and (c) carefully correlate their observations with the requirements of the CONTRACT DOCUMENTS.

Reference is made to the Special Conditions of the Specifications and Plans for the identification of those surveys and investigation reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the Work which have been relied upon by the ENGINEER in preparing the Drawings and Specifications. Before submitting their Bid each Bidder will, at their own expense, make such additional surveys and investigations, as

The submission of a Bid will constitute an incontrovertible representation by the Bidder that they have complied with every requirement of these instructions.

4. **Bid Form(s):** The bid Form(s) is included in the Contract Documents; additional copies may be obtained from Owner. The items listed under Item No. 3 herein shall be submitted.

Bids by corporations must be executed in the corporate name by the President or Vice President (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the Secretary, or an assistant Secretary. The corporate address and state of incorporation shall be shown below the signature.

Bids by partnerships must be executed in the partnership name and signed by a partner, his title must appear under his signature and the official address of the partnership must be shown below the signature.

All names must be typed or printed below the signature with phone and fax numbers.

The bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

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

- a. Must be acceptable to the Owner and have current eligibility status for federal programs.

Approval of the proposed subcontract award cannot be given by the Owner unless and until the proposed subcontractor has submitted the Certifications and/or other evidence showing that it has fully complied with any reporting requirements to which it is or was subject. Although the bidder is not required to attach such Certifications by proposed subcontractors to their bid, the bidder is hereby advised of this requirement so that appropriate action can be taken to prevent subsequent delay in subcontract awards.

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

7. **Method of Bidding:** The Owner invites the following bid(s):

Contract No. 9 – Water System Improvements

Contract No. 10 – 150,000 Gallon Elevated Water Tank

8. **Qualifications of Bidder:** The Owner may make such investigations as they deem necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to

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

Each prime bidder shall complete, in detail; the form of "Bidder's Qualifications" found in and included as part of the form of Proposal. In lieu of the filling out of the detailed financial statement, the bidder may substitute a current and certified company financial statement.

Corporate Firms: Foreign Corporations are required to be registered with the Secretary of State of the Commonwealth and must be in good standing. Domestic Corporations are required to be in good standing with the requirements and provisions of the Office of the Secretary of State, Commonwealth of Kentucky.

Good Standing with the Public Works Act: Any contractor and/or subcontractors in violation of any wage or work act provisions (KRS 337.510 and 337.550) are prohibited by Statutory Act (KRS 337.990) from bidding or working on any and all public work contracts, either in their name or in the name of any other company, firm or other entity in which he might be interested. No bid from a prime contractor, in violation of the Act can be considered, nor with any subcontractor, in violation of the Act, be approved and/or accepted. The responsibility of the qualifications of the subcontractor is solely that of the prime contractor.

9. Bid Security: Each bid must be accompanied by cash, certified check of the bidder, or a bid bond prepared on the Bid Form attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner, in the amount of 5% of the bid. Such cash, checks or bid bonds will be returned promptly after the Owner and the accepted bidder have executed the contract, or if no award has been made within 15 days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as they have not been notified of the acceptance of their bid.
10. Liquidated Damages for Failure to Enter into Contract: The successful bidder, upon their failure or refusal to execute and deliver the contract and bonds required within 10 days after they have received the notice of the acceptance of their bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with their bid.
11. Time of Completion and Liquidated Damages: Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the projects as follows:

Contract No. 9 – Water System Improvements – 180 consecutive calendar days

Contract No. 10 – 150,000 Gallon Elevated Water Tank – 180 consecutive calendar days

Bidder must agree also to pay as liquidated damages, the sum of \$500.00 for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.

12. Conditions of Work: Each bidder must inform themselves fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of their obligation to furnish all material and labor necessary to carry out the provisions of their contract. Insofar as possible, the contractor, in carrying out the work, must

employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

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

Every request for such interpretation on Contract No. 9 – Water System Improvements and Contract No. 10 – 150,000 Gallon Elevated Water Tank should be in writing addressed to Sisler-Maggard Engineering PLLC., P.O. Box 23780, Lexington, Kentucky 40523-3780 and to be given consideration must be received at least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed by certified mail with return receipt requested to all prospective bidders (at the respective addresses furnished for such purposes), not later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under their bid as submitted. All addenda so issued shall become part of the contract documents.

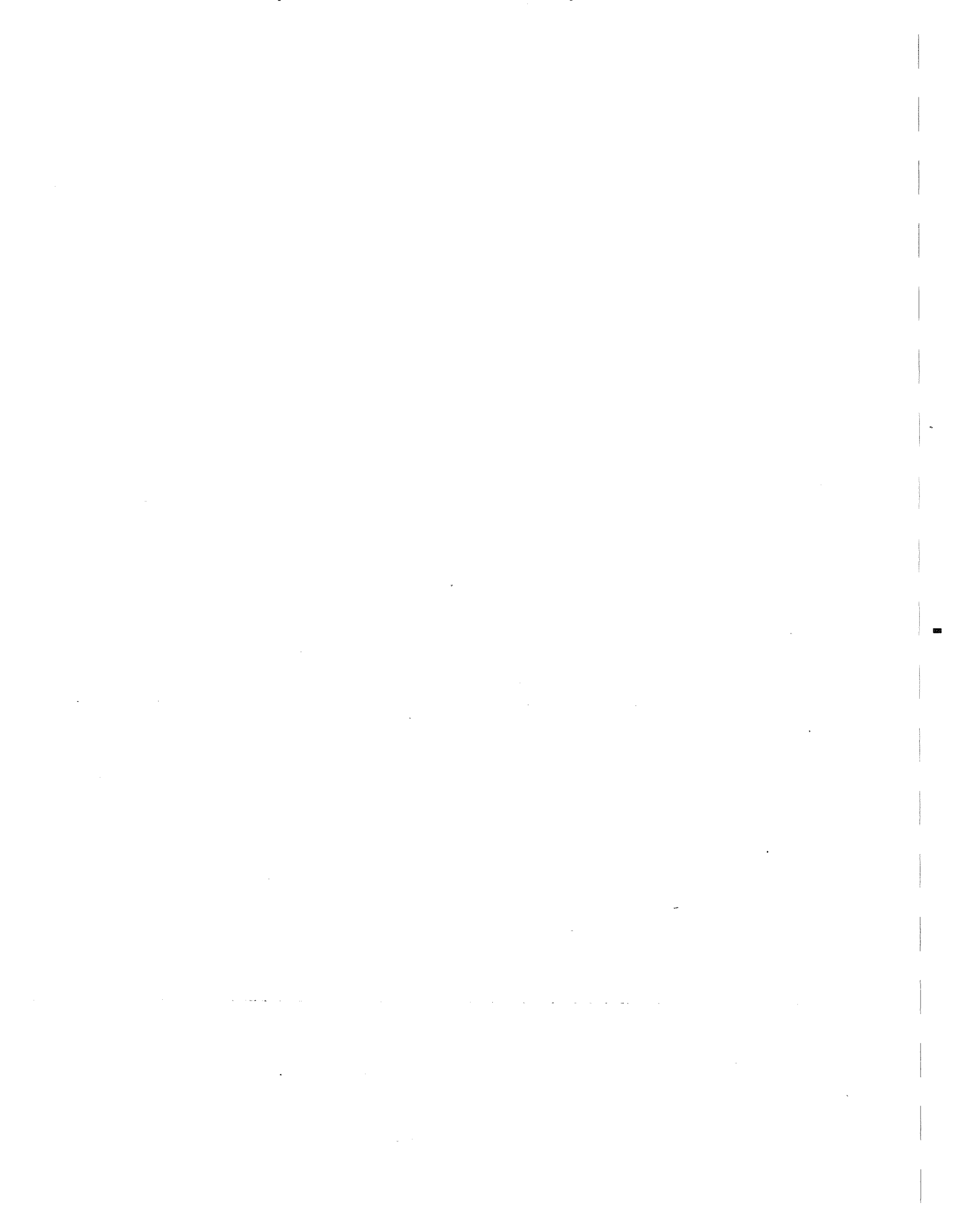
14. Security for Faithful Performance: Simultaneously with their delivery of the executed contract, the contractor shall furnish a 100% surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner.
15. Power of Attorney: Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney with Kentucky Resident agent.
16. Notice of Special Conditions: Attention is particularly called to those parts of the contract documents and specifications which deal with the following:
- a. Inspection and testing of materials
  - b. Insurance requirements
  - c. Wage rates
17. Laws and Regulations: The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written in full.
18. Method of Award - Lowest Qualified Bidder: If at the time this contract is to be awarded, the lowest base bid submitted by a responsible bidder does not exceed the amount of funds then estimated by the Owner as available to finance the contract, the contract will be awarded on the base bid only. If all bids exceed funds available to finance the contract the Owner may negotiate price with the bidder who is lowest at that point. However, **the Owner reserves the right to reject any and all bids and to waive all informalities and/or technicalities should it be in the best interest of the Owner.**
19. Award of Contract: Owner reserves the right to reject any and all Bids, and waive any and all informalities, and the right to disregard all nonconforming or conditional bids or counter proposals.

In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the bids comply with the prescribed requirements, and alternates and unit prices, if requested in the Bid forms. He may consider the qualifications and experience of the Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for portions of the Work as to which the identity of Subcontractors and other persons or organizations must be submitted as specified in the Special Conditions or Specifications. He may conduct such investigations as he deems necessary to establish the responsibility, qualifications or financial ability of the Bidders, proposed Subcontractors and other persons or organizations to do the work in accordance with the Contract Documents, to Owner's satisfaction within the prescribed time. Owner reserves the right to reject the Bid of any Bidder who reserves the right to reject the bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

If the contract is to be awarded, Owner will give the apparent successful Bidder(s) a Notice of Award within sixty (60) calendar days after the day of the Bid opening.

Simultaneously with delivery of the executed counterparts of the Agreement to Owner, Contractor shall deliver to Owner the required Contract Security.

20. Safety Standards and Accident Prevention: With respect to all work performed under this contract, the contractor shall:
- a. Comply with the safety standards provisions of applicable laws, building and construction codes and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1518 as published in the "Federal Register", Volume 36, No. 75, Saturday, April 17, 1971.
  - b. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.
  - c. Maintain at their office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees), who may be injured on the job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.
21. Prevailing Wage Law: State Prevailing Wage Rates **do apply** to this project and are included herein as SECTION 4.
22. Executive Order No. 11246: 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 SUPPLEMENTAL GENERAL CONDITIONS.



**SECTION 3**

**RURAL DEVELOPMENT**

**GENERAL & SUPPLEMENTAL**

**CONDITIONS**





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# GENERAL CONDITIONS

## ARTICLE 1 -- DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda* – Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
  2. *Agency* – The Federal or state agency named as such in the Agreement.
  3. *Agreement* – The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
  4. *Application for Payment* – The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  5. *Asbestos* – Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
  6. *Bid* – The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  7. *Bidder* – The individual or entity who submits a Bid directly to Owner.
  8. *Bidding Documents* – The Bidding Requirements and the proposed Contract Documents (including all Addenda).
  9. *Bidding Requirements* – The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.
  10. *Change Order* – A document recommended by Engineer which is signed by Contractor and Owner and Agency and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
  11. *Claim* – A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
  12. *Contract* – The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
  13. *Contract Documents* – Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

14. *Contract Price* – The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
15. *Contract Times* – The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
16. *Contractor* – The individual or entity with whom Owner has entered into the Agreement.
17. *Cost of the Work* – See Paragraph 11.01.A for definition.
18. *Drawings* – That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
19. *Effective Date of the Agreement* – The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
20. *Engineer* – The individual or entity named as such in the Agreement.
21. *Field Order* – A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
22. *General Requirements* – Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.
23. *Hazardous Environmental Condition* – The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.
24. *Hazardous Waste* – The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
25. *Laws and Regulations; Laws or Regulations* – Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens* – Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
27. *Milestone* – A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
28. *Notice of Award* – The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
29. *Notice to Proceed* – A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
30. *Owner* – The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

31. *PCBs* – Polychlorinated biphenyls.
32. *Petroleum* – Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
33. *Progress Schedule* – A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
34. *Project* – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
35. *Project Manual* – The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
36. *Radioactive Material* – Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
37. *Related Entity* – An officer, director, partner, employee, agent, consultant, or subcontractor.
38. *Resident Project Representative* – The authorized representative of Engineer who may be assigned to the Site or any part thereof.
39. *Samples* – Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
40. *Schedule of Submittals* – A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
41. *Schedule of Values* – A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
42. *Shop Drawings* – All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
43. *Site* – Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
44. *Specifications* – That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
45. *Subcontractor* – An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
46. *Substantial Completion* – The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for

which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

47. *Successful Bidder* – The Bidder submitting a responsive Bid to whom Owner makes an award.
48. *Supplementary Conditions* – That part of the Contract Documents which amends or supplements these General Conditions.
49. *Supplier* – A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.
50. *Underground Facilities* – All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
51. *Unit Price Work* – Work to be paid for on the basis of unit prices.
52. *Work* – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
53. *Work Change Directive* – A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and Agency upon recommendation of the Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

## 1.02 Terminology

- A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.
- B. *Intent of Certain Terms or Adjectives*
  1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.
- C. *Day*
  1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.



D. *Defective*

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:
  - a. does not conform to the Contract Documents, or
  - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
  - c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
  2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
  3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
  4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## ARTICLE 2 – PRELIMINARY MATTERS

### 2.01 *Delivery of Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

### 2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement.

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
  - 1. a preliminary Progress Schedule;
  - 2. a preliminary Schedule of Submittals; and
  - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, Agency, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
  - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
  - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
  - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

## ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

### 3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the *Contract Documents*. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the *Contract Documents* or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.
- C. Clarifications and interpretations of the *Contract Documents* shall be issued by Engineer as provided in Article 9.

### 3.02 *Reference Standards*

#### A. *Standards, Specifications, Codes, Laws, and Regulations*

- 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to *Laws or Regulations*, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or *Laws or Regulations* in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the *Contract Documents*.
- 2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the *Contract Documents*. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the *Contract Documents*.

### 3.03 *Reporting and Resolving Discrepancies*

#### A. *Reporting Discrepancies*

- 1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the *Contract Documents* and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
- 2. *Contractor's Review of Contract Documents During Performance of Work*: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the *Contract Documents* or between the *Contract Documents* and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the *Contract Documents* has been issued by one of the methods indicated in Paragraph 3.04.
- 3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the *Contract Documents* unless Contractor knew or reasonably should have known thereof.

#### B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
  - a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
  - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

#### 3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
  1. A Field Order;
  2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3) or
  3. Engineer's written interpretation or clarification.

#### 3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier shall not:
  1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or
  2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.
- B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

#### 3.06 *Electronic Data*

- A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

**ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS**

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
  - 1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and
  - 2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:
  - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
  - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
  - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

- A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
  - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
  - b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
  - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
  - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
  - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

#### 4.04 *Underground Facilities*

- A. *Shown or Indicated*: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and
  2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
    - a. reviewing and checking all such information and data,
    - b. locating all Underground Facilities shown or indicated in the Contract Documents,
    - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and
    - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.
- B. *Not Shown or Indicated*
1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
  2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

#### 4.05 *Reference Points*

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

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
  2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
  3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not



limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06. H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 5 -- BONDS AND INSURANCE

### 5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

### 5.02 *Licensed Sureties and Insurers*

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

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

- A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
  - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
  - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
  - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
    - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
    - b. by any other person for any other reason;
  - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
  - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
  - 1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
  - 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
  - 3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.
  - a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (Contractor shall be responsible for any deductible or self-insured retention.). This insurance shall:
  1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
  2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;
  3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
  4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
  5. allow for partial utilization of the Work by Owner;
  6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.
- B. Contractor shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.
  - C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
  - D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Contractor as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:
  1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
  2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Contractor and made payable to Contractor as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Contractor shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof.
- B. Contractor as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Contractor's exercise of this power. If such objection be made, Contractor as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Contractor as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Contractor as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

**ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES**

6.01 *Supervision and Superintendence*

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

- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
  - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
  - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

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

equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items*: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
  - a. in the exercise of reasonable judgment Engineer determines that:
    - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
    - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
    - 3) it has a proven record of performance and availability of responsive service; and
  - b. Contractor certifies that, if approved and incorporated into the Work:
    - 1) there will be no increase in cost to the Owner or increase in Contract Times, and
    - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
2. *Substitute Items*
  - a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
  - b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
  - c. The procedure requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.
  - d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
    - 1) shall certify that the proposed substitute item will:
      - a) will perform adequately the functions and achieve the results called for by the general design,
      - b) be similar in substance to that specified, and
      - c) be suited to the same use as that specified;
    - 2) will state:

- a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;
  - b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
  - c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
- 3) will identify:
- a) all variations of the proposed substitute item from that specified , and
  - b) available engineering, sales, maintenance, repair, and replacement services;
- 4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

#### 6.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.



- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor
  2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

#### 6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or

Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

- B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

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

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

- 1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
  3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work, Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

#### 6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

#### 6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
1. all persons on the Site or who may be affected by the Work;
  2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
  3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

- C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples*

- a. Submit number of Samples specified in the Specifications.

- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.
- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures*

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:
  - a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
  - b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;
  - c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and
  - d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  1. observations by Engineer;
  2. recommendation by Engineer or payment by Owner of any progress or final payment;
  3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
  4. use or occupancy of the Work or any part thereof by Owner;
  5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
  6. any inspection, test, or approval by others; or
  7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

- B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:
  - 1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
  - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

#### 6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

### ARTICLE 7 – OTHER WORK AT THE SITE

#### 7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
  - 1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs: Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
  - C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

#### 7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
  1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
  2. the specific matters to be covered by such authority and responsibility will be itemized; and
  3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

#### 7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

### **ARTICLE 8 – OWNER'S RESPONSIBILITIES**

#### 8.01 *Communications to Contractor.*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.



- 8.02 *Replacement of Engineer*
- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.
- 8.03 *Furnish Data*
- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.
- 8.04 *Pay When Due*
- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.
- 8.05 *Lands and Easements; Reports and Tests*
- A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.
- 8.06 *Insurance*
- A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.
- 8.07 *Change Orders*
- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.
- 8.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.
- 8.09 *Limitations on Owner's Responsibilities*
- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- 8.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.
- 8.11 *Evidence of Financial Arrangements*
- A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

## ARTICLE 9 – ENGINEER’S STATUS DURING CONSTRUCTION

### 9.01 *Owner’s Representative*

- A. Engineer will be Owner’s representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner’s representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

### 9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor’s executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer’s efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer’s visits and observations are subject to all the limitations on Engineer’s authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer’s visits or observations of Contractor’s Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

### 9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer’s consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

### 9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

### 9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

**ARTICLE 10 – CHANGES IN THE WORK; CLAIMS**

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, subject to written approval by Agency at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
  1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
  2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
  3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

- A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be

given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

#### 10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part,
  2. approve the Claim, or
  3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

### **ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

#### 11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
  - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
  - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
  - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
  - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.
  - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
  - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of

Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
  - h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressages, and similar petty cash items in connection with the Work.
  - i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.
- B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
  - 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
  - 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
  - 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
  - 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

## 11.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. Cash Allowances
  - 1. Contractor agrees that:

- a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
- b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
  1. the Bid price of a particular item of Unit Price Work amounts to more than 5 percent of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and
  2. there is no corresponding adjustment with respect to any other item of Work; and
  3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

**ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES**

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:



1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. Contractor's Fee: The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or
2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
  - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
  - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
  - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
  - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
  - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
  - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

## 12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

## 12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors

performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.B.
  - 1. delays caused by or within the control of Contractor; or
- D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

## **ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

### **13.01 *Notice of Defects***

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

### **13.02 *Access to Work***

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

### **13.03 *Tests and Inspections***

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
  - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and
  3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
  - D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
  - E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.
  - F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

#### 13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

#### 13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. repair such defective land or areas; or
  - 2. correct such defective Work; or
  - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
  - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims,

costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

#### 13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

### ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

#### 14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

#### 14.02 *Progress Payments*

##### A. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such

supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

*B. Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
  - a. the Work has progressed to the point indicated;
  - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and
  - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
  - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
  - b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
  - a. to supervise, direct, or control the Work, or
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

- c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
  - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
  - b. the Contract Price has been reduced by Change Orders;
  - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
  - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

*C. Payment Becomes Due*

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

*D. Reduction in Payment*

- 1. Owner may refuse to make payment of the full amount recommended by Engineer because:
  - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
  - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
  - c. the Contractor's performance or furnishing of the Work is inconsistent with funding Agency requirements;
  - d. there are other items entitling Owner to a set-off against the amount recommended; or
  - e. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
- 2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.
- 3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 *Contractor's Warranty of Title*

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

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Agency, Contractor, and Engineer shall make a prefinal inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.
  - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.



2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

#### 14.06 *Final Inspection*

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

#### 14.07 *Final Payment*

##### A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;
  - b. consent of the surety, if any, to final payment;
  - c. a list of all Claims against Owner that Contractor believes are unsettled; and
  - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

##### B. *Engineer's Review of Application and Acceptance*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims. The remaining balance of any sum included in the final Application for Payment but held by OWNER for Work not fully completed and accepted will become due when the Work is fully completed and accepted.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
  1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
  2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

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

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
  2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
  3. Contractor's disregard of the authority of Engineer; or
  4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),
  2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and
  3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
  2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
  3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
  4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

**ARTICLE 16 – DISPUTE RESOLUTION**

16.01 *Methods and Procedures*

- A. Owner and Contractor may mutually request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or
  2. agrees with the other party to submit the Claim to another dispute resolution process, or

3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

## ARTICLE 17 – MISCELLANEOUS

### 17.01 *Giving Notice*

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

### 17.02 *Computation of Times*

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

### 17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

### 17.04 *Survival of Obligations*

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

### 17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

### 17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

## ARTICLE 18 – FEDERAL REQUIREMENTS

### 18.01 *Agency Not a Party*

- A. This Contract is expected to be funded in part with funds provided by Agency. Neither Agency, nor any of its departments, entities, or employees is a party to this Contract.

18.02 *Contract Approval*

- A. Owner and Contractor will furnish Owner's attorney such evidence as required so that Owner's attorney can complete and execute the following "Certificate of Owner's Attorney" (Exhibit GC-A) before Owner submits the executed Contract Documents to Agency for approval.
- B. Concurrence by Agency in the award of the Contract is required before the Contract is effective.

18.03 *Conflict of Interest*

- A. Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer.
- B. Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

18.04 *Gratuities*

- A. If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.
- B. In the event this Contract is terminated as provided in paragraph 18.04.A, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

18.05 *Audit and Access to Records*

- A. For all negotiated contracts and negotiated modifications (except those of \$10,000 or less), Owner, Agency, the Comptroller General, 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. Contractor shall maintain all required records for three years after final payment is made and all other pending matters are closed.

18.06 *Small, Minority and Women's Businesses*

- A. If Contractor intends to let any subcontracts for a portion of the work, 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 schedules, 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 of this section; and (7) Contractor is encouraged to procure goods and services from labor surplus area firms.

18.07 *Anti-Kickback*

- A. Contractor shall comply with the Copeland Anti-Kickback Act (18 USC 874 and 40 USC 276c) as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States"). The Act provides that Contractor or subcontractor 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 they are otherwise entitled. Owner shall report all suspected or reported violations to Agency.

18.08 *Clean Air and Pollution Control Acts*

- A. If this Contract exceeds \$100,000, Contractor shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 USC 7401 *et seq.*) and the Federal Water Pollution Control Act as amended (33 USC 1251 *et seq.*). Contractor will report violations to the Agency and the Regional Office of the EPA.

18.09 *State Energy Policy*

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

18.10 *Equal Opportunity Requirements*

- A. If this Contract exceeds \$10,000, Contractor shall comply with Executive Order 11246, "Equal Employment Opportunity," as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and as supplemented by regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."
- B. Contractor's compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative active 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 area 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 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 Contractor's goals shall be a violation of the Contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.
- C. 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.

18.11 *Restrictions on Lobbying*

- A. Contractor and each subcontractor shall comply with Restrictions on Lobbying (Public Law 101-121, Section 319) as supplemented by applicable Agency regulations. This Law applies to the recipients of contracts and subcontracts that exceed \$100,000 at any tier under a Federal loan that exceeds \$150,000 or a Federal grant that exceeds \$100,000. If applicable, Contractor must complete a certification form on lobbying activities related to a specific Federal loan or grant that is a funding source for this Contract. Each tier certifies to the tier above that it will not and

has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 USC 1352. Each tier shall disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Certifications and disclosures are forwarded from tier to tier up to the Owner. Necessary certification and disclosure forms shall be provided by Owner.

18.12 *Environmental Requirements*

- A. When constructing a project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental constraints:
1. Wetlands – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.
  2. Floodplains – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, i.e., alluvial soils on NRCS Soil Survey Maps.
  3. Historic Preservation – Any excavation by Contractor that uncovers an historical or archaeological artifact shall be immediately reported to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the State Historic Preservation Officer (SHPO).
  4. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.



EXHIBIT GC-A

Certificate of Owner's Attorney

I, the undersigned, \_\_\_\_\_, the duly authorized and acting legal representative of \_\_\_\_\_, do hereby certify as follows:

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

\_\_\_\_\_

Date: \_\_\_\_\_



## Supplementary Conditions

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract Funding Agency Edition (No. C-710, 2002 Edition) and other provisions of the Contract Documents as indicated below. All provisions not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions will have the meanings indicated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

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**SC-1.01.A.2. Add the following language to the end of Paragraph 1.01.A.2:**

The Project is financed in whole or in part by USDA Rural Development pursuant to the Consolidated Farm and Rural Development Act (7 USC Section 1921 et seq.). Project also includes KIA-IEDF grants and local funds.

**SC-1.01.A.4. Add the following language to the end of Paragraph 1.01.A.4:**

The Application for Payment form to be used on this Project is Form RD 1924-18. The Agency must approve all Applications for Payment before payment is made.

**SC-1.01.A.10. Add the following language to the end of Paragraph 1.01.A.10:**

The Change Order form to be used on this Project is Form RD 1927-7. Agency approval is required before Change Orders are effective.

**SC-1.02.A.15. Delete in its entirety and replace with the following:**

Contract Times: The number of days or date stated in the Agreement to achieve substantial completion, based on remaining work, weather and market conditions.

**SC-2.03.A. Delete Paragraph 2.03.A in its entirety and insert the following in its place:**

A. The Contract Times will commence on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 10 days after the Effective Date of the Agreement.

**{SC-4.02. Add the following new paragraphs immediately after Paragraph 4.02.B:**

C. In the preparation of Drawings and Specifications, Engineer relied upon the following reports of exploration and tests of subsurface conditions at the Site:

Contract No. 9 – Waterline Extensions – NONE

Contract No. 10 – Water Tank – Thelen and Associates, Inc. – Geotechnical report dated December 12, 2007

D. Copies of reports and drawings itemized in SC-4.02.C are included with Bidding Documents. These reports and drawings are part of the Contract Documents. Contractor is not entitled to rely upon other information and data utilized by Engineer in the preparation of the Drawings and Specifications.

**SC-5.03. Add the following new paragraph immediately after Paragraph 5.03.B:**

C. Failure of the Owner to demand such certificates or other evidence of full compliance with these insurance requirements or failure of the Owner to identify a deficiency from evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

**SC-5.04. Add the following new paragraph immediately after Paragraph 5.04.B:**

C. The limits of liability for insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 5.04.A.1 and A.2 of the General Conditions:
  - a. State: Statutory
  - b. Applicable Federal Statutory  
(e.g., Longshoremen's)
  - c. Employer's Liability \$500,000
2. Contractor's General Liability under Paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability

coverages and eliminate the exclusion with respect to property under the care, custody, and control of the Contractor:

a. General Aggregate	\$2,000,000
b. Products – Completed Operations Aggregate	\$1,000,000
c. Personal and Advertising Injury	\$1,000,000
d. Each Occurrence (Bodily Injury and property damage)	\$1,000,000
e. Property Damage liability insurance will provide Explosion, Collapse, and Underground coverages where applicable.	
f. Excess or Umbrella Liability	
1.) General Aggregate	\$5,000,000
2.) Each Occurrence	\$2,000,000

3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:

a. Bodily Injury:	
Each Person	\$1,000,000
Each Accident	\$1,000,000
b. Property Damage	
Each Accident	\$1,000,000
c. Combined Single Limit of	\$1,000,000

4. The Contractual Liability coverage required by paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:

a. Bodily Injury:	
Each Person	\$2,000,000
Each Accident	\$2,000,000
b. Property Damage:	
Each Accident	\$2,000,000
Annual Aggregate	\$2,000,000

**SC-6.06 Add a new paragraph immediately after Paragraph 6.06.G:**

H. The Contractor shall not award work valued at more than (50%) percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

**SC-7.02.A.1 Delete paragraphs 7.02.A.1-3 in their entirety and insert the following:**

1. All General Contractors shall have the authority and be responsible for coordination of the activities among the other prime contractors and subcontractors on the Site to ensure a safe, efficient working environment. This authority covers scheduling delivery of materials, storage of materials, sequencing of construction involving different crafts, resolving interface issues between crafts, scheduling testing, and all other aspects of the Work that do not impact the design or function of the work. }

**SC-9.03A. Add the following language at the end of paragraph 9.03.A:**

The Engineer will provide Resident Project Representative Services for this project. The Duties, Responsibilities, and Limitations of Authority of the Resident Project Representative will be as stated in Exhibit D of the Agreement Between Owner and Engineer, E-510, 2002 Edition, as amended and executed for this specific project.

**SC-14.02.A.3 Add the following language at the end of paragraph 14.02.A.3:**

No payments will be made that would deplete the retainage prior to substantial completion, nor place in escrow any funds that are required for retainage, or invest the retainage for benefit.

**SC-14.02.C.1. Delete Paragraph 14.02.C.1 in its entirety and insert the following in its place:**

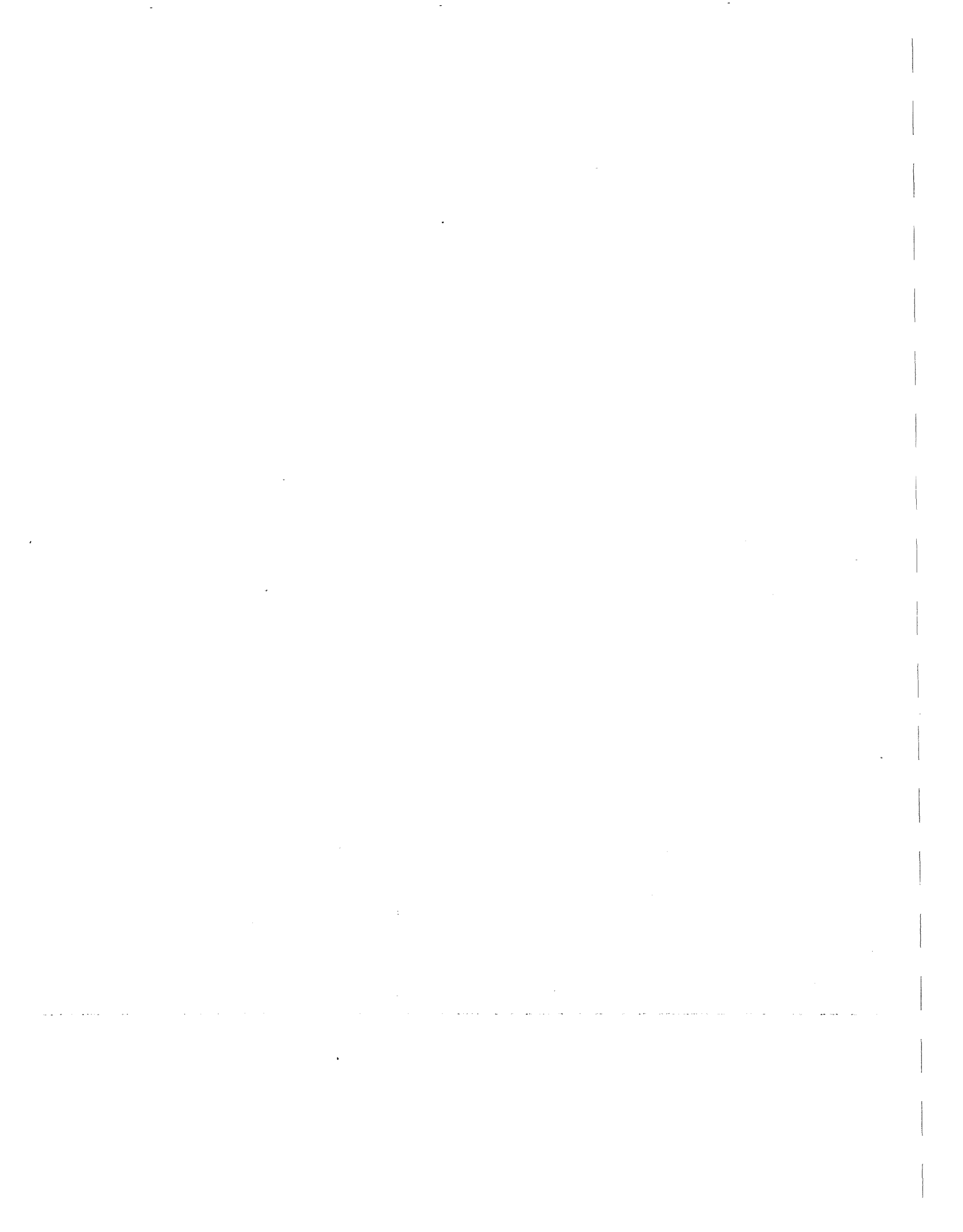
1. The Application for Payment with Engineer's recommendations will be presented to the Owner and Agency for consideration. If both the Owner and Agency find the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 14.02.D will become due thirty days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

**SC-18.08 Delete paragraph 18.08.A in its entirety and insert the following in its place:**

A. If 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 USC §1857(h)), Section 508 of the Clean Water Act (33 USC §1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR Part 15).

**SECTION 4**

**STATE WAGE RATES**







Steve Beshear  
Governor

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET  
DEPARTMENT OF LABOR  
OFFICE OF WORKPLACE STANDARDS  
1047 US Hwy 127 S STE 4  
Frankfort, Kentucky 40601  
Phone: (502) 564-3070  
www.labor.ky.gov

J. R. Gray  
Commissioner

May 30, 2008

Joseph F. Sisler  
Sisler-Maggard Engineering  
220 East Reynolds Rd Ste A-3  
Lexington KY 40517

Re: Nicholas County Water District, Contract #9 & 10 Water System Improvements  
091-H-00013-07-3

Advertising Date as Shown on Notification: June 24, 2008

Dear Joseph F. Sisler:

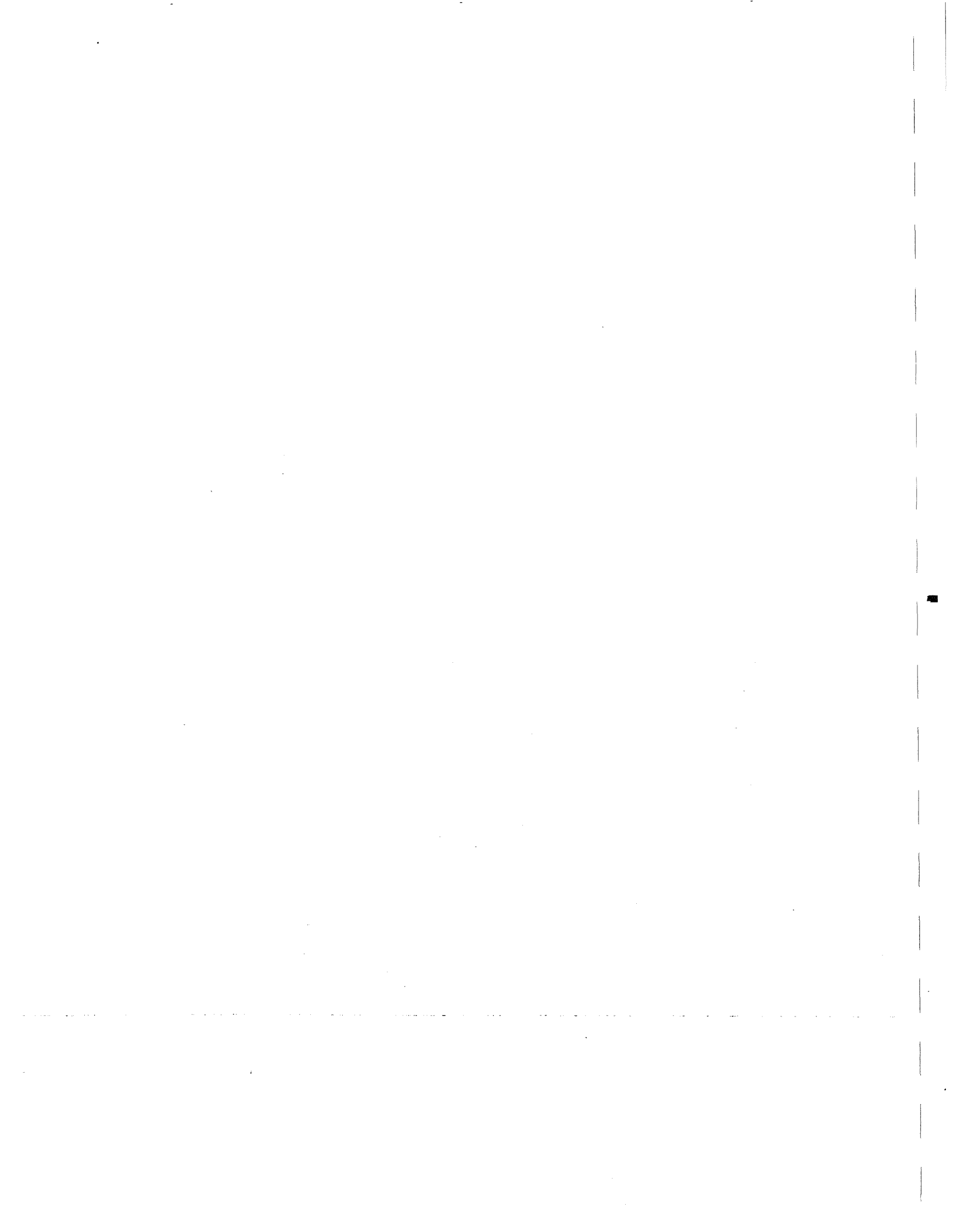
This office is in receipt of your written notification on the above project as required by KRS 337.510 (1).

I am enclosing a copy of the current prevailing wage determination number CR-3-029, dated May 11, 2007 for NICHOLAS County. This schedule of wages shall be attached to and made a part of the specifications for the work, printed on the bidding blanks, and made a part of the contract for the construction of the public works between the public authority and the successful bidder or bidders.

The determination number assigned to this project is based upon the advertising date contained in your notification. There may be modifications to this wage determination prior to the advertising date indicated. In addition, if the contract is not awarded within 90 days of this advertising date or if the advertising date is modified, a different set of prevailing rates of wages may be applicable. It will be the responsibility of the public authority to contact this office and verify the correct schedule of the prevailing rates of wages for use on the project. Your project number is as follows: 091-H-00013-07-3, Heavy/Highway

Sincerely,

Robin M. Young  
Prevailing Wage Specialist



KENTUCKY DEPARTMENT OF LABOR  
PREVAILING WAGE DETERMINATION  
CURRENT REVISION  
LOCALITY NO. 029

Determination No. CR-3-029

**Project No.** 091-H-00013-07-3  
**Type:** Heavy/Highway

Date of Determination: May 11, 2007

This schedule of the prevailing rate of wages for Locality No. 029, which includes Bath, Bourbon, Clark, Harrison, Montgomery and Nicholas Counties, has been determined in accordance with the provisions of KRS 337.505 to 337.550. This determination shall be referred to as Prevailing Wage Determination No. CR-3-029.

Apprentices shall be permitted to work as such subject to Administrative Regulations adopted by the Executive Director of Workplace Standards. Copies of these regulations will be furnished upon request to any interested person.

Overtime is to be computed at not less than one and one-half (1 1/2) times the indicated BASE RATE for all hours worked in excess of eight (8) per day, and/or in excess of forty (40) per week. However, KRS 337.540 permits an employee and employer to agree, in writing, that the employee will be compensated at a straight time base rate for hours worked in excess of eight (8) hours in any one calendar day, but not more than ten (10) hours worked in any one calendar day, if such written agreement is prior to the over eight (8) hours in a calendar day actually being worked, or where provided for in a collective bargaining agreement. The fringe benefit rate is to be paid for each hour worked at a straight time rate for all hours worked. Fringe benefit amounts are applicable for all hours worked except when otherwise noted. Welders will receive rate for craft in which welding is incidental.

No laborer, workman or mechanic shall be paid at a rate less than that of the General Laborer except those classified as bona fide apprentices registered with the Kentucky State Apprenticeship Supervisor unless otherwise specified in this schedule of wage rates.

NOTE: The type of construction shall be determined by applying the following definitions.

**BUILDING CONSTRUCTION**

Building construction is the construction of sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment, or supplies. It includes all construction of such structures, the installation of utilities and the installation of equipment, both above and below grade level, as well as incidental grading, utilities and paving.

CR-3-029  
May 11, 2007

### HIGHWAY CONSTRUCTION

Highway construction includes the construction, alteration or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, and other similar projects not incidental to building or heavy construction. It includes all incidental construction in conjunction with the highway construction project.

### HEAVY CONSTRUCTION

Heavy projects are those projects that are not properly classified as either "building" or "highway". For example, dredging projects, water and sewer line projects, dams, flood control projects, sewage treatment plants and facilities, and water treatment plants and facilities are considered heavy.



Jim Zimmerman, Executive Director  
Office of Workplace Standards  
Kentucky Department of Labor

CR-3-029  
May 11, 2007

<u>CLASSIFICATIONS</u>		<u>RATE AND FRINGE BENEFITS</u>	
ASBESTOS/INSULATION WORKERS:		BASE RATE	\$16.50
		FRINGE BENEFITS	.50
-----			
BOILERMAKERS:		BASE RATE	\$29.29
		FRINGE BENEFITS	14.66
-----			
BRICKLAYERS:		BASE RATE	\$20.00
-----			
CARPENTERS:			
Carpenters:	BUILDING	BASE RATE	\$18.14
		FRINGE BENEFITS	8.83
Piledriver:	BUILDING	BASE RATE	\$18.64
		FRINGE BENEFITS	8.83
Carpenters:	HEAVY & HIGHWAY	BASE RATE	\$19.95
		FRINGE BENEFITS	5.43
Piledriver:	HEAVY & HIGHWAY	BASE RATE	\$20.70
		FRINGE BENEFITS	5.43
Divers:	HEAVY & HIGHWAY	BASE RATE	\$31.05
		FRINGE BENEFITS	5.43
-----			
CEMENT MASONS:		BASE RATE	\$ 16.00
		FRINGE BENEFITS	1.90
-----			
ELECTRICIANS:		BASE RATE	\$25.91
		FRINGE BENEFITS	9.21

When workmen are required to work from bosun chairs, trusses, stacks, tanks, scaffolds, catwalks, radio and T.V. towers, structural steel (open, unprotected, unfloored raw steel) and bridges or similar hazardous locations where workmen are subject to a direct fall: 50 feet to 75 feet – add 25% above the workman's hourly rate, over 75 feet add 50% above workman's hourly rate. No premium shall be paid on work performed using JLGs, bucket trucks or other similar elevated mechanized work platforms up to 75 feet above the surface upon which the platform sits.

CR-3-029  
 May 11, 2007

CLASSIFICATIONS RATE AND FRINGE BENEFITS

ELEVATOR CONSTRUCTORS:	BASE RATE	\$23.06
	FRINGE BENEFITS	5.63

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GLAZIERS:	BASE RATE	\$15.45
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IRONWORKERS:	BASE RATE	\$23.49
	FRINGE BENEFITS	14.80

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**LABORERS:**

**BUILDING GROUP 1:**

General laborers, asbestos abatement laborer, toxic waste removal laborer, water boys, tool room checker, carpenter tenders, (civil engineer helper, rodman, grade checker, excluding all field work performed by Engineering Firms), concrete pouring and curing, concrete forms stripping and wrecking, hand digging and backfilling of ditches, clearing of right of ways and building sites, wood sheeting and shoring, signalman for concrete bucket and general cleaning, and environmental laborer - nuclear, radiation, toxic and hazardous waste - Level D:

BUILDING	*BASE RATE	\$16.28
	FRINGE BENEFITS	7.52

**BUILDING GROUP 2:**

All air tool operators, air track drills, asphalt rakers, tampers, batchers plant and scale man, chain saw, concrete saw, cutter/burner, electric hand grinder, all electric bush and chipping hammers, flagmen, forklift operators, form setter (street or highway), metal form setters, heaters, mesh handlers on walkways, streets and roadways outside building, gunnite laborers, hand spiker, introflax burning rod, joint makers, mason tender, multi-trade tender, pipe layers, plaster tender, powderman helpers, power driven Georgia buggies, power posthole diggers, railroad laborers, sandblaster laborers, scow man and deck hand, signal man, sweeper and cleaner machines, vibrator operators, vibrator/tamper operated by hand or remote control, walk behind trenching machines, mortar mixer machines, water pumpmen, and environmental laborers - nuclear, radiation, toxic and hazardous waste - Level C:

BUILDING	*BASE RATE	\$16.68
	FRINGE BENEFITS	7.52

**BUILDING GROUP 3:**

Asphalt paver screwman, gunnite nozzleman and gunnite nozzle machine operator, sand blaster nozzleman, concrete or grout pumpman, plaster pumpman:

BUILDING	*BASE RATE	\$16.88
	FRINGE BENEFITS	7.52

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

**LABORERS/ BUILDING:** (Continued)

**BUILDING GROUP 4:**

Powderman and blaster, and environmental laborer - nuclear, radiation, toxic and hazardous waste - Level B:

BUILDING	*BASE RATE	\$16.98
	FRINGE BENEFITS	7.52

**BUILDING GROUP 5:**

Caisson holes (6 ft. and over) pressure and free air including tools, and environmental laborer-nuclear, radiation, toxic and hazardous waste - Level A:

BUILDING	*BASE RATE	\$17.48
	FRINGE BENEFITS	7.52

**BUILDING GROUP 6:**

Tunnel man and tunnel sand miner, cofferdam (pressure and free air), sand hog or mucker (pressure or free air):

BUILDING	*BASE RATE	\$17.78
	FRINGE BENEFITS	7.52

**\*Employees handling chemically treated materials which are harmful to the skin shall receive an additional \$.50 above base rate. Employees working on high work such as towers or smoke stacks, or any type of work fifty (50) feet above the ground or a solid floor shall receive \$1.00 above base rate. Employees working on boilers, kilns, melting tanks, furnaces, or when refractory is done using live fires, drying fires, heatups or any hot work shall receive \$2.00 above base rate.**

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**LABORERS/HEAVY & HIGHWAY:**

**Group 1:**

Aging and curing of concrete (any mode or method), asbestos abatement worker, asphalt plant laborers, asphalt laborers, batch truck dumpers, carpenter tenders, cement mason tenders, cleaning of machines, concrete laborers, demolition laborers, dredging laborers, drill helper, environmental laborer - nuclear, radiation, toxic and hazardous waste - Level D, flagmen, grade checkers, all hand digging and hand back filling, highway marker placers, landscaping laborers, mesh handlers and placers, puddler, railroad laborers, rip-rap and grouters, right of way laborers, sign, guard rail and fence installers (all types), signal men, sound barrier installer, storm and sanitary sewer laborers, swamper, truck spotters and dumpers, and wrecking of concrete forms:

HEAVY & HIGHWAY	BASE RATE	\$15.88
	FRINGE BENEFITS	5.63

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

**LABORERS/HEAVY & HIGHWAY:(Continued)**

Group 2:

Batter board men (sanitary and storm sewer), brickmason tenders, mortar mixer operator, burner and welder, bushammers, chain saw operator, con-crete saw operators, deckhand scow man, dry cement handlers, environ-mental laborers - nuclear, radiation, toxic and hazardous waste - Level C, forklift operators for masonry, form setters, green concrete cutting, hand operated grouter and grinder machine operator, jack hammers, lead paint abatement, pavement breakers, paving joint machine, pipe layers-laser operators (non-metallic), plastic pipe fusion, power driven georgia buggy or wheelbarrow, power post hole diggers, precast manhole setters, walk-behind tampers, walk-behind trenchers, sand blasters, concrete chippers, surface grinders, vibrator operators, wagon drillers:

HEAVY & HIGHWAY	BASE RATE	\$16.13
	FRINGE BENEFITS	5.63

Group 3:

Air track driller (all types), asphalt luteman and rakers, gunnite nozzleleman, gunnite operators and mixers, grout pump operator, powderman and blaster, side rail setters, rail paved ditches, screw operators, tunnel laborers (free air), and water blasters:

HEAVY & HIGHWAY	BASE RATE	\$16.18
	FRINGE BENEFITS	5.63

Group 4:

Caisson workers (free air), cement finishers, environmental laborer - nuclear, radiation, toxic and hazardous waste - Levels A and B, miners and drillers (free air), tunnel blasters, and tunnel muckers (free air):

HEAVY & HIGHWAY	BASE RATE	\$16.78
	FRINGE BENEFITS	5.63

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**MARBLE, TILE & TERRAZZO:**

Workers:	BASE RATE	\$15.00
	FRINGE BENEFITS	2.69

Layoutmen:	BASE RATE	\$15.25
	FRINGE BENEFITS	2.69

Finishers:	BASE RATE	\$9.90
	FRINGE BENEFITS	2.69





CLASSIFICATIONS

RATE AND FRINGE BENEFITS

**OPERATING ENGINEERS: (Continued)**

Bituminous distributor, cement gun, conveyor, mud jack, paving joint machine, roller (earth), tamping machine, tractors (under 50 hp), vibrator, oiler, concrete saw, burlap and curing machine, hydro-seeder, power form handling equipment, deckhand steersman, hydraulic post driver, and drill helper:

BUILDING	BASE RATE	\$16.04
	FRINGE BENEFITS	7.90

**HEAVY HIGHWAY CLASS A:**

A-frame winch truck, auto patrol, backfiller, batcher plant, bituminous paver, bituminous transfer machine, all types of boom cats, bulldozer, cableway, carry-all scoop, carry deck crane, central compressor plant operator, clamshell, concrete mixer (21 cu. ft. or over), concrete paver, truck-mounted concrete pump, core drills, crane, crusher plant, derrick, derrick boat, ditching and trenching machine, dragline, dredge operator, dredge engineer, earth movers, elevating grader and all types of loaders, grade-all, guries, heavy equipment robotics operator/mechanic, high lift, hoe-type machine, hoist (two or more drums), hoisting engine (two or more drums), horizontal directional drill operator, hydraulic boom truck, hydrocrane, hyster, KeCal loader, Letourneau, Locomotive, mechanic, mechanically operated laser screed, mechanic welder, mucking machine, motor scraper, orangepeel bucket, piledriver, power blade, pumpcrete push dozer, rock spreader attached to equipment, all rotary drills, roller (bituminous), scarifier, scoopmobile, shovel, side boom, subgrader, tallboom, telescoping type forklift, tow or push boat, tower cranes (French, German and other types) tractor shovel and truck crane, tunnel mining machines including moles, shields, or similar types of tunnel mining equipment:

HEAVY & HIGHWAY	BASE RATE	\$22.95
	FRINGE BENEFITS	12.10

**Operators on cranes with booms one hundred fifty feet (150') and over including jib shall receive \$.50 above base rate.**

**HEAVY HIGHWAY CLASS B:**

All air compressors (over 900 cu. ft. per min.), bituminous mixer, boom type tamping machine, bull float, concrete mixer (under 21 cu. ft.), dredge engineer, electric vibrator compactor/self-propelled compactor, elevator (one drum or buck hoist), elevator (regardless of ownership when used to hoist building material), finish machine, firemen, flexplane, forklift (regardless of lift height), form grader, hoist (one drum), joint sealing machine, mechanic helper, outboard motor boat, power sweeper (riding type), roller (rock), ross carrier, skid mounted or trailer mounted concrete pumps, skid steer machine with all attachments, switchman or brakeman, throttle valve man, Tract air and road widening trencher, tractor (50 HP and over), truck crane oiler, tugger, welding machine, well points, and whirley oiler:

HEAVY & HIGHWAY	BASE RATE	\$20.53
	FRINGE BENEFITS	12.10

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CLASSIFICATIONS RATE AND FRINGE BENEFITS

**OPERATING ENGINEERS/HEAVY HIGHWAY: (Continued)**

**HEAVY HIGHWAY CLASS B2:**

Greaser on grease facilities servicing heavy equipment, all off road material handling equipment, including articulating dump trucks:

HEAVY & HIGHWAY	BASE RATE	\$20.91
	FRINGE BENEFITS	12.10

**HEAVY HIGHWAY CLASS C:**

Bituminous distributor, burlap and curing machine, caisson drill and core drill helper (track or skid mounted), cement gun, concrete saw, conveyor, deckhand oiler, grout pump, hydraulic post driver, hydro seeder, mud jack, oiler, paving joint machine, power form handling equipment, pump, roller (earth), steermen, tamping machine, tractors (under 50 H.P.) and vibrator:

HEAVY & HIGHWAY	BASE RATE	\$20.27
	FRINGE BENEFITS	12.10

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<b>PAINTERS:</b>	<b>BUILDING</b>	<b>BASE RATE</b>	<b>\$14.70</b>
		<b>FRINGE BENEFITS</b>	<b>3.06</b>

Journeyman:	HEAVY & HIGHWAY	BASE RATE	\$20.54
		FRINGE BENEFITS	5.78

Bridges:	HEAVY & HIGHWAY	BASE RATE	\$21.88
		FRINGE BENEFITS	5.78

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<b>PLASTERERS:</b>		<b>BASE RATE</b>	<b>\$19.00</b>
		<b>FRINGE BENEFITS</b>	<b>2.60</b>

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<b>PLUMBERS/PIPEFITTERS:</b>		<b>BASE RATE</b>	<b>\$23.95</b>
		<b>FRINGE BENEFITS</b>	<b>11.10</b>

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<b>ROOFERS: (Excluding Metal Roofs)</b>		<b>BASE RATE</b>	<b>\$13.31</b>
		<b>FRINGE BENEFITS</b>	<b>2.13</b>

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<b>SHEETMETAL WORKERS: (Including Metal Roofs)</b>		<b>BASE RATE</b>	<b>\$22.13</b>
		<b>FRINGE BENEFITS</b>	<b>7.89</b>

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CLASSIFICATIONS RATE AND FRINGE BENEFITS

SPRINKLER FITTERS: BASE RATE             \$27.05  
FRINGE BENEFITS    12.90

**BATH, CLARK, & MONTGOMERY COUNTIES:**

TRUCK DRIVERS:             BUILDING             BASE RATE             \$ 9.50  
FRINGE BENEFITS       .72

Mobile batch truck tender:             HEAVY & HIGHWAY   BASE RATE             \$14.62  
FRINGE BENEFITS       5.92

Greaser, tire changer, and mechanic tender:             HEAVY & HIGHWAY   BASE RATE             \$14.73  
FRINGE BENEFITS       5.92

Single axle dump, flatbed, semi-trailer or pole trailer when used to pull building materials and equipment, tandem axle dump, distributor, and truck mechanic:

HEAVY & HIGHWAY   BASE RATE             \$14.91  
FRINGE BENEFITS       5.92

Mixer:                             HEAVY & HIGHWAY   BASE RATE             \$14.94  
FRINGE BENEFITS       5.92

Euclid & other heavy earthmoving equipment & lowboy, articulator cat, 5-axle vehicle, winch & a-frame when used in transporting materials, ross carrier, forklift when used to transport building materials, and pavement breaker:

HEAVY & HIGHWAY   BASE RATE             \$15.01  
FRINGE BENEFITS       5.92

**BOURBON, HARRISON, & NICHOLAS COUNTIES:**

TRUCK DRIVERS:

Truckhelper and warehouseman: BUILDING             \*BASE RATE             \$15.05  
\*\*FRINGE BENEFITS    5.65

CR-3-029  
May 11, 2007

CLASSIFICATIONS RATE AND FRINGE BENEFITS

**BOURBON, HARRISON, & NICHOLAS COUNTIES:**

TRUCK DRIVERS:(Continued)

Driver-3 tons and under, greaser, tire changer and mechanic helper:

BUILDING	*BASE RATE	\$15.17
	**FRINGE BENEFITS	5.65

Driver-over 3 tons, semi-trailer or pole trailer, dump trucks, tandem axle, farm tractor when used to pull building material or equipment:

BUILDING	*BASE RATE	\$15.28
	**FRINGE BENEFITS	5.65

Driver - concrete mixer trucks (all types, hauling only on job sites), truck mechanics:

BUILDING	*BASE RATE	\$15.35
	**FRINGE BENEFITS	5.65

Driver - Euclid and other heavy earthmoving equipment and lowboy, winch truck and A-Frame and monorail truck when used to transport building materials, fork lift truck when used inside warehouse or storage area:

BUILDING	*BASE RATE	\$15.45
	**FRINGE BENEFITS	5.65

**\*Employees who perform work either on or hauling to or from any hazardous or toxic waste site will receive \$4.00 in addition to their base rate of pay.**

**\*\*FRINGE BENEFITS apply to employees who have been employed a minimum of twenty (20) workdays within any ninety (90) consecutive day period for that employer.**

Mobile batch truck tender:

HEAVY & HIGHWAY	BASE RATE	\$14.62
	FRINGE BENEFITS	5.92

Greaser, tire changer & mechanic tender:

HEAVY & HIGHWAY	BASE RATE	\$14.73
	FRINGE BENEFITS	5.92

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

BOURBON, HARRISON, & NICHOLAS COUNTIES TRUCK DRIVERS: (Continued)

Single axle dump, flatbed, semi-trailer or pole trailer when used to pull building materials and equipment, tandem axle dump, distributor & truck mechanic:

HEAVY & HIGHWAY	BASE RATE	\$14.91
	FRINGE BENEFITS	5.92

Mixer:

HEAVY & HIGHWAY	BASE RATE	\$14.94
	FRINGE BENEFITS	5.92

Euclid & other heavy earth moving equipment & lowboy, articulator cat, 5-axle vehicle, winch & A-frame when used in transporting materials, ross carrier, forklift when used to transport building materials & pavement breaker:

HEAVY & HIGHWAY	BASE RATE	\$15.01
	FRINGE BENEFITS	5.92

**SECTION 5**  
**SPECIAL CONDITIONS**





SECTION 5  
CONTRACT NO. 9 – WATER SYSTEM IMPROVEMENTS

SPECIAL CONDITIONS

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SPECIAL CONDITIONS1. Contract Change Order

All changes which affect the cost of the construction of the project must be authorized by means of a CONTRACT CHANGE ORDER. 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 should be recorded on a CONTRACT CHANGE ORDER as they occur so that they may be included in the partial payment estimate. **All CONTRACT CHANGE ORDERS must be approved by the Engineer, Owner, and all funding agencies, in advance to any construction.**

2. Pre-Construction Conference

Following award of the CONTRACT, the CONTRACTOR will be required to attend a Pre-Construction Conference with OWNER and ENGINEER during which items pertinent to performance and management of the project will be thoroughly discussed and documented.

3. Equal Opportunity

If this contract exceeds \$10,000 the CONTRACTOR is subject to provisions of the equal opportunity requirements set forth in the Supplemental General Conditions, included herein with forms.

4. Labor Regulations

The CONTRACTOR and each of his subcontractors shall comply with the following statutes (and with regulations issued pursuant thereto, which are incorporated herein by reference):

Title 18 U.S.C., Section 876: Kickback from public works employees. Whoever, by force, intimidation, or threat of procuring dismissal from employment, or by any other manner whatsoever induces any person employed in the construction, prosecution, completion or repair of any public building, public work, or building or work financed in whole or in part by loans (made, insured, or guaranteed) or grants from the United States, to give up any part of the compensation to which he is entitled under his contract of employment, shall be fined not more than \$5,000 or imprisoned not more than five years, or both.

Title 40 U.S.C., Section 276c: Regulations Governing Contractors and Subcontractors. The Secretary of Labor shall make reasonable regulations for Contractors and Subcontractors engaged in the construction, prosecution, completion or repair of public buildings, public works, or buildings or work financed in whole or in part by loans (made, insured, or guaranteed) or grant from the United States, including a provision that each Contractor and Subcontractor shall furnish weekly a statement with respect to the wages paid each employee during the preceding week.

The OWNER shall report all suspected or reported violations to the funding agencies.

5. Protection of Lives and Property

In order to protect the lives and health of his employees under the CONTRACT, the CONTRACTOR shall comply with all pertinent provisions of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc., and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment or work under the CONTRACT.

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

6. Conflict of Interest

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

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

7. Partial Payments

Partial Payment estimate forms prepared by the ENGINEER shall be used when estimating periodic payments due the CONTRACTOR.

The ENGINEER will make computation of quantities that will be the basis for payment estimates, both monthly and final. All payment estimates may be checked and approved by the funding agencies before payment.

Where the computation of areas or volumes by exact geometric methods is unduly laborious or refined, the planimeter shall be held an instrument of precision and may be used in the determination of quantities upon which payments are based.

The measurements of the ENGINEER as to the amount of work done shall be final and conclusive.

Payments shall be made upon the work done within the lines prescribed by the drawings or specifications and in accordance with the unit prices for the items under which the work is done.

To insure the proper performance of the Contract, the OWNER shall retain an amount of each estimate as specified in the General Conditions.

**Additionally, clean up and seeding shall be calculated as ten percent (10%) of the unit price for pipe in place. Testing and sterilization as 5% of the unit price for pipe in place.**

8. Withholding Payments

The OWNER may 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:

- a) Defective work not remedied.
- b) Claims filed or reasonable evidence indicating probable filing of claims.
- c) Failure of CONTRACTOR to make payments properly to Subcontractors or for material or labor.
- d) A reasonable doubt that the work can be completed for the balance then unpaid.
- e) Damage to another CONTRACTOR or the OWNER'S facilities.
- f) Performance of work in violation of the terms of the CONTRACT DOCUMENTS.
- g) Where work on unit price items are substantially complete but lack cleanup and/or corrections ordered by the ENGINEER, amounts shall be deducted from unit prices in partial payment estimates to amply cover such clean up and/or corrections.
- h) When "Record Drawings" are not up to date and correct at time of each monthly pay request as determined by the Resident Observer and Engineer.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

9. Sanitary Facilities

All necessary temporary sanitary facilities shall be provided for by the Prime Contractor(s) and shall meet with current requirements of the State Environmental Protection Agency. After the completion of the work, all temporary sanitary facilities shall be properly disposed of by the Prime Contractor(s).

10. Final Inspection

Final inspection of the work shall be made for the OWNER by the ENGINEER in collaboration with the Representatives for the funding agencies. Such inspection shall be made as soon as practicable after the CONTRACTOR has notified the OWNER in writing that the work is ready for such inspection.

11. Project Signs

Contractors shall furnish signs as set out in Section 01580 of Technical Specifications. Location is to be determined by the Engineer at Pre-Construction Conference.

12. Conflicting Requirements

Should conflicting conditions exist within the Specifications, Contract Documents, or Construction Drawings, priorities shall be established as follows:

- a) Written Contract

- b) Written Proposal
- c) Advertisement for Bids
- d) Instruction to Bidders
- e) Special Conditions
- f) Rural Development General Conditions & Supplemental Conditions
- g) Written Technical Specifications
- h) Standard Details
- i) Large Scale Details on Drawings
- j) General Arrangement Details on Drawings

13. Owner's Right to Award

The OWNER shall retain the right to award or not award any or all of the Contracts covered by these Contract Documents and Specifications.

14. Owner's Right to Increase or Decrease Units

The OWNER shall retain the right to increase or decrease or eliminate up to 20% of any of the units listed in the BID submitted by the CONTRACTOR as may be required to complete the work at any time concurrent with or following the award of the Contract.

Unit prices previously approved in original bid are acceptable for pricing changes of original bid items. However, when changes in quantities exceed 20 percent of the original bid quantity and the total dollar change of that bid item is significant, the unit price may be reviewed by the OWNER to determine if a new unit price should be negotiated for added work performed after the original contract completion date.

15. Workmen's Compensation and Insurance

- a) Workmen's Compensation: As required by State Statutes.
- b) Public Liability and Property Damage Including Vehicular Liability: As listed in General Conditions.

16. Wage Rates

All Contractors for this project shall comply with State and Federal codes as they apply to wages and hours - public works projects.

The State Prevailing Wage Determinations are located in Section 4 of these Specifications.

17. Access to Records

Representatives of the funding agencies and the Kentucky D.O.W. shall have access to work whenever it is in preparation or progress. The Comptroller General of the United States, or any authorized representative, shall have access to any books, documents, papers, and records which are pertinent to the project for the purpose of making audit, examination, excerpts, and transcriptions thereof.

18. Time of Completion and Liquidated Damages

Phase IX shall be completed within 180 calendar days from the date of Notice to Proceed.

Liquidated Damages shall be \$500.00 for each calendar day any Contract remains incomplete after the Time of Contract Completion.

19. Contractor's Obligations

The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time herein specified, in accordance with the provisions of this Contract and said Specifications and in accordance with the plans and drawings covered by this Contract and any and all supplemental plans and drawings, and in accordance with the directions of the ENGINEER as given from time to time during the progress of the work. He shall furnish, erect, maintain, and remove such construction plants and such temporary works as may be required. The CONTRACTOR shall observe, comply with, and be subject to all the terms, conditions, requirements, and limitations of the Contract and Specifications, and shall do, carry on, and complete the entire work to the satisfaction of the ENGINEER and the OWNER.

20. Quantities of Estimate

Whenever the estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of the documents including the BID, they are given for use in comparing bids and the right is especially reserved except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the OWNER to complete the work contemplated by this Contract, and such increase or diminution shall not give cause for claims or liability for damages.

21. Liens

Neither the final payment nor any part of the retained percentage shall become due until the Contractor, if required, shall deliver to the OWNER, a complete release of all liens arising out of this Contract or receipt in full in lien thereof, and if required in either case, an affidavit that insofar as he has knowledge or information, the releases and receipts include all the labor and materials for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner to indemnify him against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the OWNER all monies that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

22. Work Reasonably Inferred But Not Particularly Delineated or Specified

The Contractor shall make a thorough examination of the site and study all drawings and specifications and all conditions relating to the erection of the work, and if any materials or labor are evidently necessary for the proper and complete execution of the work which are not specifically mentioned and included in the drawings and specifications, although reasonably inferred therefrom, unless eliminated by special mention, or if any error or inconsistency appears therein, or in the event of any doubts arising as to the true intent and meaning of the drawings or specifications, he shall report it to the ENGINEER at least five (5) days in advance of receiving the proposals. The ENGINEER will then issue an addendum

containing the proper information to all Contractors not later than three (3) days prior to the time for opening of bids, to assure fair competition.

In case the Contractor fails to make such report and the ENGINEER is not otherwise advised of such doubtful matters, the Contractor is hereby made responsible for the furnishing of the necessary labor and material reasonably inferred for any additional work involved in the correction of apparent errors or inconsistencies and in executing the true intent and meaning of the drawings and specifications as interpreted by the ENGINEER, and all such labor and material shall be provided at the Contractor's expense and under no condition will any such labor and material be allowed as an extra.

23. Limit of Liability of Owner to Contractor for Delays, Extra Cost and Damage  
If, through no wrongful act or neglect of the OWNER, the Contractor is delayed, stopped, or caused extra cost or damage by injunction, court orders, judgment, or requirements of some other authority or acts beyond the control of the OWNER, he shall not be liable to the Contractor except for extension of time and payments only as reflected in application of quantities, prices, and extra work set forth in these specifications and contract. If sufficient work is otherwise available for application of Contractor's forces, the Owner will not be required to grant extension of time.
24. Requirements for Highway and Railroad Crossings and Rights-of-Way  
The specifications herein concerning trenching, pipe laying, jacket pipe crossings, backfilling, maintenance during construction, protection of public, maintaining traffic, tunneling, and re-paving are subject to revision to conform to such requirements as set forth by highway and railroad specifications and such crossings and rights-of-way.
25. Delays and Cost Due to Errors and/or Changes in Lines and Grades  
When the OWNER'S engineering forces make errors or changes in lines and grades that cause items of construction to be removed and replaced, the extra cost of such removal and replacement over that of correct construction shall be chargeable as an extra per terms of the General Conditions.

Where the Contractor's forces are delayed only due to ENGINEER'S errors or changes in not more than five in fifty cases of location of points on the whole project, errors and changes will not be above normal to be expected in the execution of the work, and no claims for extra cost due to such delay will be granted. Layout work is considered a normal portion of a construction operation in which it is considered impractical to prevent delays of some of the required labor and equipment while others are performing their portion of the operation. Excessive delay due to such causes shall be chargeable as extra work per terms of the General Conditions. However, to be allowable, time, labor, and equipment delayed must be reported to and approved by the ENGINEER within 24 hours. Labor and equipment must have been applied at the time of stoppage and could not have been applied to other incomplete work during the stoppage.

26. Licenses and Permits  
The Owner will secure and pay for permits required for permanent structures and State Highway Encroachment Bonds. The Contractor shall obtain and pay for all



other necessary licenses and permits and shall faithfully comply with all laws, ordinances and regulations, Federal, State, or local, which may be applicable to the operations to be conducted hereunder.

27. Conflict With or Damage to Existing Utilities

Insofar as location data is available to the ENGINEER, existing underground utilities (such as water lines, sewer lines, natural gas lines, and underground telephone and electrical conduits) are located on the drawings. However, due to the approximate nature of such data and information, the locations of any particular utility cannot be certified as being correct. In general, locations and elevations are approximate only. The Contractor shall obtain the services of representatives of each of the utilities involved during construction to assist in the location of existing utilities. Lines and grades of lines have been established to minimize interference with utilities as far as possible. However, it shall be the responsibility of the Contractor to determine any relocation necessary for his performance of the contract, and to pay any fees associated therewith, with no additional cost or liabilities to the OWNER.

28. Shop or Setting Drawings

See Section 01300 of Technical Specifications for further detail. Submittals **must** meet all submittal requirements set out therein or they will be returned to Contractor.

29. Work Hours Beyond Regular Hours

The Contractor shall notify the ENGINEER in writing of any scheduled work beyond regular and normal working hours at least 48 hours in advance of the work. Work performed after regular working hours and without notice to the ENGINEER, shall be considered not in conformance with the Plans and Specifications and may be removed or not paid for.

30. Excavation

All excavation shall be considered unclassified. **Rock excavation is not a separate pay item**, and shall not be cause for claim of additional compensation due to the Contractor.

31. Air and Water Acts

If the contract exceeds \$100,000 the Contractor agrees to comply with all the requirements of Section 114 of the Air Act (41 U.S.C., Section 1857 C-9) and Section 308 of the Water Act (33 U.S.C., Section 1318) relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in Section 114 of the Air Act and Section 308 of the Water Act and all regulations (40CFR 15.4) and guidelines issued thereunder after the award of the contract. In so doing, the Contractor further agrees to:

- a). As a condition for the Award of Contract, to notify the OWNER of the receipt of any communication from the Environmental Protection Agency (EPA) indicating that a facility to be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities. Prompt notification is required prior to contract award.

- b). The Contractor will include, or cause to be included, the above criteria and requirements in every nonexempt subcontract and that he will take such action as the Government may direct as a means of enforcing such provisions.
- c.) To certify that any facility to be utilized in the performance of any nonexempt contractor is not listed on the EPA List of Violating Facilities pursuant to 40 CFR 15.20 as of the date of contract award.

32. Subcontracting

The following is in addition to and in conjunction with Article 6 of the General Conditions.

Prior to the execution and delivery of the Agreement, the successful Bidder will submit to the OWNER and the ENGINEER for acceptance a list of the names of Subcontractors and such other persons and organizations (including those who are to furnish materials or equipment fabricated to a special design) proposed for those portions of the Work as to which the identity of the Subcontractors and other persons and organizations must be submitted as specified in the Contract Documents. Prior to the execution and delivery of the Agreement, the ENGINEER will notify the successful Bidder in writing if either the OWNER or the ENGINEER, after due investigation, has reasonable objection to any Subcontractor, person or organization on such list. The failure of the OWNER or the ENGINEER to make objection to any Subcontractor, person or organization on the list prior to the execution and delivery of the Agreement shall constitute an acceptance of such Subcontractor, person or organization. Acceptance of any such Subcontractor, person or organization shall not constitute a waiver of any right of the OWNER or the ENGINEER to reject defective Work, material or equipment, not in conformance with the requirements of the Contract Documents.

If, prior to the execution and delivery of the Agreement, the OWNER or the ENGINEER has reasonable objection to and refuses to accept any Subcontractor, person or organization on such list, the successful Bidder may, prior to such execution and delivery, either (a) submit an acceptable substitute without an increase in his Bid Price or (b) withdraw his Bid and forfeit his Bid security. If, after the execution and delivery of the Agreement, the OWNER or the ENGINEER refuses to accept any Subcontractor, person or organization on such list, the CONTRACTOR will submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution and appropriate Change Order shall be issued; however, no such increase in the Contract Price shall be allowed in respect of any substitutions unless the CONTRACTOR has acted promptly and reasonably in submitting a name with respect thereto prior to the execution and delivery of the Agreement.

The CONTRACTOR will not employ any Subcontractor (whether initially or as a substitute) against whom the OWNER or the ENGINEER may have reasonable objection, nor will the CONTRACTOR be required to employ any Subcontractor against whom he has reasonable objection. The CONTRACTOR will not make any substitution for any Subcontractor who has been accepted by the OWNER and the ENGINEER, unless the ENGINEER determines that there is good cause for doing so.

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

The CONTRACTOR agrees to specifically bind every Subcontractor to all of the applicable terms and conditions of the Contract Documents. Every Subcontractor, by undertaking to perform any of the Work, will thereby automatically be deemed to be bound by such terms and conditions.

All Work performed for the CONTRACTOR by a Subcontractor shall be pursuant to an appropriate agreement between the CONTRACTOR and the Subcontractor which shall contain provisions that waive all rights the contracting parties may have against one another for damages caused by fire or other perils covered by insurance provided in accordance with the General Conditions; except such rights as they may have to the proceeds of such insurance held by the OWNER as trustee under the General Conditions. The CONTRACTOR will pay each Subcontractor a just share of any insurance moneys received by the CONTRACTOR under the General Conditions.

33. Materials, Equipment and Labor; Substitute Material or Equipment

The following is in addition to and in conjunction with Article 6 of the General Conditions.

All materials and equipment will be new. If required by the ENGINEER, the CONTRACTOR will furnish satisfactory evidence as to the kind and quality of materials and equipment.

If it is indicated in the Specifications that the CONTRACTOR may furnish or use a substitute that is equal to any material or equipment specified, and if the CONTRACTOR wishes to furnish or use a proposed substitute, he will, promptly after the award of the contract, make written application to the ENGINEER for approval of such a substitute certifying in writing that the proposed substitute will perform adequately the duties imposed by the general design, be similar and of equal substance to that specified by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified. No substitute shall be ordered or installed without the written approval of the ENGINEER who shall be the judge of equality.

34. Availability of Lands, Physical and Subsurface Conditions; Reference Points

The following is in addition to and in conjunction with of the General Conditions.

The OWNER will provide, as indicated in the Contract Documents and not later than the date when needed by the CONTRACTOR, the lands upon which the Work is to be done, rights-of-way for access thereto, and such other lands which are designated for the use of the CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be secured and paid for by the OWNER, unless otherwise specified in the Contract Documents. If the CONTRACTOR believes that any delay in the OWNER'S furnishing these lands or

providing such easements entitles him to an extension of the Contract Time, he may make a claim therefore as provided in the General Conditions. The CONTRACTOR will provide all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

The OWNER will, upon request, furnish to the CONTRACTOR copies of all-available boundary surveys and subsurface tests.

The CONTRACTOR will promptly notify the OWNER and ENGINEER in writing of any subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents. The ENGINEER will promptly investigate those conditions and advise the OWNER in writing if further surveys or subsurface tests are necessary. Promptly thereafter, the OWNER will obtain the necessary additional surveys and tests and furnish copies to the ENGINEER and the CONTRACTOR. If the ENGINEER finds that the results of such surveys or tests indicate subsurface or latent physical conditions differing significantly from those indicated in the Contract Documents, a Change Order shall be issued incorporating the necessary revisions.

The OWNER will establish such general reference points as in his judgment will enable the CONTRACTOR to proceed with the Work. The CONTRACTOR will be responsible for the layout of the Work and will protect and preserve the established reference points and will make no changes or relocations without the prior written approval of the OWNER. He will report to the ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations. The CONTRACTOR will replace and accurately relocate all reference points so lost destroyed or moved.

35. Substantial Completion

Prior to final payment, the CONTRACTOR shall, in writing to the OWNER and the ENGINEER, certify that the entire Project is substantially complete and request that the ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, the OWNER, CONTRACTOR AND ENGINEER will make an inspection of the Project to determine the status of completion. If the ENGINEER considers the Project substantially complete, he will prepare and deliver to the OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion and the responsibilities between the OWNER and the CONTRACTOR for maintenance, heat and utilities. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment, and the certificate shall fix the time within which such items shall be completed or corrected, said time to be within the Contract Time. The OWNER shall have seven days after receipt of the tentative certificate during which he shall make written objection to the ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, the ENGINEER concludes that the Project is not substantially complete, he shall notify the CONTRACTOR in writing, stating his reasons therefore. If, after said seven days and after consideration of the OWNER'S objections, the ENGINEER considers the Project substantially complete, he will execute and deliver to the OWNER and the CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from

the tentative certificate as he believes justified after consideration of any objections from the OWNER.

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

36. Cleaning Up

The CONTRACTOR will keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work, and at the completion of the Work he will remove all waste materials, rubbish and debris from and about the premises as well as tools, construction equipment and machinery, and surplus materials, and will leave the site clean and ready for occupancy by the OWNER. The CONTRACTOR will restore to their original condition those portions of the site not designated for alteration by the Contract Documents. Also see paragraph 7 of these Special Conditions pertaining to clean-up.

37. Miscellaneous

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

The duties and obligations imposed by the General Conditions and the rights and remedies available hereunder, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon the CONTRACTOR and the rights and remedies available to the OWNER and ENGINEER thereunder, shall be in addition to and not a limitation of any otherwise imposed or available by law, by special guarantee or other provisions of the Contract Documents.

Should the OWNER or the CONTRACTOR suffer injury or damage to its person or property because of any error, omission or act of the other or of any of his employees or agents or others for whose acts he is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.

The Contract Documents shall be governed by the law of the place of the Project.

38. Safety and Health Regulations

The Contractor shall comply with the Department of Labor Safety and Health Act of 1970 (P.L. 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (P.L. 91-54).

39. Siltation and Soil Erosion

The Contractor shall make every effort possible to assure a minimum amount of siltation and erosion will occur on the job site during construction.

40. Permanent Reference Points, Bench Marks, and Property Markers  
The CONTRACTOR alone will be responsible for the protection and preservation of all permanent reference points, permanent bench marks, property corners, and property line points. The CONTRACTOR will make no changes or relocations without the written approval from the OWNER. The CONTRACTOR will report to the ENGINEER whenever any reference point, etc., is lost, damaged or destroyed or requires relocation and/or establishment of temporary points for relocation of said permanent point. The CONTRACTOR will have a registered land surveyor replace and accurately relocate all permanent points so lost, damaged, destroyed, or moved. The re-establishment of any said point shall be considered incidental to the cost of construction and therefore at no additional cost to the OWNER.

41. Existing Utilities  
Also see Technical Specifications, Section 02220.

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 public or private utility companies.

The available information concerning the location of existing underground utilities is shown on the Drawings. While it is believed that the locations shown are reasonably correct, neither the Engineer nor the Owner can guarantee the accuracy or adequacy of this information.

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) that are not shown on the Drawings. The Engineer and Owner have no objection to the Contractor arranging for the said utility companies, agencies, or departments to locate and uncover their own utilities; however, the Contractor shall bear the entire responsibility and cost for locating and avoiding, or repairing damage to said existing utilities.

Where existing utilities or appurtenant structures, either underground or above-ground, are encountered, they shall not be displaced or disturbed unless necessary, and in such case shall be replaced in as good or better condition than found as quickly as possible. Relocation and/or replacement of all utilities and appurtenant structures to accommodate the construction work shall be at the Contractor's expense, unless such relocation and/or replacement is by statute or agreement the responsibility of the owner of the utility.

Where a sewer line is to be installed within 18 inches vertically or 10 feet horizontally of a water line, that section of the sewer line shall be encased in concrete, according to the requirements of Paragraph 3.10 B, Section 02700.

A list of the utility companies which service the project area are on the cover sheet of the drawings. The utilities are not limited to those on said list.

42. Coordination

All Contractors are advised that various Contracts will be awarded simultaneously with their Contracts. It is imperative that the various Contractors coordinate its activities and cooperate with the other Contractors to assure expedient completion of the Project. Any conflicts should be brought to the attention of the Engineer.

43. Care of Shrubbery

Reasonable care shall be taken during construction to avoid damage to vegetation. Ornamental shrubbery and tree branches shall be temporarily tied back, where appropriate, to minimize damage. Trees, which receive damage to branches, shall be trimmed of those branches to improve the appearance of the tree. Tree trunks receiving damage from equipment shall be treated with a tree dressing.

44. Water for Testing and Disinfecting Purposes

Where water is required for testing and disinfecting water lines and storage tanks or testing and flushing sewer lines, the Contractor shall be responsible for all costs of said water. In the case where test water is to be purchased, the Contractor shall arrange for the purchase and shall pay all costs associated with the purchase including tap fee if applicable.

Note: The Owner will furnish water to Contractors for testing and sterilization at a cost not to exceed \$2.00/1,000 gallons. Contractors are responsible for all charges for water losses caused by leaks which occur during the one year warranty period.

Water volume used for testing and sterilization shall be computed as the difference in the master readings and the average of the readings recorded during the six months prior to construction.

END OF SECTION





**SECTION 6**  
**TECHNICAL SPECIFICATIONS**



SECTION 6  
TECHNICAL SPECIFICATIONS  
CONTRACT 9 – WATER SYSTEM IMPROVEMENTS

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SECTION 01010

GENERAL REQUIREMENTS

CONTRACT No. 9- WATER SYSTEM IMPROVEMENTS

SUMMARY OF WORK

PART 1 - GENERAL

1.0 WORK COVERED BY CONTRACT DOCUMENTS

1.1 SCOPE

Division 1 - General Requirements shall apply to all Divisions of the Specifications. Any conflict shall be called to the attention of the Engineer for clarification and ruling.

1.2 GENERAL DESCRIPTION

A. These specifications and drawings accompanying them describe the work to be done and the materials to be furnished for installation of all specified work, on Contract No. 9 – Water System Improvements.

B. By submission of his bid, the Contractor acknowledges that he has acquainted himself with all conditions which may affect the work as would be evident from a thorough investigation of the job site, and these specifications covering the work for the purpose of coordinating his work and cost, and agrees that the Owner will not be held liable for any additional costs incurred by the Contractor for causes or conditions which could or should have been determined by such an investigation.

1.3 MANAGER'S NAME AND PHONE NUMBER

Mary Jo McCord, Chairman  
Nicholas County Water District  
1639 Old Paris Road (SR 32)  
Carlisle, KY 41749  
(859) 289 - 3157

1.4 The Drawings and Specifications are intended to be fully explanatory, however, should anything be shown, indicated or specified on one and not the other, it shall be done the same as if shown, indicated or specified in both.

1.5 It shall be the responsibility of all Contractors and subcontractors to carefully examine all Drawings, Specifications and Contract Documents pertaining to all phases of the construction in order that Contractor and Subcontractors may foresee all requirements for coordination of their work. Submission of a bid shall be construed as evidence that such

an examination has been made. Claims based on unforeseen requirements will not be considered.

- 1.6 Should any error or inconsistency appear in Drawings or Specifications, the Contractor, before proceeding with the work, must make mention of the same to the Engineer for proper adjustment, and in no case proceed with the work in uncertainty or with insufficient drawings.
- 1.7 Contractors shall follow sizes in specifications or figures on drawings, in preference to scale measurements and follow detail drawings in preference to general drawings.
- 1.8 Where it is obvious that a drawing illustrates only a part of a given work or of a number of items, the remainder shall be deemed repetitious and so constructed.

## PART 2 - SCOPE OF WORK

### 2.1 WORK COVERED BY CONTRACT DOCUMENTS

### 2.2 GENERAL

- A. The work to be performed consists of furnishing all materials, labor, equipment and the execution of all operations necessary for the completion of Contract No. 9 – Water System Improvements.

The major items of work include but are not limited to:

1. Construction of Contract No. 9 – Water System Improvements and appurtenances. All miscellaneous items of work shown by the drawings and/or described in the specifications.

### 2.3 CONTRACTS

### 2.4 NOTICE AND SERVICE THEREOF

- A. Any notice to the Contractor from the Owner relative to any part of this Contract, shall be in writing and considered delivered and the service thereof completed, when such notice is posted, by mail, to the Contractor at his last given address, or delivered in person to the Contractor or his authorized representative on the work site.

### 2.5 DIVISION OF SPECIFICATIONS

Division of specifications into sections is done for convenience of reference and is not intended to control Contractors in dividing work among subcontractors or to limit scope of work performed by any trade under any given section.



## 2.6 CONFLICTS

- A. If and when doubt exists in the mind of the Bidder as to the true meaning of any part of the Bidding Documents, the Bidder shall request interpretation thereof in accordance with the Instructions to Bidders. Alleged "answers by telephone" will not be adjudged as legitimate interpretations of conflicting information. Official interpretations shall be by Addendum only, within the time frame indicated in the Instructions to Bidders and/or the individual sections of the Specifications.
- B. If a conflict occurs in or between bidding documents regarding methods of performing the work or the material required, and the Bidder does not obtain a written decision (official Addendum) with respect thereto prior to submitting his proposal, he shall be deemed to have bid upon the more expensive way of doing the work and the better quality of material. If the Owner and/or Engineer later elects to use the less expensive method, less expensive quality or less quantity of material the Owner shall receive a suitable credit.
- C. Refer to the General Conditions and Special Conditions for Contract requirements.
- D. The intent of the contract documents is to include all items necessary for the proper execution and completion of the work. Anything called for in the specifications and not shown on the drawings or shown on the drawings and not called for in the specifications, shall be included in the Contractor's work, the same as if included in both. In the event of a doubt arising as to the true intent and meaning of the drawings and specifications, the Contractor shall report it at once to the Engineer. The Engineer shall furnish, with reasonable promptness, additional instructions, by means of drawings or otherwise, necessary for the proper execution of the work. All such drawings and instructions shall be consistent with the contract documents, true developments thereof and reasonably inferable therefrom. The work shall be executed in conformity therewith and the Contractor shall do no work without proper drawings and instructions. In case of conflicts between the various contract documents, the order of precedence will be set out in Special Conditions at paragraph 12.
- E. The Contractor shall make a thorough examination of the site and study all drawings and specifications and all conditions relating to the erection of the work. Materials or labor evidently necessary for the proper and complete execution of the work, which are not specifically mentioned although reasonably inferred therefrom, shall be included in the work.

## 2.7 BENEFICIAL USAGE (SUBSTANTIAL COMPLETION)

- A. The date of beneficial usage of the project, or a designated portion thereof, is the date where construction is sufficiently completed on the project for the use for which it is intended.

- B. Corrective work and the replacement of defective equipment or materials and the adjustment of control apparatus shall not delay the determination of beneficial usage.
- C. When the majority of the work is complete and ready for operation, but cannot be certified as substantially complete because of incomplete items impossible to complete due to weather conditions, payments will be authorized for the amount of work completed, withholding reasonable amounts to cover the incomplete work. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims, and shall not terminate the contract.
- D. When the Owner begins to use the facilities or any portion thereof, prior to contract completion, the operation, maintenance, utilities and insurance become the responsibility of the Owner.

## 2.8 LIQUIDATED DAMAGES

Should the Contractor fail to complete the work under his Contract and make the Project available for Beneficial Usage on or before the date stipulated for Beneficial Usage (or such later date as may result from extensions in the Contract Time granted by the Owner), the Contractor agrees that the Owner is entitled to, and shall pay the Owner, as liquidated damages, the sum of Five Hundred Dollars (\$500.00) for each consecutive calendar day until Beneficial Usage (Substantial Completion) is reached as described herein.

## 2.9 SUBSTITUTION - MATERIALS AND EQUIPMENT

- A. Substitution of major equipment and materials previously submitted by the Contractor and reviewed by the Engineer will be considered only for the following reasons:
  - 1. Unavailability of the material or equipment due to conditions beyond the control of the supplier.
  - 2. Inability of the supplier to meet contract schedule.
  - 3. Technical noncompliance to specifications.
- B. Substitution of other equipment and materials named in the specifications will be considered, provided the proposed substitution will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function of that specified. The burden for proving equality is that of the Contractor.

- C. Inclusion of a certain make or type of materials or equipment in the Contractor's estimate shall not obligate the Owner to accept such material or equipment if it does not meet the requirements of the plans and specifications.
- D. Also, see Section 01600.

### PART 3 - CONTRACTOR USE OF PREMISES

#### 3.1 RELEASE OF SITE

- A. All access to the site shall be as defined by the Owner.
- B. Contractor shall insure that no hazardous situations exist at the site during working hours or are left during non-working hours.

#### 3.2 SCHEDULING OF WORK

- A. The work shall be scheduled so the project can be put into service at the earliest possible date.
- B. All work shall be completed within time limits established in other portions of the Contract Documents.

#### 3.3 TRAFFIC MAINTENANCE

- A. All traffic must be maintained at all times on public streets and roadways. No road or street shall be closed without special written permission from the Owner.
- B. Traffic must be maintained on State maintained roads in accordance with the Standard Drawings, details and specification Section 01570. Contractor will be required to adhere to all provisions of the Kentucky Transportation Cabinet Permit for the project.

END OF SECTION



SECTION 01030

LABOR PROVISIONS

PART 1 - GENERAL

1.1 FUNDING SOURCES

This project is being funded by GOLD and USDA – Rural Development.

1.2 WORK INCLUDED

The Contractor shall conform to all provisions of the Kentucky Department of Labor and Revised Statutes as they may apply to the work to be accomplished under these specifications.

1.3 WAGE RATES

**The Applicable State Wage Decisions are provided herein at Section 4.** These schedules of wages shall govern the work. The Contractor shall post at appropriate, conspicuous points at the project site, copies of these wage decisions. The Contractor will utilize, when feasible, local labor and will pay them wages commensurate with these prevailing wages. Two (2) copies of all payroll records shall be submitted to the OWNER within one week after each pay period.

1.4 HOURS OF WORK

Hours of work shall be as set by the latest State Wage Laws and Regulations. Overtime shall be determined and paid pursuant to the latest State Wage Laws.

Whenever overtime work is scheduled, the Contractor shall give prior notice to the Owner & Engineer.

END OF SECTION



## SECTION 01060

## REGULATORY REQUIREMENTS

1.0 CODES

All construction work shall be done in strict accordance with the latest edition of the Kentucky Building Code, National Electrical Code (NEC) and supplements, the requirements of the local electrical utility company, local codes, and as specified herein. All work shall be performed by skilled workmen in a neat manner and all equipment shall be cleaned before final acceptance. A partial list of codes is as follows:

- Kentucky Building Code
- City and/or County Building Inspector
- National and Local Electrical Codes
- National Fire Protection Association (NFPA)
- State Fire Marshal
- Local Fire Marshal
- Standards of Safety
- O.S.H.A.
- KY Division of Water

END OF SECTION





## SECTION 01070

## ABBREVIATIONS AND SYMBOLS

## PART 1 - GENERAL

## 1.1. REQUIREMENTS INCLUDED

Where any of the following abbreviations are used in the Contract Documents, they shall have the meaning set forth as follows.

## 1.2. QUALITY ASSURANCE

- A. For the products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. The date of the standard is that in effect as of the Bid date, or date of Owner-Contractor Agreement when there are no bids, except when a specific date is specified.
- C. When required by individual Specifications section, obtain a copy of standard. Maintain a copy at job site during submittals, planning and progress of the specific work, until Substantial Completion.

## 1.3. SCHEDULE OF REFERENCES

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturers Association.
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
IEEE	Institute of Electrical and Electronic Engineers, Inc.
AISC	American Institute of Steel Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
API	American Petroleum Institute
ASCE	American Society of Civil Engineers

ASHRAE Engineers	American Society of Heating, Refrigerating and Air Conditioning
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
CS	Commercial Standard
IBR	Institute of Boiler and Radiator Manufacturers
IPS	Iron Pipe Size
JIC	Joint Industry Conference Standards
KDOH	Kentucky Department of Highways
NBS	National Bureau of Standards
NEC	National Electrical Code; latest edition
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.
Fed.	Federal Specifications issued by the Federal Supply Spec. Service of the General Services Administration, Washington, D.C.
125-lb ANSI	American National Standard for Cast-Iron Pipe
150-lb ANSI	Flanges and Flanged Fittings, Designation B16.24 (1991), for the appropriate class
AWG	American or Brown and Sharpe Wire Gage
NPT	National Pipe Thread
OS&Y	Outside screw and yoke
Stl. Wg	U. S. Steel Wire, Washburn and Moen, American Steel and Wire or Roebling Gage
UL	Underwriters' Laboratories
USS	United States Standard Gage

WOG Water, Oil, Gas

WSP Working Steam Pressure

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION



## SECTION 01090

## REFERENCE STANDARDS

## PART 1 - GENERAL

## 1.1. QUALITY ASSURANCE

- A. For Products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Material shall bear Underwriters' Laboratories label where such a standard has been established and listed by Underwriters' Laboratories, Inc. All materials, equipment and appliances shall conform to requirements of standards referenced here.
- C. Conform to reference standard by date of issue current on date of Contract Documents.
- D. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

## 1.2. SCHEDULE OF REFERENCES

- ACI American Concrete Institute  
Box 19150  
Reford Station  
Detroit, MI 48219
- AGC Associated General Contractors of America  
1957 E Street, N.W.  
Washington, DC 20006
- AITC American Institute of Timber Construction  
7012 South Revere Parkway, Suite 140  
Englewood, CO 80112
- ANSI American National Standards Institute  
1819 L. Street, N.W. (6<sup>th</sup> Floor)  
Washington, D.C. 20036

ASTM American Society for Testing and Materials  
100 Barr Harbor Drive  
West Conshohocken, PA 19428-2959

CDA Copper Development Association  
260 Madison Avenue  
New York, NY 10016

CRSI Concrete Reinforcing Steel Institute  
933 Plum Grove Road  
Schaumburg, IL 60173-4758

FCC Federal Communications Commission  
DOT, M443.2  
Utilization and Storage Section  
Washington, DC 20590

FM Factory Mutual System  
500 River ridge Drive  
Norwood, MA 02062

IEEE Institute of Electrical and Electronics Engineers  
445 Hoes Lane, P.O. Box 1331  
Piscataway, N.J. 08855-1331

NEMA National Electrical Manufacturers' Association  
1300 N. 17<sup>th</sup> Street, Suite 1847  
Rosslyn, VA 22209

NFPA National Fire Protection Association  
1 Buttery March Park  
P.O. Box 9101  
Quincy, MA 02269-9101

PCA Portland Cement Association  
5420 Old Orchard Road  
Skokie, IL 60077

REA Rural Electrification Administration  
USDA-REA-ASD  
Room 0180  
ATTN: Publications  
14th and Independence Avenue, S.W.  
Washington, DC 20250

UL Underwriters' Laboratories, Inc.  
333 Pfingston Road  
Northbrook, IL 60062-2096

## PART 2 - REFERENCED STANDARDS

All work performed in connection with this contract shall be in accordance with the latest version of the following standards:

Occupational Safety and Health Administration (OSHA)

Applicable Telecommunications Standards

National Fire Protection Association

National Electrical Code (NEC)

National Electrical Safety Code (NESC)

Federal Communications Commission

National Telecommunications and Information Administration

Electronics Industries Association (EIA)

American National Standards Institute

Rural Electrification Administration

## PART 3 - EXECUTION

NOT USED.

END OF SECTION





## SECTION 01300

## SUBMITTALS

## PART 1 - GENERAL

## 1.1. WORK INCLUDED

Shop drawings, descriptive literature, project data and samples (when samples are specifically requested) for all manufactured or fabricated items shall be submitted by the Contractor to the Engineer for examination and review in the form and in the manner required by the Engineer. All submittals shall be furnished as set out in paragraph 1.5 hereinafter and shall be checked and reviewed and stamped and signed as approved by the Contractor before submission to the Engineer. The review of the Drawings by the Engineer shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is satisfactory. Review of such drawings will not relieve the Contractor of the responsibility for any errors which may exist, as the Contractor shall be responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work.

## 1.2. RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. General Conditions.
- B. Section 01720 - Project Record Documents (As Built).

## 1.3. DEFINITIONS

The term "submittals" shall mean shop drawings, manufacturer's drawings, catalog sheets, brochures, descriptive literature, diagrams, schedules, calculations, material lists, performance charts, test reports, office and field samples, and items of similar nature which are normally submitted for the Engineer's review for conformance with the design concept and compliance with the Contract Documents.

## 1.4. GENERAL CONDITIONS

Review by the Engineer of shop drawings or submittals of material and equipment shall not relieve the Contractor from the responsibilities of furnishing same of proper dimension, size, quality, quantity, materials, and all performance characteristics to efficiently perform the requirements and intent of the Contract Documents. Review shall not relieve the Contractor from the responsibility for errors of any kind on the shop drawings. Review is intended only to assure conformance with the design concept of the Project and compliance with the information given in the Contract Documents.

Review of shop drawings shall not be construed as releasing the Contractor from the responsibility of complying with the Specifications.

#### 1.5. GENERAL REQUIREMENTS FOR SUBMITTALS

##### A. Shop Drawings

1. Shop drawings shall be prepared by a qualified detailer. Details shall be identified by reference to sheet and detail numbers shown on Contract Drawings. Where applicable, show fabrication, layout, setting, and erection details.
2. Shop drawings are defined as original drawings prepared by the Contractor, subcontractors, suppliers, or distributors performing work under this Contract. Shop drawings illustrate some portion of the work and show fabrication, layout, setting, or erection details of equipment, materials, and components. The Contractor shall, except as otherwise noted, have prepared the number of reviewed copies required for contractor distribution plus three (3), which will be retained by the Engineer. Shop drawings shall be folded to an approximate size of 8-1/2" x 11" and in such manner that the title block will be located in the lower right-hand corner of the exposed surface.

B. Project data shall include manufacturer's standard schematic drawings modified to delete information which is not applicable to the Project, and shall be supplemented to provide additional information applicable to the Project. Each copy of descriptive literature shall be clearly marked to identify pertinent information as it applies to the Project.

C. Where samples are required, they shall be adequate to illustrate materials, equipment, or workmanship, and to establish standards by which completed work is judged. Provide sufficient size and quantity to clearly illustrate functional characteristics of product and material, with integrally related parts and attachment devices, along with a full range of color samples.

D. All submittals shall be referenced to the applicable item, section, and division of the Specifications, and to the applicable Drawing(s) or Drawing schedule(s). All submittals shall bear the Engineer's project code as noted in the upper right corner of this sheet.

- E. The Contractor shall review and check submittals. Including those of any subcontractor(s) and shall indicate his review and approval by placing and executing the following on all shop drawings:

This shop drawing has been reviewed by [Name of Contractor] and approved with respect to the mean, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incidental thereto. [Name of Contractor] also warrants that this shop drawing complies with contract documents and comprises no variation thereto.

By: \_\_\_\_\_

Date: \_\_\_\_\_

- F. make any changes to structures, piping, controls, electrical work, mechanical work etc., that may be necessary to accommodate this equipment or material. Should equipment other than that on which design drawings are based be accepted by the Engineers, shop drawings shall be submitted detailing all modification work and equipment changes made necessary by the substituted items.
- G. Additional information If the submittals deviate from the Contract Drawings and/or Specifications, the Contractor shall advise the Engineer, in letter of transmittal of the deviation and the reasons therefore. All changes shall be clearly marked on the submittal with a bold red mark. Any additional costs for modifications shall be borne by the Contractor.
- H. In the event the Engineer does not specifically reject the use of material or equipment at variance to that which is shown on the Drawings or specified, the Contractor shall, at no additional expense to the Owner, and using methods reviewed by the Engineer, on particular items, such as special drawings, schedules, calculations, performance curves, and material details, shall be provided when specifically requested in the technical Specifications.
- I. Submittals for all electrically operated items (including instrumentation and controls) shall include complete wiring diagrams showing leads, runs, number of wires, wire size, color coding, all terminations and connections, and coordination with related equipment.
- J. Equipment shop drawings shall indicate all factory or shop paint coatings applied by suppliers, manufacturers, and fabricators; the Contractor shall be responsible for ensuring the compatibility of such coatings with the field-applied paint products and systems.

- K. Fastener specifications of manufacturer shall be indicated on equipment shop drawings.
- L. Where manufacturers' brand names are given in the Specifications for building and construction materials and products, such as grout, bonding compounds, curing compounds, masonry cleaners, waterproofing solutions, and similar products, the Contractor shall submit names and descriptive literature of such materials and products he proposes to use in this Contract.
- M. No material shall be fabricated or shipped unless the applicable drawings or submittals have been reviewed by the Engineer and returned to the Contractor.
- N. All bulletins, brochures, instructions, parts lists, and warranties packaged with and accompanying materials and products delivered to and installed in the Project shall be saved and transmitted to the Owner through the Engineer.

#### 1.6. CONTRACTOR RESPONSIBILITIES

- A. Verify field measurements, field construction criteria, catalog numbers, and similar data.
- B. Coordinate each submittal with requirements of Work and of Contract Documents.
- C. Notify Engineer, in writing at time of submission, of deviation in submittals from requirement of Contract Documents.
- D. Begin no work, and have no material or products fabricated or shipped which require submittals until return of submittals with Engineer's stamp and initials or signature indicating review.

#### PART 2 - PRODUCTS

NOT USED.

#### PART 3 - EXECUTION

NOT USED.

END OF SECTION

## SECTION 01440

## CONTRACTOR QUALITY CONTROL

## PART 1 - GENERAL

## 1.1. WORK INCLUDED

- A. The General Contractor shall set forth for immediate execution a detailed and well organized quality control plan and implementation program.

## 1.2. CODES, STANDARDS AND INDUSTRY SPECIFICATIONS

- A. Material or operations specified by reference to published specifications of a manufacturer, testing agency, society, association or other published standards shall comply with requirements in latest revisions thereof and amendments or supplements thereto in effect on date of (Advertisement for Bids).
- B. Discrepancies between referenced codes, standards, specifications and Contract Documents shall be governed by the latter unless written interpretation is obtained from Engineer.
- C. Material or work specified by reference to conform to a standard, code, law or regulation shall be governed by Contract Documents when they exceed requirements of such references; referenced standards shall govern when they exceed Contract Documents.
- D. Proof of Compliance

Whenever Contract Documents require that a project be in accordance with Federal Specification, ASTM designation, ANSI specification, or other association standard, at Engineer request, Contractor shall present an affidavit from manufacturer certifying that product complies therewith. Where requested or specified, submit supporting test data to substantiate.

## E. PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices and/or lump-sum prices contained in the Bidding Schedule.

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices and/or lump-sum prices contained in the Bidding Schedule.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.1. GENERAL

The General Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract. The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both on-site and off-site, and shall be keyed to the proposed construction sequence.

3.2. QUALITY CONTROL PLAN

A. General

The General Contractor shall furnish for review by the Engineer and Owner not later than 30 days after receipt of notice to proceed, a Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract. The plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used. The Engineer will consider an interim plan for the first 30 days of operation.

B. Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Engineer/Owner reserves the right to require the Contractor to make changes in his CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.3. SUBMITTALS

Submittals shall be as specified in Section 01300 SUBMITTAL. The CQC organization shall be responsible for certifying that all submittals are in compliance with the contract requirements.

3.4. CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the

requirements of the contract. The controls shall be adequate to cover all construction operations, including both on-site and off-site fabrication, and will be keyed to the proposed construction sequence.

### 3.5. TESTS

#### A. Testing Procedure

The Contractor shall perform tests specified or required to verify that control measures are adequate to provide a product which conforms to contract requirements. Testing includes operation and/or acceptance tests when specified. A list of tests to be performed shall be furnished as a part of the CQC plan. The list shall give the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required. The Contractor shall perform the following activities and record and provide the following data:

1. Verify that testing procedures comply with contract requirements.
2. Verify that facilities and testing equipment are available and comply with testing standards.
3. Check test instrument calibration data against certified standards.
4. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
5. Results of all tests taken, both passing and failing tests, will be recorded on the Quality Control report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test will be given. Actual test reports may be submitted later, if approved by the Engineer, with a reference to the test number and date taken. An information copy of tests performed by an off-site or commercial test facility will be provided directly to the Engineer. Failure to submit timely test reports, as stated, may result in nonpayment for related work performed and disapproval of the test facility for this contract.

#### B. Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials will be borne by the Contractor.

### 3.6. COMPLETION INSPECTION

At the completion of all work or any increment thereof established by a completion time, the Contractor shall conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved plans and specifications. Such a list of deficiencies shall be included in the CQC documentation, and shall include the estimated date by which the deficiencies will be corrected. The Contractor shall make a second

inspection to ascertain that all deficiencies have been corrected and so notify the Engineer. These inspections and any deficiency corrections required by this paragraph will be accomplished within the time stated for completion of the entire work or any particular increment thereof if the project is divided into increments by separate completion dates.

### 3.7. DOCUMENTATION

The Contractor shall maintain current records of quality control operations, activities, and tests performed, including the work of subcontractors and suppliers. These records shall be on an acceptable form and shall include factual evidence that required quality control activities and/or tests have been performed, including but not limited to the following:

- A. Contractor/subcontractor and their area of responsibility.
- B. Operating plant/equipment with hours worked, idle, or down for repair.
- C. Work performed today, giving location, description, and by whom.
- D. Test and/or control activities performed with results and references to specifications/plan requirements.
- E. Material received with statement as to its acceptability and storage.
- F. Identify submittals reviewed, with contract reference, by whom, and action taken.
- G. Off-site surveillance activities, including actions taken.
- H. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- I. List instructions given/received and conflicts in plans and/or specifications.
- J. Contractor's verification statement.
- K. These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Engineer weekly within 20 hours after the date(s) covered by the report, except that reports need not be submitted for days on which no work is performed. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the Contractor. The report from the Contractor shall include copies of test reports



and copies of reports prepared by all subordinate quality control personnel.

3.8. SAMPLE FORMS

Sample forms for Daily Construction Quality Control Report and Deficiency shall be provided by the General Contractor and submitted to Engineer for acceptance.

3.9. LINES AND GRADES

- A. Be responsible for properly laying out work, and for lines and measurements for the work executed under Contract Documents. Verify figures indicated on Drawings before laying out work, and report errors or inaccuracies in writing to the Engineer before commencing work.
- B. All trades shall be responsible for layout of their work, based on reference lines and measurements established by the General Contractor.
- C. Establish and maintain permanent hubs and other control points throughout construction.

END OF SECTION



SECTION 01530

BARRIERS

PART 1 - GENERAL

1.1. DESCRIPTION

- A. Temporary Railing: Temporary railing shall be provided around open pits and other locations where needed, to prevent accidents or injury to workers and/or public.
- B. Temporary Barriers: Temporary barriers shall be provided for safety for traffic control purposes.

1.2. COST

- A. The Contractor shall pay all costs for barriers and railings used on this project

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION



SECTION 01540

SECURITY

PART I - GENERAL

1.1. WORK INCLUDED

- A. Provide barricades, lanterns, and other signs and signals as may be necessary to warn of the dangers in connection with open excavation and obstructions.
- B. Temporary Railing: Temporary railing shall be provided around open pits and other locations where needed, to prevent accidents or injury to workers and/or public.
- C. Perimeter of the site shall be secured with a 6' chain link fence at all times when Owner or Contractor personnel are not present.

1.2. COSTS

- A. Contractor shall pay all costs for protection and security systems.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION



## SECTION 01570

## TRAFFIC REGULATION

## PART 1 - GENERAL

## 1.01 REQUIREMENTS INCLUDED

- A. Construction parking control.
- B. Flagmen.
- C. Flares and lights.
- D. Haul routes.
- E. Traffic signs and signals.
- F. Removal.

## 1.02 RELATED REQUIREMENTS

- A. Section 01530 - Barriers.
- B. Section 01580 - Project Identification Sign.

## 1.03 WORK INCLUDED

- A. The Contractor shall complete all excavations; shall protect all existing structures, utilities, and services; shall furnish all suitable tools and appliances for the safe and convenient handling of all materials to be used on the work; shall lay the pipelines, including valves, valve boxes, fire hydrants, and all other appurtenances thereto; shall install or replace any or all service connections if specified; shall test the lines; shall disinfect water lines; shall replace all walks, driveways, grass plots, or paving; shall remove all surplus materials of every kind; and leave the entire site of the work in a presentable and satisfactory condition; all as specified herein under the various sections.
- B. The specifications for installing pressure mains are intended to conform with the latest revision of AWWA C600, "Installation of Ductile Iron Water Mains and their Appurtenances," and/or AWWA C605 "Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water". The Engineer shall require compliance with those specifications the same as if they were totally incorporated herein, except where these specifications direct otherwise.

## PART 2 - PRODUCTS

### 2.01 SIGNS, SIGNALS, AND DEVICES

- A. Post-mounted and wall-mounted traffic control and informational signs.
- B. Automatic Traffic Control Signals: As approved by local jurisdictions.
- C. Traffic Cones and Drums, Flares, and Lights: As approved by local jurisdictions.
- D. Flagman and Equipment: As required by local jurisdictions.
- E. All traffic control means and methods on state roads shall meet KDOH Standards.

## PART 3 - EXECUTION

### 3.01 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.
- B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in nondesignated areas.

### 3.02 TRAFFIC CONTROL

- A. Whenever and wherever, in the Engineer's opinion, traffic is sufficiently congested or public safety is endangered, Contractor shall furnish uniformed officers to direct traffic and to keep traffic off the highway area affected by construction operations.
- B. Contractor shall abide by local regulations governing utility construction work.
- C. **Traffic control shall be provided according to the Kentucky Department of Highways Manual for Uniform Traffic Control Devices for Streets and Highways. Traffic control will be strictly enforced by KDOH.**
- D. **The KDOH will strictly enforce the tracking of mud or dirt onto State Roads or allowing drainage caused by construction to run onto roadways. Necessary brooms or other equipment for keeping roads clean is required.**



### 3.03 FLAGMEN

Provide trained and equipped flagmen to regulate traffic when construction operations or traffic encroach on public traffic lanes.

### 3.04 FLARES AND LIGHTS

Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

### 3.05 HAUL ROUTES

- A. Consult with authorities, establish public thoroughfares to be used for haul routes and site access.
- B. Confine construction traffic to designated haul routes.
- C. Provide traffic control at critical areas of haul routes to regulate traffic and minimize interference with public traffic.

### 3.06 TRAFFIC SIGNS AND SIGNALS

- A. At approaches to site and on site, install at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- B. Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
- C. Relocate as work progresses, to maintain effective traffic control.

### 3.07 REMOVAL

Remove equipment and devices when no longer required. Repair damage caused by installation. Remove post settings to a depth of 2 feet.

END OF SECTION



SECTION 01580

PROJECT IDENTIFICATION SIGN

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. The Contractor shall provide signs required by these specifications near the site of the work. The signs shall set forth the description of the work and the names of the Owner, Engineer and Contractor as shown hereinafter in these Specifications.
- B. The Contractor for Contract No. 9 – Water System Improvements shall furnish and install four (4) project signs as described in previous paragraph and as detailed hereafter.

PART 2 - PRODUCTS

2.1. SIGNS.

- A. The signs shall be constructed of 3/4" thick APA A-B Exterior grade or marine plywood. Posts shall be 4" x 4" of fencing type material. Prime all wood with white primer.

PART 3 - EXECUTION

3.1. MAINTENANCE

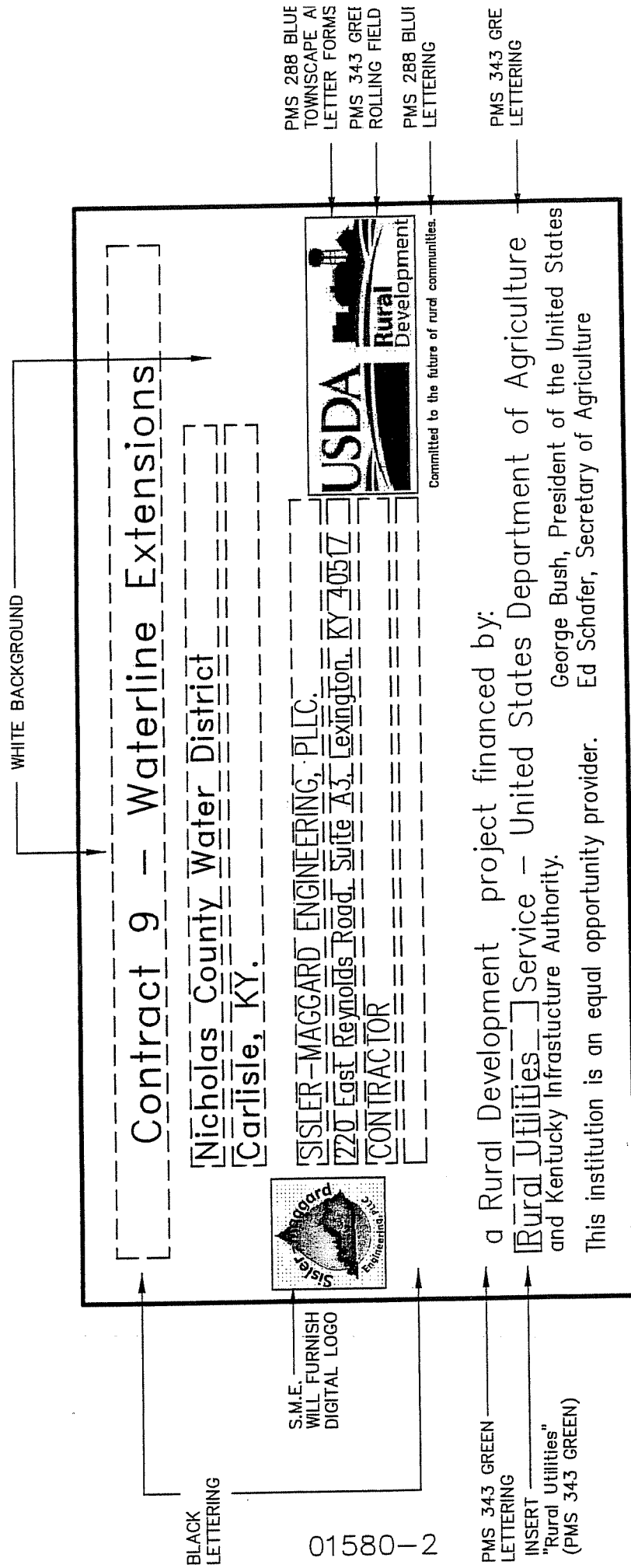
- A. The signs shall be maintained in good condition until completion of the Project. The signs shall be removed at completion of project.

3.2. LOCATION OF SIGNS.

The signs called for in these Specifications shall be placed at the locations selected by the Engineer.

Vertical line of text on the right edge of the page.

construction sign for RURAL DEVELOPMENT projects:



PMS 288 BLUE TOWNSCAPE AI LETTER FORMS  
PMS 343 GREY ROLLING FIELD  
PMS 288 BLUE LETTERING

PMS 343 GRE LETTERING

#05001

BLACK LETTERING

S.M.E. WILL FURNISH DIGITAL LOGO

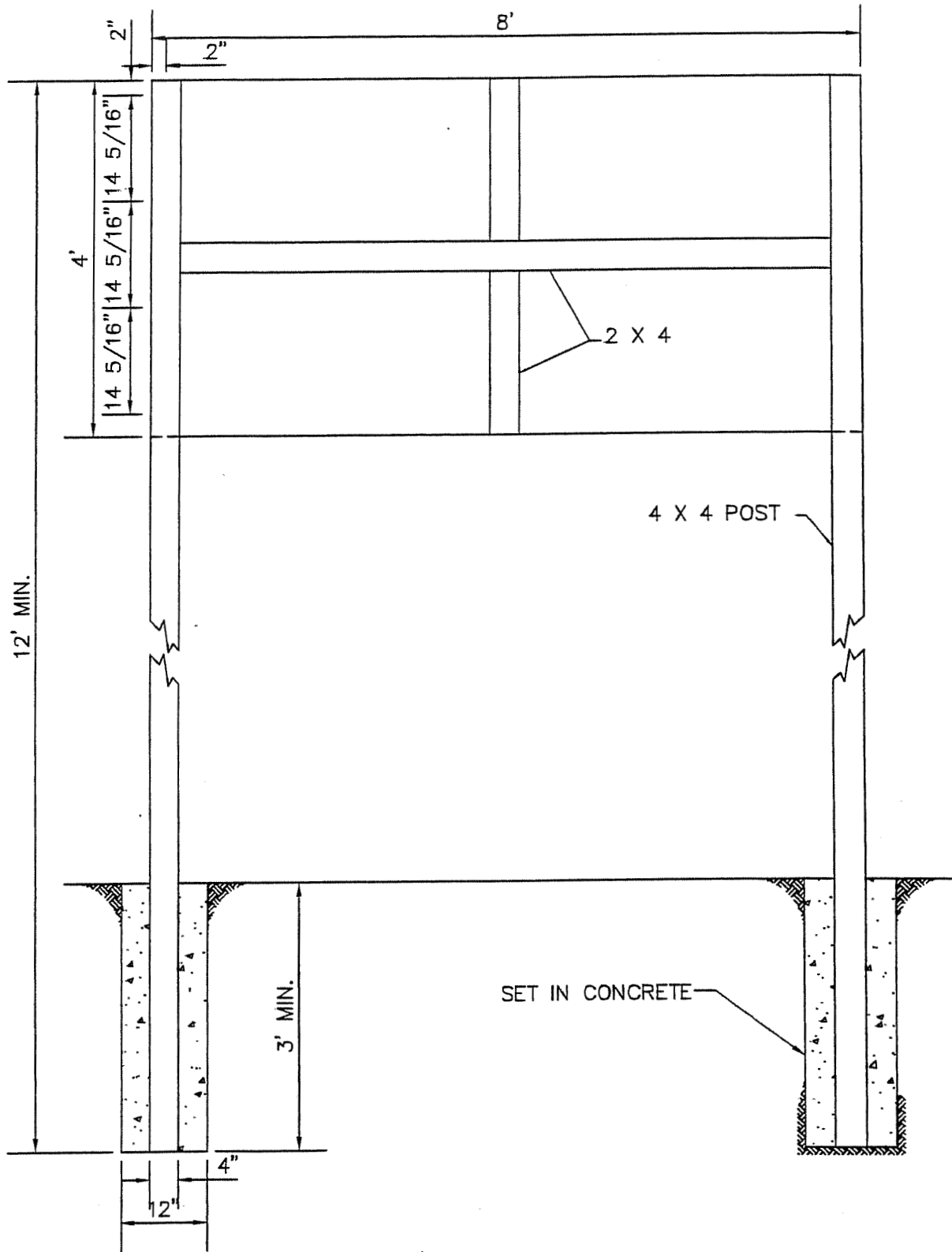
01580-2

PMS 343 GREEN LETTERING  
INSERT "Rural Utilities" (PMS 343 GREEN)

BLACK LETTERING

SIGN DIMENSIONS: 1200mm X 2400mm X 19mm (approx. 4' X 8' X 3/4")  
PLYWOOD PANEL (APA RATED A-B GRADE - EXTERIOR)





ASSEMBLY OF PLYWOOD SIGN

NOT TO SCALE

END OF SECTION  
01580-3





SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1. ORDERING MATERIALS

- A. Immediately following award of Contract for this work, Contractor shall determine source of supply for all materials and length of time required for their delivery, including materials of subcontractors, and order shall be placed for such materials promptly.
- B. If, for any reason, any item specified will not be available when needed and the Contractor can show that he has made a reasonable persistent effort to obtain item in question, the Engineer is to be notified in writing within five (5) days after Contract is signed, and he will either determine source of supply or arrange with the Owner for appropriate substitute within terms of Contract. Otherwise, Contractor will not be excused for delays in securing material specified and will be held accountable if completion of building is thereby delayed.

1.2. STORAGE AND PROTECTION

- A. Each Contractor providing materials and equipment shall be responsible for the proper and adequate storage and protection of his materials and equipment, and for the removal or same upon completion of his work. Storage of materials at the site shall be confined to areas designated by the Owner.

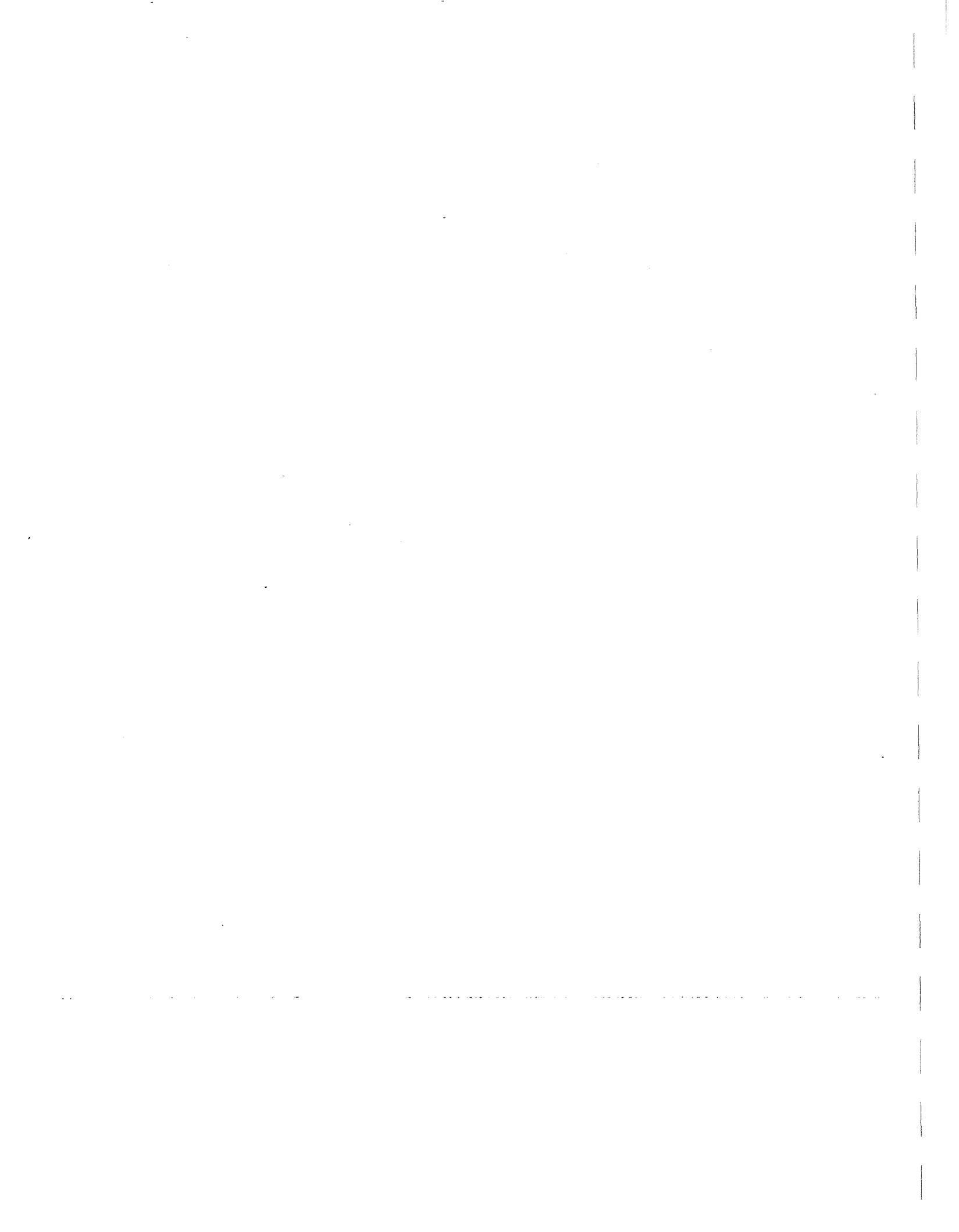
PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION



SECTION 01610

TRANSPORTATION AND HANDLING

PART 1 - GENERAL

1.1. WORK INCLUDED

A. Handling and Distribution:

1. The Contractor shall handle, haul, and distribute all materials and all surplus materials on the different portions of the work, as necessary or required; shall provide suitable and adequate storage room for materials and equipment during the progress of the work, and be responsible for the protection, loss of, or damage to materials and equipment furnished by him, until the final completion and acceptance of the work.
2. Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.

B. Storage of Materials and Equipment

1. All excavated materials and equipment to be incorporated in the work shall be placed so as not to injure any part of the work or existing facilities and so that free access can be had at all times to all parts of the work and to all public utility installations in the vicinity of the work.
2. Materials and equipment shall be kept neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to public travel and adjoining owners, tenants, and occupants.

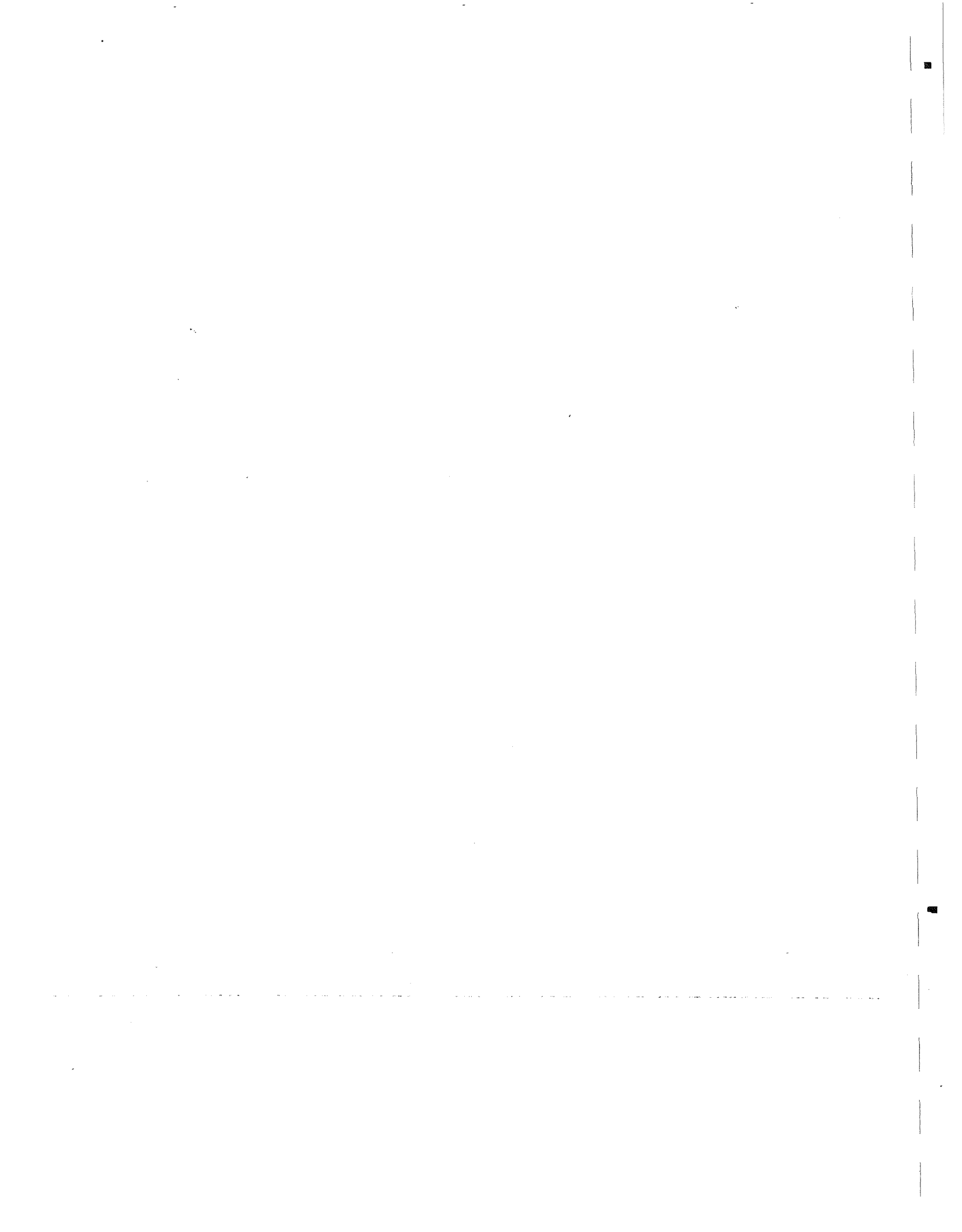
PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION



## SECTION 01650

## STARTING OF SYSTEMS

## PART 1 - GENERAL

## 1.1. WORK INCLUDED:

- A. Starting systems
- B. Demonstration and instructions
- C. Testing, adjusting, and balancing

## 1.2. RELATED SECTIONS

- A. Section 01420 - Inspection Services: Certificates.
- B. Section 01500: Field Office Temporary Facilities and Controls.
- C. Section 01700 - Project Closeout: System operation and maintenance data and extra materials.

## 1.3. STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Engineer and Owner ten days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or for other conditions which may cause damage.
- D. Verify that tests, meter readings, signal strengths, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of responsible manufacturer's representative and/or Contractors' personnel in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

- H. Submit a written report in accordance with Section 01400 that equipment or system has been properly installed and is functioning correctly.

#### 1.4. DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.
- E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- F. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

#### PART 2 - PRODUCTS

NOT USED.

#### PART 3 - EXECUTION

NOT USED.

END OF SECTION

## SECTION 01700

## PROJECT CLOSEOUT

## PART 1 - GENERAL

## 1.1. RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Liquidated Damages: BID PROPOSAL, AGREEMENT AND GENERAL CONDITIONS
- B. Cleaning: Section 01710
- C. Project Record Documents: Section 01720

## 1.2. SUBSTANTIAL COMPLETION

- A. Contractor:
  - 1. Submit written certification to Engineer that Project is substantially complete.
  - 2. Submit list of items to be completed or corrected.
- B. Engineer will make an inspection within seven days after receipt of certification, together with Owner's and Contractor's Representatives.
- C. Should Engineer consider the project substantially complete:
  - 1. Contractor shall prepare and submit to Engineer a list of items to be completed or corrected, as determined by the inspection.
  - 2. Engineer will prepare and issue a Certificate of Substantial Completion containing:
    - a. Date of Substantial Completion.
    - b. Contractor's list of items to be completed or corrected, verified and/or amended by Engineer.
    - c. The time within which Contractor shall complete or correct work of listed items.
    - d. Time and date Owner will assume possession of project or designated portion thereof.
    - e. Responsibilities of Owner and Contractor for:
      - i. Insurance
      - ii. Utilities
      - iii. Operation of mechanical, electrical, and other systems
      - iv. Maintenance and cleaning
      - v. Security

- f. Signatures of:
  - i. Contractor
  - ii. Engineer
  - iii. Owner

3. Owner occupancy of Project or Designated Portion of Project:

- a. Contractor shall:
  - i. Obtain certificate of occupancy.
  - ii. Perform final cleaning in accordance with Section 01710.
- b. Owner will occupy Project under provisions stated in Certificate of Substantial Completion.

4. Contractor: Complete work listed for completion or correction, within designated time.

D. Should Engineer consider that work is not substantially complete:

- 1. He shall immediately notify Contractor, in writing, stating reasons.
- 2. Contractor: Complete work, and send second written notice to Engineer, certifying that Project, or designated portion of Project is substantially complete.
- 3. Engineer and Owner will re-inspect work.

1.3. FINAL INSPECTION

A. Contractor shall submit written certification that:

- 1. Contract Documents have been reviewed.
- 2. Project has been inspected for compliance with Contract Documents.
- 3. Work has been completed in accordance with Contract Documents.
- 4. Equipment and systems have been tested in presence of Engineer and Owner's Representative and are operational.
- 5. Project is completed and ready for final inspection.

B. Engineer will make final inspection within seven (7) days after receipt of certification.

C. Should Engineer consider that work is finally complete in accordance with requirements of Contract Documents, he shall request Contractor to make Project Closeout submittals.

D. Should Engineer consider that work is not finally complete:



1. He shall notify Contractor, in writing, stating reasons.
2. Contractor shall take immediate steps to remedy the stated deficiencies, and send second written notice to Engineer certifying that work is complete.
3. Engineer and Owner will re-inspect work.

1.4. FINAL CLEANING UP

The Work will not be considered as completed and final payment made until all final clean up has been done by the Contractor in a manner satisfactory to the Engineer and Owner. See Section 01710 for detailed requirements.

1.5. CLOSEOUT SUBMITTALS

Project Record Documents: See requirements of Section 01720.

1.6. FINAL APPLICATION FOR PAYMENT

Contractor shall submit final applications for payment in accordance with requirements of GENERAL CONDITIONS (Section 19).

1.7. FINAL CERTIFICATE FOR PAYMENT

- A. Engineer will issue final certificate in accordance with provisions of GENERAL CONDITIONS.
- B. Should final completion be materially delayed through no fault of Contractor, Engineer may issue a Semi-Final Certificate for Payment.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION



## SECTION 01710

## CLEANING

## PART 1 - GENERAL

## 1.1. WORK INCLUDED

- A. During its progress, the work and the adjacent areas affected thereby shall be kept cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.
- B. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes, structures, work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the project. The ditches, channels, drains, pipes, structures, and any other work shall, upon completion of the work, be left in a clean and neat condition.
- C. On or before the completion of the project, the Contractor shall, unless otherwise specifically directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic in, under, and around privies, hoses and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- D. The Contractor shall thoroughly clean all materials and equipment installed by him and his subcontractors, and on completion of the project shall deliver it undamaged and in fresh and new appearing conditions.
- E. The Contractor shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.

1.2. DESCRIPTION

A. Related Requirements Specified Elsewhere:

Project Closeout: Section 01700.

- B. On a continuous basis, maintain premises free from accumulations of waste, debris, and rubbish caused by operations.
- C. At completion of project, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all sight-exposed surfaces; leave Project clean and ready for occupancy.

1.3. SAFETY REQUIREMENTS.

A. Hazards Control:

1. Store volatile wastes in covered metal containers, and remove from premises daily.
2. Prevent accumulation of wastes which create hazardous conditions.
3. Provide adequate ventilation during use of volatile or noxious substances.

B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

1. Do not burn or bury rubbish and waste materials on Project site without written permission from the Owner.
2. Do not dispose of volatile wastes such as mineral spirits, oil, or fuel in open drainage ditches or storm or sanitary drains.
3. Do not dispose of wastes in streams or waterways.

PART 2 - PRODUCTS

2.1. MATERIALS

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

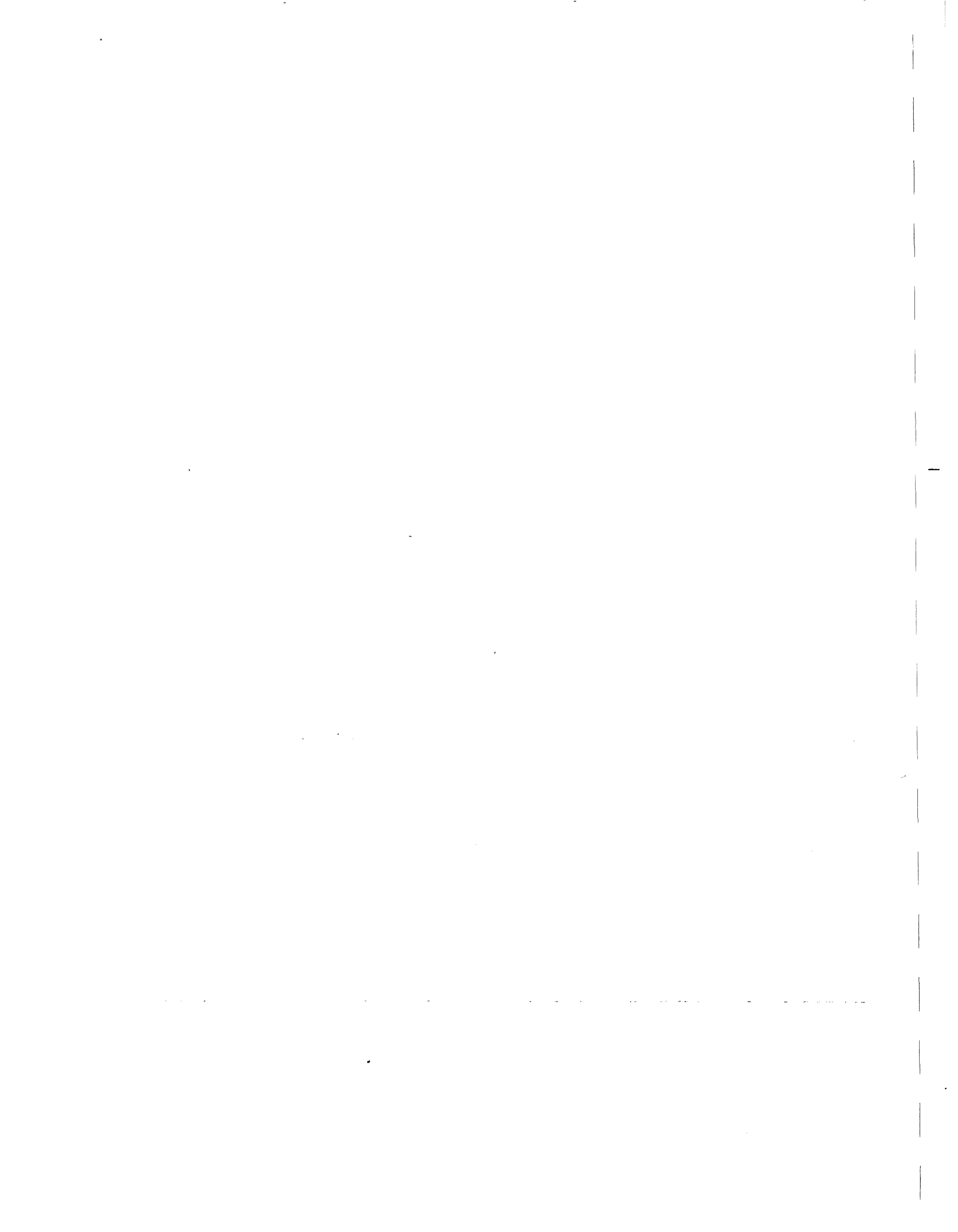
3.1. DURING CONSTRUCTION

- A. Execute cleaning to ensure that grounds and public properties are maintained free from accumulations of waste materials and rubbish.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. At reasonable intervals during progress of Work, clean site and public properties, and properly dispose of waste materials, debris, and rubbish.
- D. Provide on-site containers for collection of waste materials, debris, and rubbish.
- E. Remove waste materials, debris, and rubbish from site and legally dispose of at public or private dumping areas off Owner's property.
- F. The Contractor shall thoroughly clean all materials and equipment installed.

3.2. FINAL CLEANING

- A. Employ experienced workmen, or professional cleaners, for final cleaning.
- B. The Contractor shall restore or replace existing property or structures as promptly and practicable as work progresses.

END OF SECTION



## SECTION 01720

## PROJECT RECORD DOCUMENTS

## PART 1 - GENERAL

## 1.1. WORK INCLUDED

The contractor shall obtain from the Engineer one (1) set of blueline prints of the Contract Drawings. These prints shall be kept and maintained in good condition at the project site and qualified representative of the Contractor shall enter upon these prints, from day-to-day, the actual "as built" record of the construction progress. Entries and notations shall be made in a neat and legible manner and these prints shall be delivered to the Engineer upon completion of the construction. APPROVAL FOR FINAL PAYMENT WILL BE CONTINGENT UPON COMPLIANCE WITH THIS PROVISION.

## 1.2. RELATED REQUIREMENTS SPECIFIED ELSEWHERE:

- A. Maintain at job site, one copy of:
  - 1. Contract Drawings
  - 2. Specifications
  - 3. Addenda
  - 4. Reviewed Shop Drawings
  - 5. Change Orders
  - 6. Other Modifications to Contract.
- B. Store documents in approved location, apart from documents used for construction.
- C. Provide files and racks for storage of documents.
- D. Maintain documents in clean, dry, legible condition.
- E. Do not use record documents for construction purposes.
- F. Make documents available at all times for inspection by Engineer and Owner.

## 1.3. MARKING DEVICES

Provide colored pencil or felt-tip pen for all marking.

## 1.4. RECORDING

- A. Label each document "PROJECT RECORD" in 2-inch high printed letters.
- B. Keep record documents current.

- C. Do not permanently conceal any work until required information has been recorded.
- D. Contract Drawings: Legibly mark to record actual construction:
  - 1. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
  - 2. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
  - 3. Field changes of dimension and detail.
  - 4. Changes made by Change Order or Field Order.
  - 5. Details not on original Contract Drawings.
- E. Specifications and Addenda: Legibly mark up each Section to record:
  - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
  - 2. Changes made by Change Order or Field Order.
  - 3. Other matters not originally specified.
- F. Shop Drawings: Maintain as record documents; legibly annotate Shop Drawings to record changes made after review.

1.5. SUBMITTAL

- A. At completion of project, deliver record documents to Engineer.
- B. Accompany submittal with transmittal letter, in duplicate, containing:
  - 1. Date Project Title and Number Contractor's Name and Address
  - 2. Title and Number of each Record Document
  - 3. Certification that each Document as Submitted is Complete and Accurate
  - 4. Signature of Contractor or his authorized Representative.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED.

END OF SECTION



SECTION 01740  
BASIS FOR PAYMENT

CONTRACT NO. 9 – WATER SYSTEM IMPROVEMENTS

PART 1 - GENERAL

All payment for work done under the provisions of this contract shall be in accordance with the basis for payment for the specific items listed herein and in the bid proposal. The item numbers in this section correspond with the item numbers in the bid proposal.

Items 1-5 Inclusive - Waterlines

Payment for these items shall be based on the unit price bid per linear foot, measured in place, as shown on plans, regardless of depth. These items shall include all work and materials necessary to excavate trenches (including pavement removal and rock excavation) to required depth, install bedding as per detail and install the pipe and ductile iron mechanical joint fittings, blocking, backfilling, trenching, seeding, testing, disinfection, tracer wire, marking tape and cleanup, all in accordance with the Technical Specifications and details.

The cost of all associated items not specifically listed for separate payment in the proposal shall be included as an incidental expense.

Pipe lengths shall be measured in place. Where pipelines diverge, measurement shall be from the center of the pipe main to the end of the diverging line. No deduction in pipe length shall be made for fittings.

Rock excavation is not a separate pay item.

Items 6-9 Inclusive – Gate Valves

Payment for these items shall be made at the unit price bid each for the size of gate valve installed and shall include all work and materials necessary for complete installation, including gate valve, bedding, valve box, cover, collar, backfill, clean up and seeding in accordance with the Technical Specifications and details.

The cost of all associated items not specifically listed for separate payment in the proposal shall be included as an incidental expense.

Item 10 - Blowoff Valve Assembly

Payment for this item shall be made at the unit price bid each and shall include all work and materials necessary for the complete installation, including excavation, bedding, boxes, covers, fittings, gate valves, backfill, clean up and seeding in accordance with the Technical Specifications and details for an in-line and end line blow offs.

The cost of all associated items not specifically listed for separate payment in the proposal shall be included as an incidental expense.

Item 11 - Air Release Valves

Payment for this item shall be made at the unit price bid, each installed and shall include all work and materials necessary for the complete installation including excavation, bedding, fittings, valves, box, cover, tapped connection, backfill, clean up and seeding all in accordance with the Technical Specification and details.

The cost of all associated items not specifically listed for separate payment in the proposal shall be included as an incidental expense.

Items 12 – 15 inclusive - Bore & Jack Casing w/Water Line

Payment for these items shall be made at the unit price bid per linear foot for the size of water line encased (as set out in specifications), length to be measured in place including all boring, casing, sealing of casing, carrier pipe, clean up and seeding in accordance with the Technical Specifications and details. Please note that the payment for this item includes the installation of a carrier pipe on the inside and the closure of the end of the casing with concrete.

The cost of all associated items not specifically listed for separate payment shall be included as an incidental expense.

Rock boring is not a separate pay item.

Item 16 – Casing Pipe (Open Cut)

Payment for these items shall be made at the unit price bid per linear foot for the size of sewer line encased (as set out in specifications), length to be measured in place including casing spacers, sealing of casing (boot), carrier pipe (sewer line), clean up and seeding in accordance with the Technical Specifications and details. Please note that the payment for this item includes the installation of a carrier pipe (sewer line) on the inside and the closure of the end of the casing with concrete or boot.

The cost of all associated items not specifically listed for separate payment shall be included as an incidental expense.

Rock boring is not a separate pay item.

Item 17 - Asphalt Pavement, Concrete Surface, Gravel Surface Replacement

Payment of this item shall be based on the unit price bid per square yard of various items furnished as listed in the proposal and in accordance with the Technical Specifications and details. Payment is to be based on the measured quantity of the various items placed within limits shown in details as necessary to furnish and place same, including preparation of trenches.

The cost of all associated items not specifically listed for separate payment shall be included as an incidental expense.

#### Item 18 - Concrete Encasement

Payment for this item shall be based on the unit price per linear foot of encasement. Payment is to be the measured length of concrete encasement within the limits as authorized by the Engineer, and shall include all work and materials necessary to install same, in accordance with the Technical Specifications and details.

The cost of all associated items not specifically listed for separate payment shall be included as an incidental expense.

#### Items 19-23 Inclusive - Tie New Line to Existing Line, regular or WET TAP

Payment for these items shall include all work, excavation, backfill, clean up, seeding, fittings and equipment necessary to locate and connect the new water line with the existing systems including wet tap if called for. Existing equipment shown to be removed shall not be a separate pay item.

The cost of all associated items not specifically listed for separate payment shall be included as incidental expenses.

Gate Valves where shown to be required as a part of the tie-in, are a separate pay item except in the case of wet taps. **Required wet taps are shown on drawings.**

Rock excavation is not a separate pay item.

#### Items 24 – Meter Assemblies Installed

Payment for these items shall be made at the unit price bid each installed and shall include all work and materials necessary for the complete installation, including excavation, bedding, radio read meter, meter box, meter box cover, meter setter, tapped connection with service clamp and corporation stop, PRV (where required), backfill, clean-up and seeding all in accordance with the Technical Specifications and details.

The cost of all associated items not specifically listed for separate payment in the proposal shall be included as an incidental expense.

Rock excavation is not a separate pay item.

#### Item 25 – Fire Hydrant Assembly w/ Gate Valve

Payment for this item shall be made at the unit price bid and shall include all work and materials necessary for the complete installation of new fire hydrants, gate valve including tee fittings in the main line, blocking, backfill, clean-up and seeding and all other materials or fittings required for the installation in accordance with the Technical

Specifications and Standard Details.

The cost of all associated items not specifically listed for separate payment in the proposal shall be included as an incidental expense.

Rock excavation is not a separate pay item.

Item 26 – Reconnect Existing Meter to New W.L.

Payment for these items shall be made at the unit price bid each and shall include all work and materials necessary for the complete reconnection, including excavation, bedding, tapping main line with corp stop, backfill, clean up and seeding in accordance with the Technical Specifications and details.

The cost of all items not specifically listed for separate payment in the proposal shall be included as an incidental expense.

Item 27 – Relocate Meters

Payment for these items shall be made at the unit price bid each and shall include all work, equipment, and materials necessary for the complete relocation of designated meters as shown on the plans or directed by the Engineer. The work shall include excavation, backfill, bedding, clean-up, seeding and mulching. The Contractor shall furnish new meter box, ring and lid, loop and yoke and necessary fittings for the complete installation as called for in Technical Specifications and details. **The existing radio read meter and MXU shall be reused.** The 1" service line is a separate pay item. All salvage material shall be itemized and returned to the City.

The cost of all associated items not specifically listed for separate payment shall be included as incidental expenses.

Rock excavation is not a separate pay item.

END OF SECTION

SECTION 02110

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1. WORK INCLUDED

A. DEFINITIONS

1. Clearing

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including down timber, snags, brush, and rubbish occurring in the areas to be cleared.

2. Grubbing

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas.

B. PAYMENT

1. Cost associated with Clearing and Grubbing shall be incidental to facilities being placed.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

3.1. CLEARING

- A. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Trees designated to be left standing within the cleared areas shall be trimmed of dead branches 1-1/2 inches or more in diameter and shall be trimmed of all branches the heights indicated or directed. Limbs and branches to be trimmed shall be neatly cut close to the bole of the tree or main branches. Cuts more than 1-1/2 inches in diameter shall be painted with an approved tree-wound paint. Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and

construction operations by the erection of barriers or by such other means as the circumstances require.

- B. Clearing shall also include the removal and disposal of structures that obtrude, encroach upon, or otherwise obstruct the work.

### 3.2. GRUBBING

- A. Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract, such as areas for buildings, and areas to be paved.
- B. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

### 3.3. TREE REMOVAL

- A. Where indicated or directed, trees and stumps that are designated as trees shall be removed from areas outside those areas designated for clearing and grubbing. This work shall include the felling of such trees and the removal of their stumps and roots as specified in paragraph GRUBBING.
- B. Where Trees shall be disposed of in an approved manner.

### 3.4. DISPOSAL OF MATERIALS

- A. Logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations shall be disposed of by the Contractor in an approved manner. The Contractor shall be responsible for compliance with all Federal and State laws and regulations and with reasonable practice relative to the disposal of the material.
- B. Disposal of refuse and debris and any accidental loss or damage attendant thereto shall be the Contractor's responsibility.

END OF SECTION

SECTION 02202

ROCK REMOVAL

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. Removal of discovered rock during excavation.
- B. Use of explosives for rock removal.

1.2. RELATED WORK

- A. Geotechnical data as indicated on the Drawings.
- B. Section 02221 - Excavation.
- C. Section 02070 - Selective Demolition.

1.3. QUALITY ASSURANCE

- A. Explosives Firm: Company specializing in explosives for disintegration of subsurface rock with a certified blaster in the State of Kentucky.
- B. Contractor shall conform to all State, Federal, and Local laws, ordinances and regulations in regard to transportation, use, and handling of explosives.

1.4. OUTSIDE SERVICES

- A. Contractor shall employ the above mentioned experts if necessary during blasting, to protect workers, property and public.

1.5. SHOP DRAWINGS

- A. Submit means and methods under provisions of Section 01300.
- B. Indicated proposed method of blasting, delay pattern, explosives types, type of blasting mat or cover, and intended rock recovery method.

## PART 2 - PRODUCTS

### 2.1. MATERIALS

- A. Rock Definition: Solid mineral material or man made material that cannot be removed with a power shovel or as defined by KDOH specifications.
- B. Explosives: Type recommended by explosives firm and required by authorities having jurisdiction.
- C. Delay Devices: Type recommended by explosives firm and conforming to State regulations.
- D. Blasting Materials: Type recommended by explosives firm and conforming to State regulations.

## PART 3 - EXECUTION

### 3.1. INSPECTION

- A. Verify site conditions and note irregularities affecting work of this Section.
- B. Beginning work of this Section means acceptance of existing condition.

### 3.2. ROCK REMOVAL

- A. Excavate for and remove rock by a mechanical method.
- B. Cut away rock at excavation bottom to form even surface.
- C. In utility trenches, excavate to 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter.
- D. Correct unauthorized rock removal in accordance with backfilling and compaction requirements of Section 02221, paragraph 3.04.

### 3.3. ROCK REMOVAL – EXPLOSIVES METHODS

- A. If rock is uncovered requiring the explosives method for rock disintegration, notify the Engineer.
- B. Advise Owners of adjacent building or structures in writing prior to setting up seismographs. Describe blasting and seismic operations.
- C. Peak particle velocity will be limited to 4.0 in./sec.



D. Provide seismographic monitoring during progress of all blasting operations, or as required by State regulations.

E. Distinguish rock and remove from excavation.

3.4. FIELD QUALITY CONTROL.

A. Engineer or his representative shall approve the depth of the final rock cut.

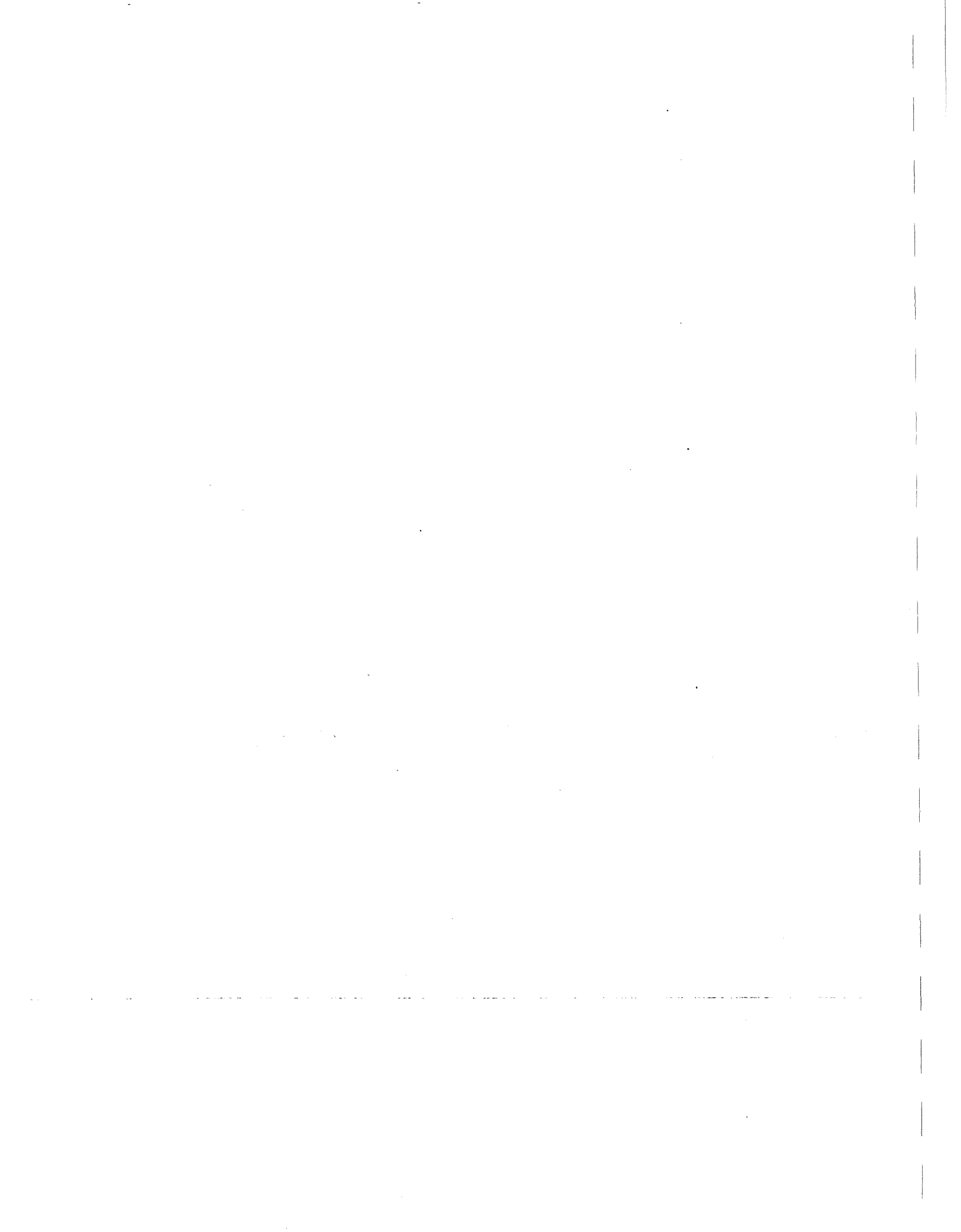
3.5. HAUL

A. No payment will be made separately or directly for haul on any part of the work for removed rock: All haul will be considered a necessary and incidental part of the work, and the cost thereof shall be considered by the Contractor in the contract unit price for the pay items of the work involved.

3.6. **ROCK REMOVAL**

A. **Rock removal is not a pay item. Cost associated with rock removal shall be incidental to the project and shall be considered by the contractor in the unit price for the pay items of the work involved.**

END OF SECTION



## SECTION 02220

## EXCAVATION

## PART 1 - GENERAL

All excavation on this project is unclassified.

**Rock removal is not a pay item.**

## PART 2 - PRODUCTS

Not used.

## PART 3 - EXCAVATION FOR TRENCHES

## 3.1. INSPECTION

- A. All excavation on this project is unclassified. Rock removal is not a pay item.
- B. If the foundation is good firm earth and the machine excavation has been accomplished, the remainder of the material shall be excavated by hand and the earth pared or molded to give full support to the lower quadrant of the barrel of each pipe. Where bell and spigot pipe are involved, bell holes shall be excavated during this latter operation to prevent the bells from being supported on undisturbed earth. If for any reason the machine excavation in earth is carried below an evaluation that will permit the type of bedding in undisturbed earth, then a layer of granular material shall be placed so that the lower quadrant of the pipe will be securely bedded in the granular fill as described in Section 02700, Part 3, Article 3.03.
- C. If the foundation is rock and the excavation has been undercut as set out hereinbefore, a bed of No. 9 crushed stone aggregate shall be placed to provide continuous support for the lower quadrant of the pipe. This bedding is incidental cost of construction and is not a pay item.
- D. 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 than 2'6" plus the nominal diameters of the pipe at the level of or below the top of the pipe. Trenches cut in roads and streets shall not exceed a maximum width of 3'6" plus the nominal diameters of the pipe at the level of the road or street surface.
- E. All excavated materials shall be placed a minimum of 2 feet back from the edge of the trench.

- F. Unless specifically directed otherwise by the Engineer, not more than 500 feet of trench shall be opened ahead of the pipe laying work of any one crew, and not more than 500 feet or open ditch shall be left behind the pipe laying work of any one crew or a total of 1000 feet or open ditch. Watchmen or barricades, lanterns, 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.
- G. When so required, or when directed by the Engineer, only one-half of street crossings and road crossings shall be excavated before placing temporary bridges over the side excavated, for the convenience of the traveling public. All backfilled ditches shall be maintained in such manner that they will offer no hazard to the passage of traffic. The convenience of the traveling public and the property owners abutting the improvements shall be taken into consideration. All public or private drives shall be promptly backfilled or bridged at the direction of the Engineer.
- H. Where existing drainage ditches coincide with the proposed gravity sewer alignment, the Contractor shall re-establish the drainage ditch after the sewer line has been laid and properly backfilled. The drainage ditch shall be of equal size as the previously existing one and free of any restrictions which might impede flow.

### 3.2. REMOVAL OF WATER

- A. The Contractor, at his own expense, shall provide adequate facilities for promptly and continuously removing water from all excavation.
- B. To ensure proper conditions at all times during construction, the Contractor shall provide and maintain ample means and devices (including spare units kept ready for immediate use in case of breakdowns) with which to intercept and/or remove promptly and dispose properly for all water entering trenches and other excavations. Such excavation shall be kept dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged.
- C. All water pumped or drained from the work shall be disposed of in a suitable manner without undue interference with other work, damage to pavements, other surfaces, or property. Suitable temporary pipes, flumes, or channels shall be provided for water that may flow along or across the site of work.
- D. If necessary, The Contractor shall dewater the excavations by means of an efficient drainage wellpoint system which will drain the soil and prevent saturated soil from flowing into the excavation. The wellpoints shall be designed especially for this type of service. The pumping unit shall be designed for use with the wellpoints, and shall be capable of maintaining a high vacuum and of handling large volumes of air and water at the same time.

- E. The installation of the wellpoints and pump shall be done under the supervision of a competent representative of the manufacturer. The Contractor shall do all special work such as surrounding the wellpoints with sand or gravel or other work which is necessary for the wellpoint system to operate for the successful dewatering of the excavation

### 3.03 DISPOSITION OF EXCAVATED MATERIAL

Material excavated for gravity sewers, manholes, or other structures shall be disposed of by the Contractor at his own expense. All excavated material which is not needed or is unacceptable for backfilling purposes shall be disposed of by the Contractor in a manner satisfactory to the Engineer.

### 3.04 UNAUTHORIZED EXCAVATION

Whenever the excavation is carried beyond or below the required lines and grades, the Contractor, at his own expense, shall refill said excavated space with suitable material in a manner approved by the Engineer.

### 3.05 EXISTING UTILITIES AND OTHER OBSTRUCTIONS

The Engineer has endeavored to show all existing utilities and or obstructions to the best of his ability within the confines of information furnished by others. It is the full responsibility of the Contractor to verify locations as set out hereinafter and open sufficient ditch in advance to assure no conflicts. Relocations, adjustments, and damages due to improper planned methods and procedures will be at the cost of the Contractor. Any conflicts or damages by this project with existing utilities shall be immediately brought to the attention of the Engineer. If any utility is damaged or disrupted the Contractor must take what ever measures necessary to restore service immediately at his cost.

Prior to the commencement of construction on the project, the Contractor shall contact the utility companies whose lines (above and below ground) may be affected during construction and verify the locations of the utilities as shown on the Contract Drawings. The Contractor shall ascertain from said companies if he will be allowed to displace or alter, by necessity, those lines encountered or replace those lines disturbed by accident during construction, or if the companies themselves are only permitted by policy to perform such work. If the Contractor is permitted to perform such work, he shall leave the lines in as good condition as were originally encountered and complete the work as quickly as possible. All such lines or underground structures damaged or disrupted in the construction shall be replaced at the Contractors expense, unless, in the opinion of the Engineer, such damage was caused through no fault of the Contractor

END OF SECTION



SECTION 02221

EXCAVATION, TRENCHING, AND BACKFILLING  
FOR UTILITIES SYSTEMS

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. Excavation, trenching and backfilling for the following systems:
  - 1. Water Systems

1.2. RELATED WORK

- A. Section 15410 – Plumbing Piping

1.3 APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION  
OFFICIALS (AASHTO)

AASHTO T 180 (1997) Moisture-Density Relations of Soils Using a 10-lb.  
Rammer and an 18 inch Drop

AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)

ASTM D 2487 (2000) Classification of Soils for Engineering Purposes

1.4 DEFINITIONS

- A. Degree of Compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASSHTO T 180, Method D.

PART 2 - PRODUCTS

2.1 MATERIALS

Satisfactory materials shall consist of any material classified by -ASTM D 2487- as GW, GP, and SW.

- A. Unsatisfactory materials shall be materials that do not comply with the requirements for satisfactory materials. Unsatisfactory materials include but are not limited to those materials containing roots and other organic matter, trash,

debris, frozen materials and stones larger than 3 inches, and materials classified in -ASTM D 2487-, as PT, OH, and OL. Unsatisfactory materials also include man-made fills, refuse, or backfills from previous construction.

- B. Cohesionless materials shall include materials classified in -ASTM D 2487- as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic.
- C. Rock shall consist of boulders measuring 1/2 cubic yard or more and materials that cannot be removed without systematic drilling and blasting such as rock material in ledges, bedded deposits, unstratified masses and conglomerate deposits, and below ground concrete or masonry structures, exceeding 1/2 cubic yard in volume, except that pavements will not be considered as rock.
- E. Unyielding material shall consist of rock and gravelly soils with stones greater than 3 inches in any dimension or as defined by the pipe manufacturer, whichever is smaller.
- F. Unstable material shall consist of materials too wet to properly support the utility pipe, conduit, or appurtenant structure.
- G. Select granular material shall consist of well-graded sand, gravel, crushed gravel, crushed stone or crushed slag composed of hard, tough and durable particles, and shall contain not more than 10 percent by weight of material passing a No. 200 mesh sieve and no less than 95 percent by weight passing the 1-inch sieve. The maximum allowable aggregate size shall be 1 inch, or the maximum size recommended by the pipe manufacturer, whichever is smaller.
- H. Initial backfill shall consist of select granular material or satisfactory materials free from rocks 3 inches or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer, whichever is smaller. When the pipe is coated or wrapped for corrosion protection, the initial backfill material shall be free of stones larger than 2 inches in any dimension or as recommended by the pipe manufacturer, whichever is smaller.

## PART 3 - EXECUTION

### 3.1 GENERAL EXCAVATION

- A. Excavation shall be performed to the lines and grades indicated.
- B. Rock excavation shall include removal and disposition of material defined as rock in paragraph "MATERIALS."



- C. Earth excavation shall include removal and disposal of material not classified as rock excavation.
- D. During excavation, material satisfactory for backfilling shall be stockpiled in an orderly manner at a distance from the banks of the trench equal to 1/2 the depth of the excavation, but in no instance closer than 2 feet.
- E. Excavated material not required or not satisfactory for backfill shall be removed from the site.
- F. Grading shall be done as may be necessary to prevent surface water from flowing into the excavation, and any water accumulating therein shall be removed to maintain the stability of the bottom and sides of the excavation.

### 3.2 TRENCH EXCAVATION

- A. The trench shall be excavated as recommended by the manufacturer of the pipe to be installed.
- B. Trench walls below the top of the pipe shall be sloped, or made vertical, and of such width as recommended in the manufacturer's installation manual.
- C. Where no manufacturer's installation manual is available, trench walls shall be made vertical.
- D. Trench walls more than 4 feet high shall be shored, cut back to a stable slope, or provided with equivalent means of protection for employees who may be exposed to moving ground or cave in.
- E. Vertical trench walls more than 4 feet high shall be shored.
- F. Trench walls which are cut back shall be excavated to at least the angle of repose of the soil.
- G. Special attention shall be given to slopes which may be adversely affected by weather or moisture content.
- H. The trench width below the top of pipe shall not exceed 24 inches plus pipe outside diameter (O.D.) for pipes of less than 24 inches inside diameter and shall not exceed 36 inches plus pipe outside diameter for sizes larger than 24 inches inside diameter.
- I. Where recommended trench widths are exceeded, redesign, stronger pipe, or special installation procedures shall be utilized by the Contractor.

- J. The cost of redesign, stronger pipe, or special installation procedures shall be borne by the Contractor without any additional cost to the Owner.

### 3.3 BOTTOM PREPARATION

- A. The bottoms of trenches shall be accurately graded to provide uniform bearing and support for the bottom quadrant of each section of the pipe.
- B. Bell holes shall be excavated to the necessary size at each joint or coupling to eliminate point bearing.
- C. Stones of 3 inches or greater in any dimension, or as recommended by the pipe manufacturer, whichever is smaller, shall be removed to avoid point bearing.

### 3.4 REMOVAL OF UNYIELDING MATERIALS

Where overdepth is not indicated and unyielding material is encountered in the bottom of the trench, such material shall be removed 4 inches below the required grade and replaced with suitable materials as provided in paragraph "BACKFILLING AND COMPACTION."

### 3.5 REMOVAL OF UNSTABLE MATERIALS

- A. Where unstable material is encountered in the bottom of the trench, such material shall be removed to the depth directed and replaced to the proper grade with select granular material as provided in paragraph "BACKFILLING AND COMPACTION."
- B. When removal of unstable material is required due to the fault or neglect of the Contractor in his performance of the work, the resulting material shall be excavated and replaced by the Contractor without additional cost to the Owner.

### 3.6 JACKING, BORING AND TUNNELING

Unless otherwise indicated, excavation shall be by open cut, except that sections of a trench may be jacked, bored, or tunneled if, in the opinion of the Engineer, the pipe, cable, or duct can be safely and properly installed and backfill can be properly compacted in such sections.

### 3.7 STOCKPILES

- A. Stockpiles of satisfactory and wasted materials shall be placed and graded.
- B. Stockpiles shall be kept in a neat and well-drained condition, giving due consideration to drainage at all times.

- C. The ground surface at stockpile locations shall be cleared, grubbed, and sealed by rubber-tired equipment, excavated satisfactory and unsatisfactory materials shall be separately stockpiled.
- D. Stockpiles of satisfactory materials shall be protected from contamination, which may destroy the quality and fitness of the stockpiled material.
- E. If the Contractor fails to protect the stockpiles, and any material becomes unsatisfactory, such material shall be removed and replaced with satisfactory material from approved sources at no additional cost to the Owner.

### 3.8 BACKFILLING AND COMPACTION

- A. Backfill material shall consist of satisfactory material, select granular material, or initial backfill material as required.
- B. Backfill shall be placed in layers not exceeding 6 inches loose thickness for compaction by hand operated machine compactors, and 8 inches loose thickness for other than hand operated machines, unless otherwise specified.
- C. Each layer shall be compacted to at least 95 percent maximum density for cohesionless soils and 90 percent maximum density for cohesive soils, unless otherwise specified.

### 3.9 TRENCH BACKFILL

- A. Trenches shall be backfilled to the grade shown. The trench shall be backfilled to 2 feet above the top of pipe prior to performing the required pressure tests.
- B. The joints and couplings shall be left uncovered during the pressure tests.

### 3.10 REPLACEMENT OF MATERIALS

- A. Unyielding material removed from the bottom of the trench shall be replaced with select granular material or initial backfill material.
- B. Unstable material removed from the bottom of the trench or excavation shall be replaced with select granular material placed in layers not exceeding 6 inches loose thickness.

### 3.11 BEDDING AND INITIAL BACKFILL

- A. Bedding 4" thick shall be placed under water lines.
- B. Initial backfill material shall be placed and compacted with approved tampers to a height of at least one foot above the utility pipe or conduit.

- C. The backfill shall be brought up evenly on both sides of the pipe for the full length of the pipe.
- D. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe.

### 3.12 FINAL BACKFILL

- A. The remainder of the trench shall be filled with satisfactory material. Backfill material shall be placed and compacted as follows:
  - 1. Trench backfill shall be in lifts not to exceed 12 inches and each lift shall be thoroughly compacted.
- B. Sidewalks, Turfed or Seeded Areas and Miscellaneous Areas: Backfill shall be deposited in layers of a maximum of 12-inch loose thickness, and compacted to 85 percent maximum density for cohesive soils and 90 percent maximum density for cohesionless soils.
- C. Compaction by water flooding or jetting will not be permitted. This requirement shall also apply to all other areas not specifically designated above.

### 3.13 TESTING

After other required tests have been performed and the trench backfill compacted to the finished grade surface, the pipe shall be inspected to determine whether significant displacement has occurred. This inspection shall be conducted in the presence of the Architect/Engineer.

END OF SECTION

## SECTION 02270

EROSION CONTROL, SEDIMENTATION, AND CONTAINMENT  
OF CONSTRUCTION MATERIALS

## PART 1 - GENERAL

## 1.1. WORK INCLUDED

- A. The Contractor shall do all work and take all measures necessary to control soil erosion resulting from construction operations, shall prevent the flow of sediment from the construction site, and shall contain construction materials (including excavation and backfill) within his protected working area so as to prevent damage to the adjacent wetlands.
- B. The Contractor shall not employ any construction method that violates a rule, regulation, guideline, or procedure established by Federal, State or local agencies having jurisdiction over the environmental effects of construction.
- C. Pollutants such as chemicals, fuels, lubricants, bitumen, raw sewage, and other harmful waste shall not be discharged into or alongside of any body of water or into natural or man-made channels leading thereto.

## PART 2 - PRODUCTS

## 2.1. METHODS OF CONSTRUCTION

- A. The Contractor shall use any of the acceptable methods necessary to control soil erosion and prevent the flow of sediment to the maximum extent possible. These methods shall include, but not be limited to, the use of water diversion structures, diversion ditches, and settling basins.
- B. Construction operations shall be restricted to the areas of work indicated on the Drawings and to the area, which must be entered for the construction of temporary, or permanent facilities. The Engineer has the authority to limit the surface area of awardable earth material erodible by clearing and grubbing, excavation, borrow and fill operations, and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of the wetlands and adjacent watercourses. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains, and use of temporary mulches, mats, or other control devices or methods as necessary to control erosion.
- C. Excavated soil material shall not be placed adjacent to the wetlands or watercourses in a manner that will cause it to be washed away by high water or

runoff. Earth berms or diversions constructed to intercept outlets shall be stable or shall be stabilized by means acceptable to the Engineer. If for any reason construction materials are washed away during the course of construction, the Contractor shall remove those materials from the fouled areas as directed by the Engineer.

- D. For work within easements, all materials used on construction such as excavation, backfill, roadway and pipe bedding and equipment, shall be kept within the limits of the easements.
- E. The Contractor shall not pump silt-laden water from trenches or other excavations into the wetlands or adjacent watercourses. Instead, silt-laden water from his excavations shall be discharged within areas surrounded by baled hay or into sediment traps to ensure the only sediment-free water is returned to the watercourses. Damage to vegetation by excessive watering or silt accumulation in the discharge area shall be avoided.
- F. Prohibited construction procedures include, but are not limited to, the following:
  1. Dumping of spoil material into any streams, wetlands, surface waters, or unspecified locations.
  2. Indiscriminate, arbitrary, or capricious operation of equipment in wetlands or surface waters.
  3. Pumping of silt-laden water from trenches or excavations into surface waters or wetlands.
  4. Damaging vegetation adjacent to our outside of the construction area limits.
  5. Disposal of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, washwater from concrete trucks or hydroseeders, or any other pollutant in wetlands, surface waters, or unspecified locations.
  6. Open burning of debris from the construction work.
- G. Any temporary working roadways required shall consist of clean fill approved by the Engineer. In the event fill is used, the Contractor shall take every precaution to prevent the fill from mixing with native materials of the site. All such foreign materials shall be removed from the site following construction.

## 2.2. EROSION CHECKS

- A. The Contractor shall furnish and install baled hay or straw erosion checks in all locations indicated on the Drawings, surrounding the base of all deposits of stored excavated material outside of the disturbed area, and where indicated by the Engineer.
- B. Checks, where indicated on the Drawings, shall be installed immediately after the

site is cleared and before trench excavation is begun at the location indicated. Checks located surrounding stored material shall be located approximately 6 feet from that material.

- C. Bales shall be held in place with two 2-inch by 2-inch by 4-foot wooden stakes. Each bale shall be butted tightly against the adjoining bale to preclude short-circuiting of the erosion check.

END OF SECTION





SECTION 02480

SEEDING, FERTILIZING AND MULCHING

PART 1 - GENERAL

1.1. WORK INCLUDED

A. CONDITIONS

1. General provisions of CONTRACT DOCUMENTS apply to this section.

B. DESCRIPTION OF WORK

1. Provide labor, material, equipment and services necessary for proper and complete seeding, fertilizing and mulching.
2. Seed all new and disturbed lawn areas not otherwise indicated to be sodded.

1.2. QUALITY ASSURANCE

- A. The intent of these Specifications is to require the Contractor to provide, in all areas to be seeded, fertilized and mulched, a smooth uniform turf of the grasses specified free from bare spots, eroded areas, weeds or other deficiencies. Acceptance by the Engineer is conditional upon compliance with this intent after initial growing season.
- B. Areas outside limits of construction, damaged by work under this Contract, shall be repaired as required to match existing conditions. This includes borrow areas for excavation.

PART 2 - PRODUCTS

2.1. MATERIALS

- A. Mulch shall be straw or hay mulch, tacked with asphalt, straw or hay mulch fixed in place with disk land packers or disk harrows; or fiber mulch applied simultaneously with grass seed and fertilizer by the use of hydroseeding machinery.
  1. Straw shall be stalks from oats, wheat, rye, barley, or rice that are free from noxious weeds, mold, or other objectionable material. Straw shall be in an air-dry condition suitable for placing with blower equipment.
  2. Hay shall be native hay, sudan-grass hay, broomsedge hay, or other herbaceous mowings, free from noxious weeds, mold or other

objectionable material. Hay shall be in an air-dry condition and suitable for placing with blower equipment.

3. Wood cellulose fiber for use with hydraulic application or grass seed and fertilizer shall consist of specially prepared wood cellulose fiber or a combination of wood cellulose and recycled newsprint fibers, processed to contain no growth or germination - inhibiting factors and dyed an appropriate color to facilitate visual metering of the application of materials. On an air-dry weight basis, the wood cellulose fiber shall contain a maximum of 12 percent moisture, plus or minus 3 percent at the time manufactured. The combination of wood cellulose and recycled newsprint fibers shall contain a maximum of 10 percent moisture plus or minus 3 percent at the time of manufacture. The pH range for either mix shall be between 4.5 and 6.5.

- B. Commercial fertilizer shall be a complete commercial fertilizer of 10-10-10 formula, uniform in composition, dry and free flowing. Fertilizer which becomes caked or otherwise damaged making it unsuitable for use will not be accepted.
- C. Limestone shall be finely pulverized (calcium carbonate) containing equivalent of at least 45% calcium oxide, and so pulverized that the residue on #30 and #200 sieves is not more than 0.5% and 15% respectively.

D. Seed Mixture

Lawn seed shall be guaranteed by dealer and distributed as follows:

50% Fine Leaf Falcon Fescue  
20% Kentucky Bluegrass "Ken-Blue"  
30% Perennial Ryegrass

## 2.2 SOIL IMPROVEMENTS

- A. A soil test shall be performed for pH, chemical analysis and mechanical analysis to establish the quantities and type of soil amendments required to meet local growing conditions for the type and variety of turf specified. Cost of soil tests is not a pay item and is an incidental cost to the Contractor.
- B. Lime shall be applied at the rate recommended by the soil test. Lime shall be incorporated into the soil to a minimum depth of 4 inches or may be incorporated as part of the tillage operation.
- C. Fertilizer shall be applied at the rate recommended by the soil test. Fertilizer shall be incorporated into the soil to a minimum depth of 4 inches or may be incorporated as part of the tillage or hydroseeding operation.

## 2.3 SEEDING AND MULCHING

- A. Planting Seasons and Conditions: Planting shall not be done when the ground is frozen, snow-covered, or in an unsatisfactory condition for planting. Spring seeding season shall be between February 15 and April 15. Fall seeding shall be between August 15 and October 15.
- B. Seeding seasons may be extended only at direction of Engineer.
1. Seeding:
    - a. Seed shall be broadcast uniformly by approved sowing equipment at the rate of 5 pounds per 1,000 square feet over a designated area. One half of the seed shall be sown in one direction, and the remainder shall be sown at right angles to the first sowing. The seed shall be covered to an average depth of (0.2-0.4) inch by means of spike tooth harrow, cultipacker, or other approved device. Seed shall not be broadcast when winds are above 10 miles per hour.
    - b. Drill seeding shall be accomplished using approved equipment such as cultipacker seeders and grass seed drills. The seed shall be drilled uniformly to an average depth of (0.2-0.4) inch at a rate of 5 pounds per 1,000 square feet.
    - c. When hydroseeding, the (seed and fertilizer), (seed, fertilizer, and approved mulch material) shall be mixed in the required amount of water to produce a homogeneous slurry and then uniformly applied. Wood cellulose or straw mulch shall be added after the seed and fertilizer have been thoroughly mixed. Lime, when applied hydraulically, shall be a single, separate operation.
    - d. Immediately after seeding, the entire area shall be firmed with a roller not exceeding 90 pounds for each foot of roller width. If seeding is performed with a cultipacker-type seeder or if seed is applied in combination with hydromulching, rolling will not be required.
  2. Mulching (Straw and Asphalt):
    - a. All seeded areas indicated or directed by the Engineer shall be mulched with a straw and asphalt mat. Mulching shall follow seeding operation not later than 48 hours. The asphalt mat will not be required on areas adjacent to buildings, sidewalks or concrete curbs.
    - b. Straw and asphalt mat shall be applied at rate of two and one-half (2½) tons of straw per acre, and 200 gallons of asphalt per acre. Asphalt shall either be emulsified RS-1 grade or cutback RC-1 grade. Method of application may be:

- 1) by spreading straw evenly over seeded area after which asphalt tie-down is sprayed over straw in a solid pattern, or
- 2) by applying mat in one operation by a jet type mulch spreader in which straw and asphalt are sprayed in mixture evenly over area.

## 2.4 SEED PROTECTION ON SLOPES

- A. Cover seeded slopes where grade is 3:1 or greater with jute matting. Roll matting down over slopes without stretching or pulling.
- B. Lay matting smoothly on soil surface, boring top end of each section in narrow 6-inch trench. Leave 12 inches overlap from top roll over bottom roll. Leave 4 inches overlap over adjacent section.
- C. Staple outside edges and overlaps at 36-inch intervals.
- D. Lightly dress slopes with topsoil to ensure close contact between matting and soil.
- E. In ditches, unroll matting in direction of flow. Overlap ends of strips 6 inches with upstream section on top.

## 2.5 WATERING

- A. Immediately following seeding, the Contractor shall water areas thoroughly, including subgrade.
- B. The prepared area is to be watered a minimum of two times per week until it has been accepted. This will not be required if sufficient rain occurs during the week.

## 2.6 CLEAN-UP

- A. Soil, peat or similar material which has been brought onto paved areas within or outside construction limit by hauling operations or otherwise shall be removed promptly, keeping these areas clean at all times.
- B. Upon completion of seeding, all excess soil, stones and debris which have not previously been cleaned up shall be removed from site or disposed of as directed by the Engineer.
- C. All attended areas shall be prepared for final inspection.

## 2.7 MAINTENANCE

- A. Maintenance shall begin immediately following last operation of seeding and shall continue until turf is formally accepted.

- B. Maintenance shall include watering, weeding, cultivating, mulching, regular mowing or seeded areas, and removal of dead materials.

## 2.8 INSPECTION FOR ACCEPTANCE

- A. Inspection of work of this section to determine completion, exclusive of possible replacement of seed, will be made by the Engineer upon written notice requesting such inspection submitted at least ten (10) days prior to anticipated date of inspection and provided that an 80% minimum coverage per square foot for all seeded areas has been established. Contractor shall guarantee, at the time of compliance with the intent of this Specification described herein. This guarantee shall apply to all permanent seeding performed in conjunction with project, regardless of type protection used or season in which seeding performed.
- B. When seeding does not meet guarantee requirements at time of inspection, the Contractor will be advised of amount and location of corrective work deemed necessary. Additional work required may include preparation of a new seedbed, refertilizing, reseeding, remulching, or any erosion control items that were originally required. Contractor shall perform all corrective work as soon as favorable working conditions occur after being advised of corrective work required. Corrective work and materials required to fulfill guarantee requirements will not be paid for, except as hereinafter provided for unavoidable damage.
- C. When unavoidable damage occurs after date project is declared complete and before inspection previously described, then payment will be made at original contract unit prices for additional seeding and protection work ordered by the Engineer. Unavoidable damage may result from slides, vehicular traffic, fires, and deluges. Failure of seed to sprout and grow will not be considered unavoidable damage.
- D. From time seeding and protection work begins until date project is declared complete, keep all seeded areas in good condition at all times. Damage to seeded areas or to mulch materials shall be promptly repaired as directed. All work and materials necessary to protect, maintain and restore seeded areas during life of contract shall be performed at no additional cost to Owner, except additional work caused by changes in project by the Engineer.
- E. When it becomes necessary to disturb previously seeded areas at direction of the Engineer, payment for a reasonable amount of additional work, as determined by the Engineer, will be made at original contract unit price. No payment will be made for additional work due to changes made for benefit of Contractor, nor will payment be made for corrective work required because Contractor has failed to properly coordinate his entire erosion control schedule thus causing previously seeded areas to be disturbed by operations that could have been performed prior to seeding.

- F. After inspection, Contractor will be notified in writing by Engineer or acceptance of all work of this Section and Contractor will be notified in writing if there are deficiencies of requirements for completion of work. Replacements, maintenance or repair work remaining to be done shall be subject to re-inspection before acceptance.

## 2.9 PLANT WARRANTY AND REPLACEMENT

- A. The Contractor shall warrant 80% coverage per square foot of established grass area for duration of one (1) growing season after final acceptance of seeding by Owner. Seed shall be alive and in satisfactory growth at end of warranty period.
- B. Owner will be responsible for all maintenance necessary to keep grass alive and healthy between time lawns are accepted and end of warranty period. Basic needs of lawn during this period are for adequate water and protection from insects and other similar pests.
- C. Should contractor find lawn is not receiving proper maintenance at any time prior to end of the warranty period, he shall advise Engineer and Owner immediately in writing so corrective measures may be initiated.

END OF SECTION

## SECTION 02701

POLYVINYL CHLORIDE PIPE  
(WATER MAINS)

## PART 1 GENERAL

## 1.01 DESCRIPTION

- A. Polyvinyl chloride (PVC) pressure pipe two inches through twelve inch shall conform to the American Society for Testing and Materials (ASTM) Standard ASTM D-2241.
- B. Pressure class shall be minimum 200 psi with a standard dimension ratio (SDR) of 21 or 250 psi with SDR of 17 as called for on plans and of the size noted on the Plans unless called for as C900 and as specified hereinafter.

## 1.02 RELATED SECTIONS

- A. Section 01300 Submittals
- B. Section 01600 Material & Equipment

## PART 2 PRODUCTS

## 2.01 POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

- A. **Unless shown otherwise on the Plans** or in the Contract Documents, the Contractor may use any of the following types of PVC pipe.

- 1. PVC pipe meeting the requirements of AWWA C 900, Standard Specification for Polyvinyl Chloride (PVC) Pressure Pipe, 4-Inch through 12-inch. PVC pipe meeting the requirements of AWWA C 905, Standard Specification for Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14-inch through 36-inch. The minimum pressure class allowed shall be Class 200 (DR 18) or as shown on the plans.

Joints shall be gasket, bell and spigot, push-on types, which meet the requirements of AWWA C 900. Gaskets shall meet the requirements of ASTM F 477, Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

- 2. PVC pipe meeting the requirements of ASTM D 2241, Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR

Series). The minimum pressure rating shall be 200 psi.

Joints shall be gasket, bell and spigot, push-on types which meet the requirements of ASTM D 3139, Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals. Gaskets shall meet the requirements of ASTM F 477, Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

3. Molecular oriented PVC pressure pipe (PVCO) may be substituted as an "or equal" for **six inch and above Class 200 PVC pipe only**. Molecular oriented PVC pressure pipe, PVCO, shall conform to latest revisions of ASTM F-1483. Pipe must be manufactured from rigid poly (vinyl chloride) compound having a cell classification of 1245-B in conformance with ASTM D-1784 having a hydrostatic design stress (HDS) of 2,000 psi. The finished PVCO pipe shall have a HDS of 3,550-psi minimum. The pipe shall have steel pipe (IPS) O.D.'s. PVCO pipe shall have an operating pressure of 200 psi and shall be as manufactured by Uponor-ETI or approved equal.

## 2.02 ANCHORING ASSEMBLIES

- A. Anchoring assemblies will be required for all fire hydrants and hydrant valves. Anchoring assemblies will be required for setting other valves and bends, as shown on the drawings and details.
- B. Special anchoring will be required at other places along the pipelines. Where the construction drawings call for special anchoring, it shall include ductile iron pipe with mechanical joint anchoring fittings, locked mechanical joints, pipe or positively restrained push-on joint type ductile iron pipe and fittings which allow for the deflection at the joint after assembly, such as "Super-Lock" manufactured by the Clow Corporation or approved equal.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. The installation of PVC pipelines is intended to conform to AWWA Specifications C900-75 and Appendix A as if they were totally incorporated herein, except where these specifications direct otherwise.

### 3.02 FITTINGS

- A. All fittings for 3" and above PVC pipe shall be a ductile iron push-on joint Class 250 tar coated outside, cement lined inside in accordance with ANSI/AWWA Specifications C110/A21.10, C111/A21.11 or ductile iron fittings in accordance with AWWA C153. All fittings for C900 called for on drawings shall be ductile



iron as called for above with mechanical joints.

- B. All fittings for PVC pipe smaller than 3" shall be PVC push-on socket type with rubber gasket, SDR 21, 200 psi based on SDR working pressure. Fittings shall meet all requirements of ASTM Specifications D3139 and shall be suitable for a working pressure of 200 psi unless the water line is designated Class 250. If the water line is designated Class 250 then fittings must be Class 250.

### 3.03 TIE-INS TO EXISTING LINES

- A. The tie-ins to existing lines are not to be considered as wet (hot) taps unless called for on the drawings. The Contractor, in conjunction with the Owner may shut the specific line down for prearranged minimum periods, to make these connections. However, the Contractor will be required to disinfect and flush the affected lines to assure proper levels of chlorine residual.

END OF SECTION



## SECTION 02703

## STREAM/LAKE CROSSINGS

## PART 1 GENERAL

## 1.01 WORK INCLUDED

- A. The Contractor shall furnish all labor, materials and equipment required to install a Stream/Lake Crossing or Crossings as shown on the plans and as specified herein. This specification shall only apply to those crossings so designated on the drawings. All other small crossings shall require concrete encasement only.
- B. The Stream Crossing pipe may either be high density polyethylene (HDPE) or ductile iron, as specified hereinafter or as called for on drawings. It is the intent of these specifications that both types of pipe shall be considered "equal" and the Contractor is advised to bid the type of pipe that would result in the lowest total bid. Stream Crossing pipe under this Section shall not require concrete encasement.
- C. The type and selection of methods and procedures used to install the Stream/Lake Crossings shall be approved by the Engineer.
- D. Crossings under this Section or concrete encased crossings shall be constructed in accordance with standard details or as directed by the Engineer. The stream/lake crossing shall conform with the specific detail drawings and these specifications.

## PART 2 PRODUCTS

## 2.01 DUCTILE IRON PIPE AND FITTINGS

- A. Ductile iron pipe for Stream Crossings shall be Class 51, tar-coated outside and cement-lined inside in accordance with AWWA Specifications. The joints for the Stream Crossing pipe shall be "American" Molox ball joint, or equal as approved by the Engineer. All bolts used in making up joints shall be stainless steel. Ductile iron pipe shall be suitable for a minimum working pressure of 350 psi.
- B. Fittings other than ball joint will not be allowed in the Stream Crossing. Where steep bends are required, the Contractor shall use short lengths of pipe, and the deflection in the joints shall be utilized to make the curvature of the bend.
- C. Appropriate transition fittings shall be provided to connect the stream crossing pipe to the proposed PVC water line pipe on either side of stream/lake. Transition fittings will not be allowed in the stream crossing proper. Excavation shall be made if necessary, to assure that the pipe may be laid to the curvature of the stream

bed. Concrete blocking of transition joints will be required.

## 2.02 POLYETHYLENE PIPE AND FITTINGS

- A. Polyethylene pipe for the Stream Crossing shall utilize thermal butt-fusion for jointing, all suitable for a 267 psi working water pressure, with an SDR of 9. Pipe shall be N.S.F. approved, and manufactured by Plexco, Nipak, or "Driscopipe" by Phillips Petroleum or equal as approved by the Engineer. The pipe must be furnished with an inside diameter equal to or greater than the size shown on the Drawings for the proposed water main.
- B. Appropriate transition fittings shall be provided to connect the Stream Crossing pipe to the proposed PVC water line pipe on either side of the stream/lake. Fittings will not be allowed in the stream crossing proper. Excavation shall be made, if necessary, to assure that the pipe may be bent to the curvature of the stream bed. As a minimum, a polyethylene molded flange adapter and ductile iron convoluted back up ring will be required with appropriate concrete blocking.

## PART 3 EXECUTION

### 3.01 PIPE LAYING

- A. Proper equipment, instruments, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient prosecution of the work. Before any length of pipe is placed, a careful inspection shall be made of the interior of the pipe to see that no foreign material is in the pipe.
- B. If any defective pipe shall be discovered after the pipeline is laid, it shall be removed and replaced with a satisfactory pipe without additional charge to the Owner.

### 3.02 JOINTING

- A. Joints of the pipe shall be made strictly in accordance with the manufacturer's recommendations. A copy of the manufacturer's recommendations shall be furnished to the Engineer prior to the beginning of the installation of the pipe.

### 3.03 DREDGING AND BACKFILLING (REGULAR STREAM CROSSING)

- A. The ditch for the pipe shall be dredged or excavated to provide a minimum of 30" cover below the stream bed in regular stream crossing. When used, payment for concrete encasement will be made separately at the unit price bid for this item. The trench shall be backfilled with trench excavated material, free from roots, wood, or other objectionable materials, and shall be approved by the Engineer.

Where acceptable material from the excavation or dredging is insufficient to complete the backfill, the Contractor shall furnish additional acceptable material as required to complete the work. Such additional material shall be furnished and installed by the Contractor incidental to the various bid items and shall not be measured for separate payment.

3.04 PLACEMENT (STREAM CROSSING)

- A. The intent of these specifications and the accompanying drawings is to lay the pipe on the bottom of the stream as shown on the drawings.

END OF SECTION



## SECTION 02710

## VALVES

## PART 1 - GENERAL

## 1.1 WORK INCLUDED

- A. Work addressed in this Section includes furnishing all labor, tools, materials, equipment, supplies and services necessary for installation of all ductile iron piping, valves and appurtenances as shown on Contract Drawings and specified herein.
- B. Excluded from this Section are piping and appurtenances discussed under disinfections, plumbing, laboratory fixtures, water supply, floor drains, sanitary waste lines, vents, HVAC venting and distribution equipment, and all gas and air lines.

## PART 2 - PRODUCTS

## 2.1 GATE VALVES

- A. Underground.

All underground gate valves shall be of the double-disc, parallel seat-type, iron body, non-rising stem, fully bronze mounted, tar-coated outside, and suitable for working water pressures of 150 psi unless otherwise shown on the plans. Valves shall be of standard manufacture and of the highest quality both of materials and workmanship and shall conform to the latest revision of AWWA Specification C-500.

Valves shall be furnished with bell, flanged or mechanical joint end connections suitable for connection to the pipe with which they are to be used.

Underground valves shall be nut operated, unless otherwise shown on the plans. Valve supplier shall furnish two standard stem iron wrenches for turning nut operated valves. All underground valves which have nuts deeper than 30 inches below the top of valve box shall have extended stems with nuts located within 2 feet of valve box cap.

- B. Housed.

Gate valves, 3" and larger, for fabricated pipe systems shall be double-disk, parallel seat-type, iron body, flanged, fully bronze mounted with O-ring seals, tar-coated outside, and suitable for working water pressures of 150 psi unless otherwise shown on the plans. Valves shall be standard manufacture and of the highest quality both of materials and workmanship and shall conform to the latest revision of AWWA Specifications C-500.

Unless otherwise shown on the plans, all housed valves and valves in basins shall be handwheel operated. Handwheels shall have not less than the following diameters:

Size Valves	Diameter
1"	3 1/8"
1 1/2"	4 1/4"
2"	6"
3"	8"
4"	10"
6"	12"
8"	14"
10"	16"
12"	18"
14"	20"
16"	22"
18"	24"

Valve stand handwheels and handwheels on extended stems, shall have the same minimum diameters as those shown for handwheels directly on valves. Extension stems shall have adjustable cast iron guides per each ten (10) feet of extension stem length. All extension stems shall be connected with suitable coupling castings for connection to and removal from valves and stands. Nuts and bolts on all extension stem connections shall be stainless steel.

## 2.2 SWING CHECK VALVES

Check valves shall be swing gate type. All check valves shall be iron body with straightway passage of full pipe area when swing gate is open. The valve shall be of the outside lever and weight operating type. The valve must be tight sealing and must operate without hammer or shock. The seat ring or lining must be renewable. The valve should be bronze-mounted and may contain a rubber or neoprene lining in accordance with the manufacturer's recommendations. Valves shall be as manufactured by M & H, Clow or equal.

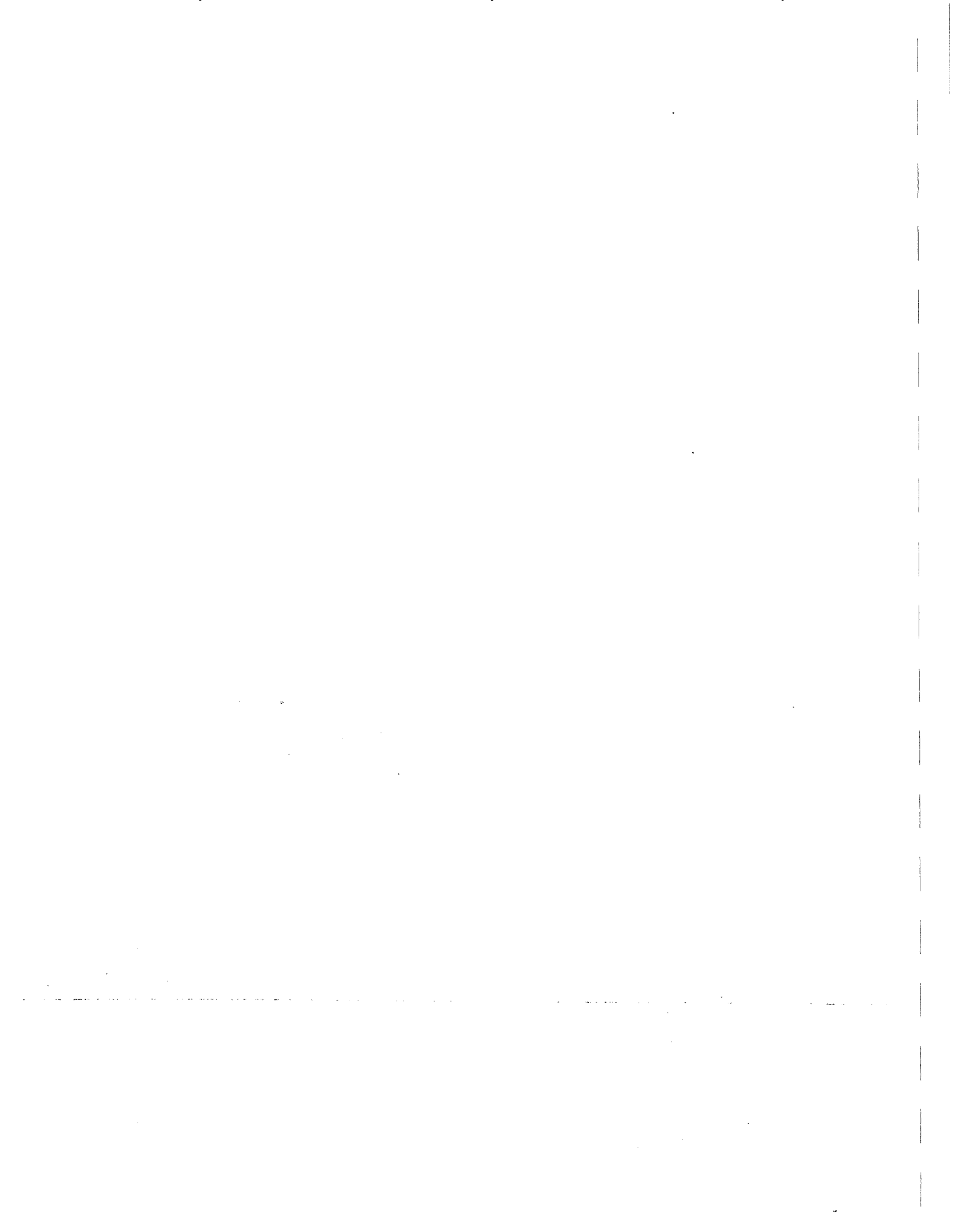
## PART 3 - EXECUTION



### 3.1 INSTALLATION

Piping valves and equipment shall be stored and installed in accordance with the installation manual furnished by the manufacturer. After installation the completely assembled valve shall be operated through one full cycle to demonstrate satisfactory operation. Such adjustments as necessary will be made until operation is approved. When required, the valve shall be subjected to leakage tests and pass the standard requirements for maximum leakage as specified in AWWA standards.

- END OF SECTION -



## SECTION 02720

## PRESSURE PIPELINES INSTALLATION

## PART 1 GENERAL

## 1.01 WORK INCLUDED

- A. The Contractor shall complete all excavations; shall protect all existing structures, utilities, and services; shall furnish all suitable tools and appliances for the safe and convenient handling of all materials to be used on the work; shall lay the pipelines, including valves, valve boxes, fire hydrants, and all other appurtenances thereto; shall install or replace any or all service connections if specified; shall test the lines; shall disinfect water lines; shall replace all walks, driveways, grass plots, or paving; shall remove all surplus materials of every kind; and leave the entire site of the work in a presentable and satisfactory condition; all as specified herein under the various sections.
- B. The specifications for installing pressure mains are intended to conform with the latest revision of AWWA C600, "Installation of Ductile Iron Water Mains and their Appurtenances," and/or AWWA C605 "Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water". The Engineer shall require compliance with those specifications the same as if they were totally incorporated herein, except where these specifications direct otherwise.

## PART 2 PRODUCTS - NOT USED.

## PART 3 EXECUTION

## 3.01 HANDLING AND STORAGE OF MATERIALS

- A. Pressure main pipe, fittings, valves, hydrants, and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground.
- B. Pipe shall be so handled that the coating and lining will not be damaged. If however, any part of the coating or lining is damaged the repair shall be made by the Contractor at his expense in a manner satisfactory to the Engineer.
- C. The Contractor shall be responsible for the safe storage of material furnished by or to him, and accepted by him, and intended for the work, until it has been incorporated in the completed project. The interior of all pipes, fittings and other accessories shall be kept free from dirt and foreign matter at all times. Valves and hydrants shall be drained and stored in a manner that will protect them from damage by freezing.

### 3.02 INSPECTION AND RESPONSIBILITY FOR MATERIAL

- A. All pipeline materials shall be carefully inspected for cracks and other defects prior to installation. All material found during the progress of the work to have cracks, flaws, or other defects, shall be rejected by the Engineer. All defective materials furnished by the Contractor shall be promptly removed by him from the site of the project.
- B. The Contractor shall be responsible for all materials furnished by him and shall replace at his own expense all such material found defective in manufacture or damaged in handling after delivery by the manufacturer. This shall include the furnishing of all material and labor required for the replacement of installed material discovered defective prior to the final acceptance of the work.

### 3.03 INSTALLATION OF PRESSURE PIPELINES

- A. Pressure mains shall be laid and maintained to the required lines and grades with fittings, valves, and hydrants at the required locations; spigots centered in bells; and all valve and hydrant stems plumb.
- B. Proper implements, tools, and facilities shall be provided and used by the Contractor for the safe and convenient performance of the work. All pipe, fittings, valves, and hydrants shall be carefully lowered into the trench piece by piece by means of a derrick, ropes, or other suitable tools or equipment in such a manner as to prevent damage to pipe main materials and protective coatings and linings. Under no circumstances shall pipe main materials be dropped or dumped into the trench.
- C. All pipe and fittings shall be carefully examined for cracks and other defects while suspended above the trench immediately before installation in final position. Spigot ends shall be examined with particular care. Defective pipe or fittings shall be laid aside as previously specified.
- D. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. If the pipe laying crew cannot put the pipe into the trench and in place without getting earth into it, the Engineer may require that before lowering the pipe into the trench, a heavy, tightly woven canvas bag of suitable size shall be placed over each end and left there until the connection is to be made to the adjacent pipe. During laying operations, no debris, tools, or other materials shall be placed in the pipe.
- E. As each length of pipe is placed in the trench, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. The pipe shall be secured in place with approved backfill material tamped under it except at the bells. Precautions shall be taken to prevent dirt from entering the joint space.

- F. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means approved by the Engineer. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry.
- G. The cutting of pipe for inserting valves, fittings, or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe or lining so as to leave a smooth end at right angles to the axis of the pipe.
- H. Pipe shall be laid with bell ends facing in the direction of laying, unless directed otherwise by the Engineer. Where pipe is laid on a grade of ten (10) percent or greater, the laying shall start at the bottom and shall proceed upward with the bell ends of the pipe up grade.

#### 3.04 PLACING PIPELINE FITTINGS

- A. Pipeline fittings, plugs and caps shall be furnished and installed of the type indicated and at the location shown on the construction drawings or as directed by the Engineer. It will be the responsibility of the Contractor to furnish and install all proper size pipe bends for both horizontal and vertical deflections that are required to construct the pressure main to the line and grade as shown on the construction drawings or as set by the Engineer. The fittings, plugs, and caps shall be set and joined to the pipe in the manner heretofore specified for installation and the cost of same is considered incidental costs included in pipeline bid items.

#### 3.05 ANCHORAGE

- A. The Contractor shall provide pipeline restraint at all locations shown on the construction drawings or as required by the Engineer. Anchorage shall be in the form of harnessed or restrained joints for the lengths of pipe and fittings shown.

#### 3.06 TESTING PRESSURE MAINS

- A. The Contractor shall subject the completed pressure pipelines to a leakage test. The test shall be performed on all newly laid pipes in lengths not to exceed 2,000 feet or any valved section thereof. The length of the test section shall exceed the specified maximum limit only with the explicit approval of the Engineer. The test may be conducted after the trench has been backfilled but must be completed before replacement of pavements and final restoration. All testing shall be done in the presence of the Engineer.
- B. The Contractor shall furnish the pump, pipe connection, temporary testing plugs and caps, if required, all necessary apparatus including the pressure gauges and meters and a supply of approved water. The Contractor shall make all necessary taps into the lines. The Contractor shall be responsible for all labor and equipment necessary to conduct the tests, including excavating and backfilling the test pit at

the locations approved by the Engineer.

- C. The pipe shall first be completely flushed out. Then each valved section shall be slowly filled with water. All air shall be expelled from the pipe at high points by means of test plugs in valve bonnets, fire hydrants or through corporation stops installed by the Contractor for this purpose. After all the air has been expelled, the openings shall be closed and the test pressure applied by means of the test pump connected to the pipe in a manner satisfactory to the Engineer.
- D. The test pressure for the leakage test shall be fifty (50) percent above the normal operating pressure of the lowest point in the section of line under the test and corrected to the elevation of the test gauge. The duration of each leakage test shall be two (2) hours.
- E. The exposed piping and/or the top of the trench shall be carefully inspected during the leakage test for any signs of leakage. Any cracked or defective pipe, fittings, valves or hydrants discovered in consequence of the leakage test shall be removed and replaced by the Contractor with sound material and the test shall be redone until satisfactory results are obtained. The Contractor is responsible for locating, excavating and backfilling the defective pressure pipeline trench at no cost to the Owner, in addition to replacing the defective material if the leakage test is conducted on a backfilled pressure pipeline. The Contractor shall maintain the hydrostatic pressure at all times during the leakage test through his test pump.
- F. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain the specified leakage test pressure after the air has been expelled, the pipe has been filled with water, and the pressure initially applied.
- G. No pipe installation will be accepted if the amount of leakage is greater than specified in Table 7, Allowable Leakage, AWWA C600, or calculated by the following equation:

$$L = \frac{SDv(P)}{133,200}$$

Where

L = allowable leakage, gallons per hour.

S = Length of pipe to be tested, ft.

D = Nominal diameter of pipe, in.

P = Average test pressure, psig.

### 3.07 DISINFECTION OF WATER MAINS

- A. All new water mains and repaired sections or extensions to existing water mains

shall be chlorinated before being placed in service so that a chlorine residual of not less than ten (10) ppm remains in the water in the test section after twenty-four (24) hours standing in the pipe. The procedures for disinfecting the water mains and the chemicals to be used shall be in accordance with the requirements of AWWA C601.

- B. If liquid chlorine is used, a chlorine gas-water mixture shall be applied by means of a solution-feed chlorinating device; or, if approved by the Engineer, the dry gas may be fed directly through proper devices for regulating the rate of flow and providing effective diffusion of the gas into the water within the pipe being treated. Chlorinating devices for feeding solutions of the chlorine gas or the gas itself must provide means for preventing the backflow of water into the chlorine cylinder.
- C. A mixture of water and a chlorine-bearing compound of known chlorine content may be substituted for liquid chlorine. Approved types are calcium hypochlorite or sodium hypochlorite. Commercial types of calcium hypochlorite are known as HTH, Perchloron and Pittchlor. Sodium hypochlorite is known commercially as liquid laundry bleach.
- D. High-test calcium hypochlorite or bleaching powder must be prepared as a water mixture for introduction into the water mains. The powder should first be made into a paste and then diluted to approximately a one (1) percent chlorine solution (10,000 ppm). The preparation of a one (1) percent chlorine solution requires the following proportions of powder to water:

Amount of: Product	Compound	Quantity of Water Gallon
High-test calcium hypochlorite (65-70% Cl)	1 lb.	7.50
Liquid laundry bleach (5.25%)	1 gal.	4.25

- E. The chlorinating agent shall be injected into the beginning of the new pipeline extension or any valved section through a corporation stop inserted by the Contractor. The Contractor shall supply the proper type chemical pump, piping and make up water to inject the solution into the main. The application shall be the amount necessary to apply 25 ppm of chlorine to the test section. The amount of one (1) percent chlorine water solution required to give 25 ppm chlorine in 1,000 feet of various size water mains is as follows:

<u>Diameter</u>	<u>Gallons</u>
6"	4

8"	8
10"	10
12"	15
16"	26
20"	40
24"	60
30"	90

- F. Water from the existing distribution system shall be controlled so as to flow slowly into the newly laid pipeline during the application of chlorine. The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the pipe that the chlorine dose applied to the water entering the newly laid pipe shall produce at least ten (10) ppm, after twenty-four (24) hours standing. This may be expected with an application of twenty-five (25) ppm, although some conditions may require that more valves be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. In the process of chlorinating newly laid pipe, all valves or other appurtenances shall be operated while the pipeline is filled with the chlorinating agent.
- G. Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipeline at its extremities until the replacement water throughout its length shall, upon test, be proved comparable in quality to the water serving the public from the existing water supply system and approved by the public health authority having jurisdiction. This satisfactory quality of water delivered by the new main should continue for a period of at least two (2) full days as demonstrated by laboratory examination of samples taken from a tap located and installed in such a way as to prevent outside contamination. Samples shall not be taken from an unsterilized hose or from a fire hydrant, because such samples will seldom meet bacteriological standards.
- H. Should the initial treatment fail to result in the conditions specified, the original chlorination procedure shall be repeated until satisfactory results are obtained.

### 3.08 PRESSURE PIPELINES NOT INSTALLED IN TRENCH

- A. All applicable provisions of this item of work shall also apply to the furnishing of materials and installation procedures for constructing pressure pipelines not installed in a trench condition.

### 3.09 SPECIAL REQUIREMENTS FOR PIPELINE CONSTRUCTION ON STATE RIGHT OF WAY (Also see Section 1580)

- A. Pressure pipelines to be laid on backside of all entrance culverts unless otherwise specified.



- B. All pressure pipelines to be laid on **backside of ditch line** unless otherwise specified.
- C. All slip areas to be open cut, backfilled and tamped at a maximum of 150' sections.
- D. All pressure pipeline crossing of highway culverts (RCP, CMP, Box Culverts) shall have a minimum of 1 foot clearance above or below the culvert.
- E. Efforts have been made to indicate accurate locations of some existing structures, piping and utilities. However, the contractor shall familiarize himself with the site and other existing conditions and notify the engineer of any discrepancies between information depicted by the construction drawings and actual field conditions which would significantly alter the design intent of the construction drawings prior to commencing his construction operations. Dimensions of existing structures and/or site restrictions are approximate. It is the contractor's responsibility to obtain and confirm all dimensions and elevations of existing structures and topography in the field necessary for his construction operation.
- F. The contractor shall use all possible care during excavation on this project so as not to disturb or damage any existing utility or structure not scheduled for demolition whether depicted or not in the construction drawings. Any damage to the aforementioned items caused directly or indirectly by the contractor shall be repaired or replaced by the contractor at no cost to the owner to a condition equal to or better than that which existed prior to being damaged.
- G. The contractor's attention is called to the presence of existing utilities in close proximity to the project site. The contractor is advised to carefully review the project requirements regarding utility reallocations. The contractor can call 1-800-752-6007 a minimum of two and no more than ten business days prior to excavation for information on the location of existing underground utilities which subscribe to the Before-U-Dig (BUD) Service. Additionally it is the contractor's responsibility to contact all existing utility owners and have them field locate their existing utilities prior to any construction activities.
- H. Unless otherwise noted, all buried pipes shall have 36" minimum cover as measured from finished grade to the outside surface of the pipe.
- I. All bores under state highways right-of way shall be a minimum, of 36" depth under bottom of ditch line to top of the proposed bored and/or casing pipe on both sides of the highway.
- J. There shall be no blasting within state right-of-way without written consent from the Kentucky Transportation Cabinet.
- K. Care shall be taken by the contractor to avoid cracking or breaking the bituminous paving. The contractor at no cost to the Dept. of Highways shall repair all damage

to the existing paving caused by the contractor's operation. Paving protection shall be accomplished by the use of rubber and street padded machinery or other approved equipment well suited for this type of construction.

- L. During construction, all embankments, refills and excavations shall be kept shaped and drained by the contractor. Ditches and drains along the highways shall be maintained in such a manner as to drain effectively at all times.
- M. All roadways and driveways within the work limits of state right-of-ways shall be refilled to the natural surface of the ground with approved material and methods. The material shall be placed and compacted to smoothness suitable for traffic. The contractor shall note that all private businesses and residences along the route of the proposed water main must have access to their properties at all time during construction. Additionally, the contractor shall replace existing entrance pipes, retaining walls, catch basins, fences and other property improvements, ditches, guardrail, signs, storm drains, etc. that are damaged by construction unless said facilities are specifically shown to be removed. In particular, all drainage ditches shall be restored to a condition equal or better than existed prior to construction.
- N. Concrete thrust or "kicker" blocks shall be installed in all pressurized lines at intersections and changes of direction to resist forces acting upon the pipeline.
- O. Concrete anchors shall be provided when the pipe slope exceeds twenty percent.
- P. Sewers shall be laid at least ten feet horizontally from any existing or proposed water main. This distance shall be measured edge to edge. If field conditions do not allow this condition to be met, then the sewer shall be construction of mechanical joint ductile iron pipe (pressure tested to 150 psi) and encased in concrete. Sewers shall cross under water mains with a minimum of eighteen inches of separation between the crown of the sewer and in the invert of the water main. If field conditions are such that this separation can not be maintained, the sewer shall be constructed of mechanical joint ductile iron pipe which shall be pressure tested to 150 psi. The ductile iron pipe must be centered on the crossing so that the joints are at least ten feet on either side of the crossing.
- Q. Traffic control is to be as per MUTCD standards.
- R. Reclamation is to be accomplished as per the general notes of the approved encroachment permit provided by the Kentucky Dept. of Highways.
- S. Valve locations cannot be shown with precision of the supplied mapping. Valve locations shall be coordinated with the resident inspector prior to installation.
- T. Numerous drop box inlets are located next to some of the state and federal highways within the project limits. These inlets have concrete aprons that are 9' x 9'. Many of the inlets are set against the backside of the rock cut along the

highway. The contractor may do one of two things. (1) He may either saw cut the backside of the Surface drain and without damaging the drainage box install the pipe. If the drainage box does get damaged in any way then the contractor will restore the drainage box and surface drain back to its original condition. (2) The contractor shall install the force main under the culvert pipe. If the culvert pipe is damaged in any fashion then the contractor shall replace the portion that is damaged to its original condition.

- U. Proposed utilities must go under or around existing highway culvert pipes. Utilities may not be placed over existing highway culverts. Minimum separation between culvert pipe and force main is five feet.
- V. Track vehicles must be isolated from pavement with an earth cushion or protective material. In no event shall track vehicles be operated directly on paved surfaces.

END OF SECTION



## SECTION 03300

## CONCRETE

## PART 1 GENERAL

## 1.1 WORK INCLUDED

- A. Admixtures
- B. Cementitious Materials
- C. Aggregates
- D. Curing Materials
- E. Embedded Items
- F. Non-shrink Grout
- G. Non-slip Surfacing Material
- H. Floor Hardener
- I. Perimeter Insulation
- J. Vapor Barrier
- K. Water

## 1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

**AMERICAN CONCRETE INSTITUTE (ACI)**

- |           |   |
|-----------|---|
| ACI 211.1 | (1991) Selecting Proportions for Normal, Heavyweight, and Mass Concrete |
| ACI 211.2 | (1998) Selecting Proportions for Structural Lightweight Concrete        |
| ACI 301   | (1999) Structural Concrete for Buildings                                |
| ACI 305R  | (1999) Hot Weather Concreting   |

ACI 318 (1999) Building Code Requirements for Reinforced Concrete

**AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)**

ASTM C 31 (1991) Making and Curing Concrete Test Specimens in the Field

ASTM C 33 (1999) Concrete Aggregates

ASTM C 39 (1993) Compressive Strength of Cylindrical Concrete Specimens

ASTM C 42 (1990) Obtaining and Testing Drilled Cores and Sawed Beams of Concrete

ASTM C 78 (1994) Flexural Strength of Concrete (Using Simple Beam With Third Point Loading)

ASTM C 94 (1994) Ready Mixed Concrete

ASTM C 109 (1992) Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)

ASTM C 143 (2000) Slump of Portland Cement Concrete

ASTM C 150 (1999) Portland Cement

ASTM C 171 (1997) Sheet Materials for Curing Concrete

ASTM C 172 (1999) Sampling Freshly Mixed Concrete

ASTM C 173 (1994) Air Content of Freshly Mixed Concrete by the Volumetric Method

ASTM C 192 (2000) Making and Curing Concrete Test Specimens in the Laboratory

ASTM C 231 (1997) Air Content of Freshly Mixed Concrete by the Pressure Method

ASTM C 260 (2000) Air-Entraining Admixtures for Concrete

ASTM C 309 (1998) Liquid Membrane-Forming Compounds for Curing Concrete

ASTM C 330	(2000) Lightweight Aggregates for Structural Concrete
ASTM C 494	(1992) Chemical Admixtures for Concrete
ASTM C 552	(2000) Cellular Glass Thermal Insulation
ASTM C 567	(2000) Unit Weight of Structural Lightweight Concrete
ASTM C 578	(1995) Preformed, Cellular Polystyrene Thermal Insulation
ASTM C 595	(2000) Blended Hydraulic Cements
ASTM C 597	(1997) Pulse Velocity Through Concrete
ASTM C 618	(2000) Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete
ASTM C 803	(1997) Penetration Resistance of Hardened Concrete
ASTM C 805	(1997) Rebound Number of Hardened Concrete
ASTM C 989	(1999) Ground Iron Blast Furnace Slag for Use in Concrete and Mortars
ASTM C 1017	(1992) Chemical Admixture for Use in Producing Flowing Concrete
ASTM 1019	(2000) Sampling and Testing Grout
ASTM D 98	(1998) Calcium Chloride
ASTM E 96	(2000) Water Vapor Transmission of Materials

#### **FEDERAL SPECIFICATIONS (FS)**

FS HH I-530	(Rev B; Int Am 1) Insulation Board, Thermal, Unfaced, Polyurethane or Polyisocyanurate
COE CRD-C318	(1997) Cloth, Burlap, Jute (or Kenaf)

#### **NATIONAL READY-MIXED CONCRETE ASSOCIATION (NRMCA)**

NRMCA QC3	(Jan 1, 1984) Certification of Ready Mixed Concrete Production Facilities
NRMCA CPMB 100	(1996) Concrete Plant Standards &

NRMCA TMMB-01 (1994) Truck Mixer Agitator Standards and Front Discharge Concrete Carrier Standards.

### 1.3 SUBMITTALS

- A. Submit shop drawings and product data under provision of Section 01300.

### 1.4 GENERAL REQUIREMENTS

#### A. Strength Requirements

Structural concrete for all work shall have a 28-day compressive strength of 4000 pounds per square inch. Concrete slabs on-grade as indicated shall have a 28-day flexural strength of 600 pounds per square inch. Concrete made with high-early strength cement shall have a 7-day strength equal to the specified 28-day strength for concrete made with Type I or II Portland cement.

#### B. Air Entrainment

Concrete may, at the option of the Contractor, be air entrained to produce concrete with 3 to 5 percent total air.

#### C. Special Properties

Concrete may contain other admixtures, such as water reducers, superplasticizers, or set retarding agents to provide special properties to the concrete only specifically when approved by the Engineer.

#### D. Slump

Slump shall be within the following limits:

Structural Element	Slump in inches	
	Minimum	Maximum
Walls, columns and beams	2	4
Foundation walls, substructure walls, footings, pavement, and slabs	1	3
Any structural concrete approved for placement by pumping	None	6

\*Where use of superplasticizers is approved to produce flowing concrete these slump requirements do not apply.



E. Technical Service for Specialized Concrete

The service of a technical representative shall be obtained to oversee proportioning, batching, mixing, placing, consolidating and finishing of specialized structural concrete, such as lightweight or flowing concrete until field controls indicate concrete of specified quality is furnished.

1.5 PROPORTIONS OF MIX

A. Mixture Proportioning, Normal Weight Concrete

Trial batches shall contain materials proposed to be used in the project. Trial mixtures having proportions, consistencies and air content suitable for the work shall be made based on methodology described in ACI 211.1, using at least three different water-cement ratios. Trial mixes shall be proportioned to produce concrete strengths specified. In the case where ground iron blast-furnace slag is used, the weight of the slag will be substituted in the equations for the term P which is used to denote the weight of pozzolan. Trial mixtures shall be designed for maximum permitted slump and air content. The temperature of concrete in each trial batch shall be reported. For each water-cement ratio at least three test cylinders for each test age shall be made and cured in accordance with ASTM C 192. They shall be tested at 7 and 28 days in accordance with ASTM C 39. From these test results a curve shall be plotted showing the relationship between water-cement ratio and strength.

B. Average Strength

In meeting the strength requirements specified, the selected mixture proportion shall produce an average compressive strength exceeding the specified strength by the amount indicated below. Where a concrete production facility has test records, a standard deviation shall be established. Test records from which a standard deviation is calculated shall represent materials, quality control procedures, and conditions similar to those expected; shall represent concrete produced to meet a specified strength or strengths within 1000 psi of that specified for proposed work; and shall consist of at least 30 consecutive tests. A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days or at other test age designated for determination of the specified strength.

1. Test Records Exceeding 29

Required average compressive strength used as the basis for selection of concrete proportions shall be the larger of the specified strength plus the standard deviation multiplied by 1.34 or the specified strength plus the standard deviation multiplied by 2.33 minus 500.

## 2. Test Records Less Than 29

Where a concrete production facility does not have test records meeting the above requirements but does have a record based on 15 to 29 consecutive tests, a standard deviation may be established as the product of the calculated standard deviation and a modification factor from the following table:

No. of tests (1)	Modification factor for standard deviation
less than 15	See Note
15	1.16
20	1.08
25	1.03
30 or more	1.00

(1) Interpolate for intermediate numbers of tests.

When a concrete production facility does not have field strength test records for calculation of standard deviation or the number of tests is less than 15, the required average strength shall be:

- a. The specified strength plus 1000 specified strength of less than 3000 psi.
- b. The specified strength plus 1200 for specified strengths of 3000 to 5000 psi.
- c. The specified strength plus 1400 for specified strengths greater than 5000 psi.

## 1.6 STORAGE OF MATERIALS

Cement and pozzolan shall be stored in weathertight buildings, bins, or silos which will exclude moisture and contaminants. Aggregate stockpiles shall be arranged and used in a manner to avoid excessive segregation and to prevent contamination with other materials or with other sizes of aggregates. Rein-forcing bars and accessories shall be stored above the ground on platforms, skids or other supports. Other materials shall be stored in such a manner as to avoid contamination and deterioration. Admixtures which have been in storage at the project site for longer than 6 months or which have been subjected to freezing shall not be used unless retested and proven to meet the specified requirements.

PART 2 PRODUCTS

2.1 ADMIXTURES

Admixtures shall conform to the following:

A. Accelerating Admixture

ASTM C 494, Type C or E; or calcium chloride conforming to ASTM D 98.

B. Air Entraining Admixture

ASTM C 260.

C. Flowing Concrete Admixture

ASTM C 1017, Type 1 or 2.

D. Water-Reducing or Retarding Admixture

ASTM C 494, Type A, B, D, F, or G.

2.2 CEMENTITIOUS MATERIALS

Cementitious materials shall each be of one type and from one source when used in concrete which will have surfaces exposed in the finished structure. Cementitious materials shall conform to one of the following:

A. Cement

ASTM C 150, Type I or II low alkali.

B. Portland Blast-Furnace-Slag Cement

ASTM C 595, Type IS.

C. Portland-Pozzolan Cement

ASTM C 595, Type IP.

D. Pozzolan

ASTM C 618, Class F.

E. Ground Iron Blast-Furnace Slag

ASTM C 989, Grade 120.

## 2.3 AGGREGATES

Aggregates shall conform to the following:

### A. Lightweight Aggregate

ASTM C 330

### B. Normal Weight Aggregate

ASTM C 33.

## 2.4 CURING MATERIALS

### A. Burlap

COE CRD-C318.

### B. Impervious Sheets

ASTM C 171, type optional, except that polyethylene film, if used, shall be white opaque.

### C. Membrane-Forming Compounds

ASTM C 309, Type 1-D, Class A or B.

## 2.5 EMBEDDED ITEMS

Embedded items shall be of the size and type indicated or as needed for the application.

## 2.6 NONSHRINK GROUT

Non-shrink grout shall conform to ASTM C1019 and shall be a formulation suitable for the application.

## 2.7 FLOOR HARDENER

Floor hardener shall be a colorless aqueous solution containing zinc silicofluoride, magnesium silicofluoride, or sodium silicofluoride. These silicofluoride can be used individually or in combination.

## 2.8 PERIMETER INSULATION

Perimeter insulation shall be as noted on plans, polystyrene conforming to ASTM C 578, Type II; polyurethane conforming to FS HH-I-530, Type II; or cellular glass conforming to ASTM C 552, Type I or IV.

## 2.9 VAPOR BARRIER

Vapor barrier shall be polyethylene sheeting with a minimum thickness of 6 mils or other equivalent material having a vapor permeance rating not exceeding 0.5 perms as determined in accordance with ASTM E 96.

## 2.10 WATER

Water shall be potable, non-potable water shall not be used. The strength comparison shall be made on mortars, identical except for mixing water, prepared and tested in accordance with ASTM C 109. Water for curing shall not contain any substance injurious to concrete, or which causes staining.

# PART 3 EXECUTION

## 3.1 PREPARATION OF SURFACES

Surfaces to receive concrete shall be clean and free from frost, ice, mud, and water. Conduit and other similar items shall be in place and clean of any deleterious substance. Reference to plans for limits of specified work to be performed.

### A. Foundations

Earthwork shall be as specified on Drawings. Flowing water shall be diverted without washing over freshly deposited concrete. Rock foundations shall be cleaned by high velocity air-water jets, sandblasting, or other approved methods. Debris and loose, semi-detached or unsound fragments shall be removed. Rock surfaces shall be moist but without free water when concrete is placed. Semi-porous subgrades for foundations and footings shall be damp when concrete is placed. Pervious subgrades shall be sealed by blending impervious material with the top 6 inches of the in-place pervious material or by covering with an impervious membrane.

### B. Perimeter Insulation

Perimeter insulation shall be installed at locations indicated. Adhesive shall be used where insulation is applied to the interior surface of foundation walls.

### C. Vapor Barrier

Unless otherwise indicated, subgrades for slabs in buildings shall be covered with

a vapor barrier. Vapor barrier edges shall be lapped at least 4 inches and ends shall be lapped not less than 6 inches. Patches and lapped joints shall be sealed with pressure-sensitive adhesive or tape not less than 2 inches wide and compatible with the membrane.

#### D. Preparation of Previously Placed Concrete

Concrete surfaces to which other concrete is to be bonded shall be roughened in an approved manner that will expose sound aggregate uniformly without damaging the concrete. Laitance and loose particles shall be removed. Surfaces shall be moist but without free water when concrete is placed.

### 3.2 INSTALLATION OF EMBEDDED ITEMS

Embedded items shall be free from oil, loose scale or rust, and paint. Embedded items shall be installed at the locations indicated and required to serve the intended purpose. Voids in sleeves, slots and inserts shall be filled with readily removable material to prevent the entry of concrete.

### 3.3 BATCHING, MIXING AND TRANSPORTING CONCRETE

Ready-mixed concrete shall be batched, mixed and transported in accordance with ASTM C 94, except as otherwise specified. Truck mixers, agitators, and non-agitating units shall comply with NRMCA TMMB-100. Ready-mix plant equipment and facilities shall be certified in accordance with NRMCA Q3. Site-mixed concrete shall be mixed in accordance with ACI 301. On-site plant shall conform to the NRMCA CPMB-100.

#### A. Admixtures

Admixtures shall be batched within an accuracy of 3 percent. Where two or more admixtures are used in the same batch, they shall be batched separately and must be compatible. Retarding admixture shall be added within one minute after addition of water is complete or in the first quarter of the required mixing time, whichever is first. Superplasticizing admixtures shall be added as recommended by manufacturer. Concrete that shows evidence of total collapse or segregation caused by the use of admixture shall be removed from the site.

#### B. Control of Mixing Water

No water from the truck system or elsewhere shall be added after the initial introduction of mixing water for the batch except when on arrival at the jobsite, the slump of the concrete is less than that specified. Water added to bring the slump within the specified range shall not change the total water in the concrete to a point that the approved water-cement ratio is exceeded. The drum shall be turned an additional 30 revolutions, or more, if necessary, until the added water is uniformly mixed into the concrete. Water shall not be added to the batch at any

later time.

C. Mixing of Lightweight Concrete

The mixing cycle shall be as recommended by the aggregate producer for the batching and mixing as required by the absorptivity of the aggregate. Typically, the mixer is charged with approximately 2/3 of the total mixing water and all of the aggregate. Ingredients are mixed for not less than 30 seconds in a stationary mixer nor less than 10 revolutions at mixing speed in a truck mixer. Cement, air entraining admixture, and the rest of the mixing water are added to obtain the required slump and mixing is continued for 30 revolutions at mixing speed.

3.4 SAMPLING AND TESTING

Sampling and Testing is the responsibility of the Contractor and shall be performed by an approved testing agency.

A. Aggregates

Aggregates for normal weight concrete shall be sampled and tested in accordance with ASTM C 33. Gradation tests shall be performed on the first day and every other day thereafter during concrete construction.

B. Sampling of Concrete

Samples of concrete for air, slump, unit weight, and strength tests shall be taken in accordance with ASTM C 172.

1. Air Content

Test for air content shall be performed in accordance with ASTM C 173 or ASTM C 231. A minimum of 1 test per day shall be conducted.

2. Slump

At least 2 slump tests shall be made on randomly selected batches of each mixture of concrete during each day's concrete placement. Tests shall be performed in accordance with ASTM C 143.

C. Evaluation and Acceptance of Concrete

1. Frequency of Testing

Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 150 cubic yards of concrete, nor less than once for each 5000 square feet of surface

area for slabs or walls. If this sampling frequency results in less than 5 strength tests for a given class of concrete, tests shall be made from at least 5 randomly selected trucks or from each truck if fewer than 5 truck loads are used. Field cured specimens for determining form removal time or when a structure may be put in service shall be made in numbers directed to check the adequacy of curing and protection of concrete in the structure. The specimens shall be removed from the molds at the age of 24 hours and shall be cured and protected, insofar as practicable, in the same manner as that given to the portion of the structure the samples represent.

## 2. Testing Procedures

Cylinders and beams for acceptance tests shall be molded and cured in accordance with ASTM C 31. Cylinders shall be tested in accordance with ASTM C 39 and beams shall be tested in accordance with ASTM C 78. A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days or at another specified test age.

## 3. Evaluation of Results

Concrete specified on the basis of compressive strength will be considered satisfactory if the averages of all sets of three consecutive strength test results equal or exceed the specified strength and no individual strength test result falls below the required strength by more than 500 pounds per square inch. For flexural strength concrete, the strength level of the concrete will be considered satisfactory if the averages of all sets of five consecutive strength test results equal or exceed the required flexural strength.

### D. Investigation of Low-Strength Test Results

When any strength test of standard-cured test cylinder falls below the specified strength requirement by more than 500 pounds per square inch, or if tests of field-cured cylinders indicate deficiencies in protection and curing, steps shall be taken to assure that load-carrying capacity of the structure is not jeopardized. Non-destructive testing in accordance with ASTM C 597, ASTM C 803 or ASTM C 805 may be permitted by the Engineer to determine the relative strengths at various locations in the structure as an aid in evaluating concrete strength in place or for selecting areas to be cored. Such tests, unless properly calibrated and correlated with other test data, shall not be used a basis for acceptance or rejection. When strength of concrete in place is considered potentially deficient, cores shall be obtained and tested in accordance with ASTM C 42. At least three representative cores shall be taken from each member or area of concrete in place that is considered potentially deficient. The location of cores shall be determined



by the Engineer to least impair the strength of the structure. If the concrete in the structure will be dry under service conditions, the cores shall be air-dried (temperature 60 to 80 degrees F, relative humidity less than 60 percent) for seven days before testing and shall be tested dry. If the concrete in the structure will be more than superficially wet under service conditions, the cores shall be tested after moisture conditioning in accordance with ASTM C 42. Concrete in the area represented by the core testing will be considered adequate if the average strength of the cores is equal to or at least 85 percent of the specified strength requirement and if no single core is less than 75 percent of the specified strength requirement. If the core tests are inconclusive or impractical to obtain, or if structural analysis does not confirm the safety of the structure, load tests may be directed by the Engineer in accordance with the requirements of ACI 318. Concrete work evaluated by structural analysis or by results of a load test and found deficient shall be corrected in a manner satisfactory to the Engineer. All investigations, testing, load tests, and correction of deficiencies shall be performed, and approved by the Engineer, at the expense of the Contractor.

### 3.5 CONVEYING CONCRETE

Concrete shall be conveyed from mixer to forms as rapidly as possible and within the time interval specified in paragraph "CONCRETE PLACEMENT" by methods which will prevent segregation or loss of ingredients. Final method of placement shall be approved by the Engineer.

#### A. Chutes

When concrete can be placed directly from a truck mixer or other transporting equipment, chutes attached to this equipment may be used. Separate chutes will not be permitted except when specifically approved.

#### B. Buckets

Bucket design shall be such that concrete of the required slump can be readily discharged. Bucket gates shall be essentially grout tight when closed. The bucket shall provide means for positive regulations of the amount and rate of deposit of concrete in each dumping position.

#### C. Belt Conveyors

Belt conveyors may be used when approved. Belt conveyors shall be designed for conveying concrete and shall be operated to assure a uniform flow of concrete to the final place of deposit without segregation or loss of mortar. Conveyors shall be provided with positive means for preventing segregation of the concrete at transfer points and point of placement.

#### D. Pumps

Concrete may be conveyed by positive displacement pumps when approved. Pump shall be the piston or squeeze pressure type. Pipeline shall be steel pipe or heavy duty flexible hose. Inside diameter of the pipe shall be at least three times the maximum size of the coarse aggregate. Distance to be pumped shall not exceed the limits recommended by the pump manufacturer. Concrete shall be supplied to the pump continuously. When pumping is completed, the concrete remaining in the pipeline shall be ejected without contaminating the concrete in place. After each use, the equipment shall be thoroughly cleaned. Flushing water shall be wasted outside the forms.

### 3.6 CONCRETE PLACEMENT

Mixed concrete which is transported in truck mixers or agitators or concrete which is truck mixed, shall be discharged within 1-1/2 hours or before the drum has revolved 300 revolutions, whichever comes first after the introduction of the mixing water to the cement and aggregates or the introduction of the cement to the aggregates. These limitations may be waived by the Engineer if the concrete is of such slump after the 1-1/2 hour time or 300 revolution limit has been reached that it can be placed, without the addition of water to the batch. When the concrete temperature exceeds 85 degrees F, the time shall be reduced to 45 minutes. Concrete shall be placed within 15 minutes after it has been discharged from the truck.

#### A. Placing Operation

Concrete shall be handled from mixer to forms in a continuous manner until the approved unit of operation is completed. Adequate scaffolding, ramps and walkways shall be provided so that personnel and equipment are not supported by in-place reinforcement. Placing will not be permitted when the sun, heat, wind, or limitations of facilities furnished by the Contractor prevent proper consolidation, finishing and curing. Concrete shall be deposited as close as possible to its final position in the forms, and there shall be no vertical drop greater than 8 feet except where suitable equipment is provided to prevent segregation and where specifically authorized. Depositing of the concrete shall be so regulated that it will be effectively consolidated in horizontal layers not more than 12 inches thick, except that all slabs shall be placed in a single layer. Concrete to receive other construction shall be screeded to the proper level to avoid excessive shimming or grouting.

#### B. Consolidation

Immediately after placing, each layer of concrete shall be consolidated by internal vibrators, except for slabs 4 inches or less. The vibrators shall at all times be adequate in effectiveness and number to properly consolidate the concrete; a spare vibrator shall be kept at the jobsite during all concrete placing operations. The vibrators shall have a frequency of not less than 8000 vibrations per minute, and

the head diameter and amplitude shall be appropriate for the concrete mixture being placed. Vibrators shall be inserted vertically at uniform spacing over the area of placement. The distance between insertions shall be approximately 1-1/2 times the radius of action of the vibrator so that the area being vibrated will overlap the adjacent just-vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the preceding layer if there is such. Vibrator shall be held stationary until the concrete is consolidated and then withdrawn slowly. The use of form vibrators must be specifically approved. Vibrators shall not be used to transport concrete within the forms. Slabs 4 inches and less in thickness shall be consolidated by properly designed vibrating screeds or other approved technique. Excessive vibration of lightweight concrete resulting in segregation and flotation of coarse aggregate shall be avoided.

#### C. Cold Weather Requirements

Special protection measures, approved by the Engineer, shall be used if freezing temperatures are anticipated before the expiration of the specified curing period. The ambient temperature of the air where concrete is to be placed and the temperature of surfaces to receive concrete shall be not less than 40 degrees F. The temperature of the concrete when placed shall be not less than 50 degrees F nor more than 75 degrees F. Heating of the mixing water or aggregates will be required to regulate the concrete placing temperature. Materials entering the mixer shall be free from ice, snow, or frozen lumps. Salt, chemicals or other materials shall not be incorporated in the concrete to prevent freezing. Upon written approval, calcium chloride or chemical admixture conforming to ASTM C 494 Type C or E may be used. The amount of calcium chloride shall not exceed 2 percent by weight of the cement, and it shall be batched in solution form. Calcium chloride shall not be used where concrete will be in contact with aluminum or zinc-coated items, or where sulfate resistant or pre-stressed concrete is specified.

#### D. Warm Weather Requirements

The temperature of the concrete placed during warm weather shall not exceed 85 degrees F except where an approved retarder is used. The mixing water and/or aggregates shall be cooled, if necessary, to maintain a satisfactory placing temperature. In no case shall the placing temperature exceed 95 degrees F.

### 3.7 CONSTRUCTION JOINTS

Construction joints shall be located as indicated or approved. Where concrete work is interrupted by weather, end of work shift or other similar type of delay, location and type of construction joint shall be subject to approval of the Engineer. Unless otherwise indicated and except for slabs on grade, reinforcing steel shall extend through construction joints. Construction joints in slabs on grade shall be keyed or doweled as

shown. Concrete columns, walls, or piers shall be in place at least 2 hours, or until the concrete is no longer plastic, before placing concrete for beams, girders, or slabs thereon. In walls having door window openings, lifts shall terminate at the top and bottom of the opening. Other lifts shall terminate at such levels as to conform to structural requirements or architectural details. Where horizontal construction joints are required, a strip of 1-inch square-edge lumber, beveled and oiled to facilitate removal, shall be tacked to the inside of the forms at the construction joint. Concrete shall be placed to a point 1 inch above the underside of the strip. The strip shall be removed 1 hour after the concrete has been placed, and any irregularities in the joint line shall be leveled off with a wood float, and all laitance shall be removed. Prior to placing additional concrete, horizontal construction joints shall be prepared as specified in paragraph "PREPARATIONS OF SURFACES."

### 3.8 FINISHING CONCRETE

#### A. Formed Surfaces

##### 1. Repair of Surface Defects

Surface defects shall be repaired within 24 hours after the removal of forms. Honeycombed and other defective areas shall be cut back to solid concrete or to a depth of not less than 1 inch, whichever is greater. Edges shall be cut perpendicular to the surface of the concrete. The prepared areas shall be dampened and brush-coated with neat cement grout. The repair shall be made using mortar consisting of not more than 1 part cement to 2-1/2 parts sand. The mixed mortar shall be allowed to stand to stiffen (approximately 45 minutes), during which time the mortar shall be intermittently remixed without the addition of water. After the mortar has attained the stiffest consistency that will permit placing, the patching mix shall be thoroughly tamped into place by means approved by the Engineer and finished slightly higher than the surrounding surface. For Class A and Class B finished surfaces the cement used in the patching mortar shall be a blend of job cement and white cement proportioned to produce a finished repair surface matching, after curing, the color of adjacent surfaces. Holes left after the removal of form ties shall be cleaned and filled with patching mortar. Holes left by the removal of tie rods shall be reamed and filled by dry packing. Repaired surfaces shall be cured as required for adjacent surfaces. The temperature of concrete, mortar patching material, and ambient air shall be above 50 degrees F while making repairs and during the curing period. Concrete with defects which affect the strength of the member or with excessive honeycombs will be rejected, or the defects shall be corrected as directed.

##### 2. Class A Finish

Where a Class A finish is indicated, fins shall be removed. A mortar mix

consisting of one part Portland cement and two parts well-graded sand passing a No. 30 sieve, with water added to give the consistency of thick paint, shall be prepared. White cement shall be used to replace part of the job cement. After the surface has been thoroughly wetted and allowed to approach surface dryness, the mortar shall be vigorously applied to the area by clean burlap pads or by cork or wood-floating, to completely fill all surface voids. Excess grout shall be scraped off with a trowel. As soon as it can be accomplished without pulling the mortar from the voids, the area shall be rubbed with burlap pads until all visible grout film is removed. The rubbing pads shall have on their surfaces the same sand-cement mix specified above but without any mixing water. The finish of any area shall be completed in the same day, and the limits of a finished area shall be made at natural breaks in the surface. The surface shall be continuously moist cured for 48 hours. The temperature of the air adjacent to the surface shall be not less than 50 degrees F for 24 hours prior to, and 48 hours after, the application. In hot, dry weather the smooth finish shall be applied in shaded areas.

3. Class B Finish

Where a Class B finish is indicated, fins shall be removed. Concrete surface shall be smooth with a texture at least equal to that obtained through the use of Grade B-B plywood forms.

4. Class C Finish

Where a Class C finish is indicated, fins shall be removed. Concrete surfaces shall be relatively smooth with a texture imparted by the forms used.

5. Class D Finish

Where a Class D finish is indicated, fins exceeding 1/4 inch in height shall be chipped or rubbed off. Concrete surfaces shall be left with the texture imparted by the forms used.

B. Unformed Surfaces

In cold weather, the air temperature in areas where concrete is being finished shall not be less than 50 degrees F. In hot windy weather when the rate of evaporation of surface moisture, as determined by methodology presented in ACI 305R, may reasonably be expected to exceed 0.2 pounds per square foot per hour; coverings, windbreaks, or fog sprays shall be provided as necessary to prevent premature setting and drying of the surface. The dusting of surfaces with dry materials or the addition of water during finishing will not be permitted. Finished surfaces shall be plane, with no deviation greater than 1/4 inch when tested with a 10-foot

straightedge. Surfaces shall be pitched to drains.

1. Trowel Finish

- a. Slabs shall be given a trowel finish immediately following floating. Surfaces shall be trowelled to produce smooth, dense slabs free from blemishes including trowel marks. In lieu of hand finishing, an approved power-finishing machine may be used in accordance with the directions of the machine manufacturer. A final hard steel troweling shall be done by hand.
- b. Trowel finish will be specified for most wearing surfaces and where a smooth finish is required.

2. Broom Finish (Concrete Stoops)

After floating, slabs shall be lightly trowelled, and then broomed with a fiber-bristle brush in a direction transverse to that of the main traffic.

### 3.9 CURING AND PROTECTION

A. General

1. All concrete shall be cured by an approved method for the period of time given below:

Concrete with Type III cement	3 days
Concrete with Type I, II, IP or IS cement	7 days
Concrete with Type I or Type II cement blended with pozzolan	7 days

2. Immediately after placement, concrete shall be protected from premature drying, extremes in temperatures, rapid temperature change, mechanical injury and injury from rain and flowing water. Air and forms in contact with concrete shall be maintained at a temperature above 50 degrees F for the first 3 days and at a temperature above 32 degrees F for the remainder of the specified curing period. Exhaust fumes from combustion heating units shall be vented to the outside of the enclosure and heaters and ducts shall be placed and directed so as not to cause areas of overheating and drying of concrete surfaces or to create fire hazards. All materials and equipment needed for adequate curing and protection shall be available and at the site prior to placing concrete. No fire or excessive heat shall be permitted near or in direct contact with the concrete at any time. Curing shall be accomplished by any of the following methods, or combination thereof, as approved.

## B. Moist Curing

Concrete to be moist-cured shall be maintained continuously wet for the entire curing period. If water or curing materials used stains or discolors concrete surfaces which are to be permanently exposed, the concrete surfaces shall be cleaned. When wooden forms are left in place during curing, they shall be kept wet at all times. If the forms are removed before the end of the curing period, curing shall be carried out as on unformed surfaces, using suitable materials. Horizontal surfaces shall be cured by ponding, by covering with a 2-inch minimum thickness of continuously saturated sand, or by covering with waterproof paper, polyethylene sheet, polyethylene-coated burlap or saturated burlap.

## C. Membrane Curing

Membrane curing shall not be used on surfaces that are to receive any subsequent treatment depending on adhesion or bonding to the concrete; except a styrene acrylate or chlorinated rubber compound meeting ASTM C 309, Class B requirements may be used for surfaces which are to be painted or are to receive bituminous roofing or waterproofing, or floors that are to receive adhesive applications of resilient flooring. The curing compound selected shall be compatible with any subsequent paint, roofing, waterproofing or flooring specified. Membrane curing compound shall not be used on surfaces that are maintained at curing temperatures with free steam. Curing compound shall be applied to formed surfaces immediately after the forms are removed and prior to any patching or other surface treatment except the cleaning of loose sand, mortar, and debris from the surface. Surfaces shall be thoroughly moistened with water and the curing compound shall be applied to slab surfaces as soon as the bleeding water has disappeared, with the tops of joints being temporarily sealed to prevent entry of the compound and to prevent moisture loss during the curing period. Compound shall be applied in a one-coat continuous operation by mechanical spraying equipment, at a uniform coverage in accordance with the manufacturer's printed instructions. Concrete surfaces which have been subjected to rainfall within 3 hours after curing compound has been applied shall be re-sprayed by the method and at the coverage specified. On surfaces permanently exposed to view, the surface shall be shaded from direct rays of the sun for the duration of the curing period. Surfaces coated with curing compound shall be kept free of foot and vehicular traffic, and from other sources of abrasion and contamination during the curing period.

### 3.10 SETTING BASE PLATES AND BEARING PLATES

Reference to plans for locations, which apply.

After being properly positioned, column base plates, bearing plates for beams and similar structural members, and machinery and equipment base plates shall be set to the proper

line and elevation with damp-pack bedding mortar, except where non-shrink grout is indicated. The thickness of the mortar or grout shall be approximately 1/24 the width of the plate, but not less than 3/4 inch. Concrete and metal surfaces in contact with grout shall be clean and free of oil and grease, and concrete surfaces in contact with grout shall be damp and free of laitance when grout is placed.

A. Damp-Pack Bedding Mortar

Damp-pack bedding mortar shall consist of 1 part cement and 2-1/2 parts fine aggregate having water content such that a mass of mortar tightly squeezed in the hand will retain its shape but will crumble when disturbed. The space between the top of the concrete and bottom of the bearing plate or base shall be packed with the bedding mortar by tamping or ramming with a bar or rod until it is completely filled.

B. Non-shrink Grout

Non-shrink grout shall be mixed and placed in accordance with material manufacturer's written recommendations. Forms of wood or other suitable material shall be used to retain the grout. The grout shall be placed quickly and continuously, completely filling the space without segregation or bleeding of the mix.

C. Treatment of Exposed Surfaces

For metal-oxidizing non-shrink grout, exposed surfaces shall be cut back 1 inch and immediately covered with a parget coat of mortar consisting of 1 part Portland cement and 2-1/2 parts fine aggregate by weight, with sufficient water to make a plastic mixture. The parget coat shall have a smooth finish. For other mortars or grouts, exposed surfaces shall be left untreated. Curing shall comply with paragraph "CURING AND PROTECTION."

END OF SECTION



SECTION 03419

CONCRETE ENCASEMENT AND CONCRETE CRADLE

PART 1 GENERAL

1.01 RELATED SECTIONS

- A. 01300 - Submittals
- B. 01600 - Materials and Equipment
- C. 01410 - Testing Laboratory Services
- D. 03300 - Concrete

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

3.01 CONCRETE ENCASEMENT

- A. Buried pipelines shall be encased in 2,500 psi concrete where shown on the construction drawings or to the extent and/or at other locations as determined by the Engineer/Project Manager.
- B. Concrete encasement shall provide a minimum cover of six (6) inches beneath and above the pipe O.D. and shall extend laterally to the undisturbed wall of the pipeline trench. Additional thickness of concrete encasement, if required, shall be shown on the construction drawings. Each pour shall start and stop at a pipe joint.

3.02 CONCRETE CRADLE

- A. Concrete cradles shall be 2,500 psi concrete where shown on the construction drawing or as directed by the Engineer/Project Manager.
- B. Concrete cradles shall provide a minimum of six (6) inches beneath the pipe and extend to the spring line of the pipe unless otherwise shown on the construction drawings. Each pour shall start and stop at a pipe joint.

3.03 MEASUREMENT AND PAYMENT

- A. The payment for concrete encasement shall include furnishing and placing the concrete encasement. The Contractor shall be paid for the number of lineal feet of encasement constructed at the unit price on the Bid Sheets.
- B. The payment for concrete cradle shall include furnishing and placing the concrete encasement. The Contractor shall be paid for the number of lineal feet of cradle at the unit price on the Bid Sheets. The concrete foundation under tee-based manholes is not considered cradle.

END OF SECTION

## SECTION 05500

## MISCELLANEOUS METAL

## 1 PART 1 - GENERAL

## 1.1 WORK INCLUDED

- A. Aluminum Finishes
- B. Shop Painting
- C. Miscellaneous
- D. Steel Door Frames

## 1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## ALUMINUM ASSOCIATION (AA)

- AA DAF-45 (1997) Designation System for Aluminum Finishes
- AA SAA-46 (Oct 1978, 5th Ed) Standards for Anodized Architectural Aluminum

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- ASTM A 36 (1992) Structural Steel
- ASTM A 446 (1987) Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality
- ASTM A 123 (2000) Zinc (Hot-dip Galvanized) coatings on Iron and Steel Products.
- ASTM A 475 (1998) Zinc-Coated Steel Wire Strand
- ASTM A 653 (2000) Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
- ASTM B 429 (1988) Aluminum-Alloy Extruded Structural Pipe and Tube

## AMERICAN WELDING SOCIETY (AWS)

AWS D1.1 (1988) Structural Welding Code - Steel

NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS  
(NAAMM)NAAMM-NFM (1988) Metal Finishes Manual for Architectural and Metal  
Products

## 1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01300 SUBMITTALS.

## 1.4 GENERAL REQUIREMENTS

The Contractor shall verify all measurements and shall take all field measurements necessary before fabrication. Welding to or on structural steel shall be in accordance with AWS D1.1. Items specified to be galvanized, when practicable and not indicated otherwise, shall be hot-dip galvanized after fabrication. Galvanizing shall be in accordance with ASTM A 123 or ASTM A 653, as applicable. Exposed fastenings shall be compatible materials, shall generally match in color and finish, and shall harmonize with the material to which fastenings are applied. Materials and parts necessary to complete each item, even though such work is not definitely shown or specified, shall be included. Poor matching of holes for fasteners shall be cause for rejection. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall provide strength and stiffness. Joints exposed to the weather shall be formed to exclude water.

## 1.5 DISSIMILAR MATERIALS

Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wet or pressure-treated wood, or absorptive materials subject to wetting, the surfaces shall be protected with a coat of bituminous paint, such as Tnemec Series 46-465.

## 1.6 WORKMANSHIP

Miscellaneous metalwork shall be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching shall produce clean true lines and surfaces. Welding shall be continuous along the entire area of contact except where tack welding is permitted. Exposed connections of work in place shall not be tack welded. Exposed welds shall be ground smooth. Exposed surfaces of work in place shall have a smooth finish, and unless otherwise approved, exposed riveting shall be flush. Where tight fits are required, joints shall be milled. Corner joints shall be coped or mitered, well formed,

and in true alignment. Work shall be accurately set to established lines and elevations and securely fastened in place. Installation shall be in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

## 1.7 ANCHORAGE

Anchorage shall be provided where necessary for fastening miscellaneous metal items securely in place. Anchorage not otherwise specified or indicated shall include slotted inserts made to engage with the anchors, expansion shields, and power-driven fasteners when approved for concrete; toggle bolts and through bolts for masonry; machine and carriage bolts for steel; and lag bolts and screws for wood.

## 2 PART 2 - PRODUCTS

### 2.1 ALUMINUM FINISHES

Unless otherwise specified, aluminum items shall have standard mill finish. The thickness of the coating shall be not less than that specified for protective and decorative type finishes for items used in interior locations or architectural Class I type finish for items used in exterior locations in AA DAF-45. Items to be anodized shall receive a polished-satin-finish pretreatment and a clear-lacquer over coating.

### 2.2 SHOP PAINTING

Surfaces of ferrous metal except galvanized surfaces, shall be cleaned and shop coated with the standard protective coating Tnemec Series 37H77 Chem Prime. Surfaces of items to be embedded in concrete shall not be painted. Items to be finish painted shall be prepared according to these specifications.

### 2.3 MISCELLANEOUS

Miscellaneous plates and shapes for items that do not form a part of the structural steel framework, such as lintels, sill angles, miscellaneous mountings, and frames, shall be provided to complete the work.

### 2.4 STEEL DOOR FRAMES

Steel door frames shall be neatly mitered and securely welded at the corners with all welds ground smooth. Jambs shall be provided with 2- by 1/4-by 12-inch bent metal [adjustable] anchors spaced not over 2 feet 6 inches on centers. Provision shall be made to stiffen the top member for all spans over 3 feet. Continuous door stops shall be made of 1-1/2 by 5/8-inch bars.

## 3 PART 3 – EXECUTION

### 3.1 GENERAL REQUIREMENTS

All items shall be installed at the locations shown and according to the manufacturer's recommendations. Item listed below require additional procedures as specified.

### 3.2 DOOR FRAMES

Door frames shall be secured to the floor slab by means of angle clips and expansion bolts. Continuous door stops shall be welded to the frame or tap-screwed with countersunk screws at no more than 18-inch centers, assuring in either case full contact with the frame. Any necessary reinforcements shall be made and the frames shall be drilled and tapped as required for hardware.

END OF SECTION

SECTION 05800  
BORING & JACKING  
AND COVER PIPE

PART 1 GENERAL

The construction drawings show the details of the cover pipe material.

1.01 RELATED SECTIONS

- A. 01300 - Submittals
- B. 01600 - Material and Equipment

PART 2 PRODUCTS

2.01 STEEL PIPE

- A. Where designated on the construction drawings, the steel pipe shall be fusion welded steel pipe, Grade "B" with no coating. It shall conform to the requirements of ASTM 139. The wall thickness shall be Schedule 40 for pipe up to 4-inches in diameter and 0.250 inch wall thickness for larger sizes, unless railroad specification require a greater thickness. See paragraph 3.06 for diameter of casing required.

2.02 NESTABLE CORRUGATED METAL PIPE

- A. Where corrugated metal pipe is designated in the construction drawings beneath a highway, it shall be nestable and conform to KDOT, Section 810. The gauge shall be as shown on the construction drawings.
- B. Where corrugated metal pipe is designated in the construction drawings beneath the tracks of a railroad, it shall be AREA Specification 146; with bituminous coating, in accordance with AREA Specifications 1413. The gauge shall be as shown on the construction drawings.

2.03 TUNNEL LINER PLATES

- A. Tunnel liner plates where shown on the construction drawings shall be hot dipped galvanized steel of the thickness (gauge) and section modulus shown on the construction drawings. The plates shall be formed from steel meeting the requirements of ASTM 139, Grade "B". Individual liner plates shall be made of one piece of metal, provided with flanges from both longitudinal and circumferential joints. The joints shall have sufficient bolt holes to fully develop the strength of the individual liner plate and so spaced in each liner plate that liner

plates of similar curvature will be interchangeable and readily handled in the tunnel. Liner plates shall be of a design that when bolted together no opening shall exist large enough to permit inflow of granular material. Liner plates will be accurately curved to suit the tunnel cross section and when bolted together, the finished casing pipe shall be full round with the nominal diameter to the neutral axis as specified on the proposal sheets and/or construction drawings. Grouting plugs shall consist of a 2-inch standard half-pipe couplings welded or tapped into a hole in the liner plate and furnished with a cast iron plug for closure. They will be of the same material as the liner plate and furnished with a cast iron plug for closure. The spacing of the grouting plugs will be as specified on construction drawings. Bolts, heads, and nuts shall be square and of the same size.

### PART 3 EXECUTION

#### 3.01 INSTALLING COVER PIPE

- A. Cover Pipe shall be installed by the boring method, the jacking method, by trenching or by tunneling as shown on the construction drawings. The Owner will obtain permits for any railroad, State or Federal Highway crossings. The Owner shall coordinate scheduling of construction of crossings with railroads and highway departments and shall pay any charges established by these outside agencies. Special construction requirements defined by railroads or highway departments will be shown on the construction drawings and shall be adhered to by the Contractor. Installation of cover pipe shall not commence without the express permission of the Project Engineer.
- B. The annular space between the cover pipe and the contained carrier pipe shall be filled with grout or with granular materials unless otherwise specified on the construction drawings or approved by the Engineer.

#### 3.02 INSTALLATION BY BORING

- A. Steel pipe shall be installed by the boring method utilizing an auger type boring machine or a machine of such design meeting the individual requirements of the railroad, State or Federal Highway System being crossed. The Contractor shall provide an approach pit, completely sheeted and of sufficient size to operate the boring equipment. The operation of the boring equipment shall be subject to continuous checking by the Project Engineer to insure proper alignment of the cover pipe as installed.

#### 3.03 INSTALLATION BY JACKING

- A. The Contractor will provide an approach pit for the jacking operation, excavated so the jacking face is a minimum of three (3) feet above the pipe. This open face should be shored securely to prevent displacement of the embankment. The pit shall include a backstop of sufficient size to take the thrust of the jack. The guide



rails that support the pipe as it enters the bore shall be accurately placed to line and grade. The entire approach pit shall be sheeted.

- B. Hydraulic or mechanical jacks may be used in this operation. The number of jacks and the capacity of the jacks shall be adequate to complete the operation. A jacking head shall be used to transfer the pressure from the jack and the jacking frame to the pipe. If an auger is used, the pipe shall be jacked simultaneously with the augering. The construction work shall be checked by the Contractor and Project Engineer at frequent intervals to insure proper line and grade of the installation.

### 3.04 INSTALLATION BY TUNNELING

- A. Care shall be exercised in trimming the surface of the excavated section to a true line and grade with the excavation conforming to the outside of the tunnel as nearly as possible. In the installation of tunnel or shaft liner plates, the amount of unsupported tunnel or shaft wall shall be at a minimum at all times. Excavation ahead of the liner plates will not be permitted. Liner plates shall be placed promptly as excavation permits. Upon completion of any ring of liner plates, bolts shall be retightened in the two (2) rings previously completed. The Project Engineer may direct that the top half of the tunnel excavation be supported by a cutting shield and excavation shall not advance ahead of such support.
- B. The vertical face of the excavation shall be supported, as necessary, to prevent sloughing and at any interruption of the tunneling operation, the heading shall be completely bulkheaded.
- C. Grouting shall follow the excavation and lining of the tunnel or shaft as required to fill all voids outside the tunnel liner plates. Grouting shall be performed prior to or upon completion of the installation of a maximum of four (4) rings, unless otherwise directed by the Project Engineer. Grouting shall start at the lowest hole in each grout panel and proceed upwards progressively and simultaneously, when possible, on both sides of the tunnel. The machine used for grouting shall be capable of forcing grout, under pressure, into all voids.

### 3.05 MEASUREMENT AND PAYMENT

- A. The payment for installation of cover pipe shall be made on the actual number of lineal feet of the various types and sizes of pipes installed. The unit price per foot for cover pipe shall include furnishing the carrier pipe material and installing the pipe by jacking, boring or tunneling, whichever is required, the construction of the approach pits with all necessary sheeting and all other incidentals required to complete the installation as shown on the construction drawings and herein specified.

## 3.06 CASING PIPE SCHEDULE (WATER AND SEWER LINES)

Carrier Pipe Nominal Diameter	Minimum I.D. of Casing Pipe for Water and Sewer Lines		Minimum I.D. of Casing Pipe for Vitrified Clay Sewer Lines
	PVC, ABS, C.I. & D.I. (B&S)	C.I. & D.I. (M.J.)	
	--- IN INCHES ---		
2	4	-	-
3	9	12	-
4	10	14	-
6	12	14	14
8	16	18	18
10	18	20	20
12	20	22	22
14	22	24	28
15	24	-	-
16	26	26	-
18	28	28	32
20	28	30	-
21	30	-	38
24	34	34	40
27	38	-	42
30	42	-	-
33	45	-	-
36	48	-	54
39	54	-	-
42	57	-	-

SECTION 07000

THERMAL AND MOISTURE PROTECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Roofing (Fiberglass shingles).
- B. Insulation.
- C. Caulking.
- D. Fascia, soffit and guttering.
- E. Damp-proofing.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Fiberglass base shingles, 235#/sq., 12" x 36" class A fire rating.
- B. Batt insulation shall be R-30, as indicated on the drawings. Fiberglass Blanket or Blowing Insulation installed above the drywall ceiling in accordance with manufacturer's recommendations. Manufacturers: Owens-Corning Fiberglass Corporation.
- C. Caulking compound; conform to Federal Specification for Plastic Caulking Compounds, TT-C-598. Caulking primer by manufacturer of the caulking compound.
- D. Aluminum fascia shall be provided with factory baked-on finish. (Pre-Formed or Site Formed with hemmed edge.)
- E. Aluminum soffit material shall be pre-formed, perforated with factory baked-on finish.
- F. Guttering shall be continuous pre-formed with mitered corners (sealed watertight) and factory baked-on finish.

- G. Transparent exterior dampproofing shall be Minwax colorless compound, as manufactured by Minwax Company, 11 West 42nd Street, New York, New York or White Roc 10 as manufactured by Sonneborne or Aqua Repel 91 by Karnak Chemical Corporation or approved equal. After all masonry work has been completed, cleaned, pointed and thoroughly dried, apply one coat of transparent exterior water proofing over the entire exterior masonry surfaces. This must be applied in accordance with manufacturer's specifications.

2.02           INSTALLATION

- A. Place roofing and fascia in accordance with manufacturer's directions
- B. Install insulation with vapor barrier toward conditioned side of space and attach per manufacturer's recommendations.
- C. Clean all joints of dirt, oil or other foreign matter. See that all surfaces are dry. Apply primer with brush as it comes in container. Apply calking compound with hand tool or gun; point flush with joint faces and remove excess material.
- D. Install aluminum fascia, soffit material and guttering per manufacturer's recommendations. Use nails same color as aluminum material being attached.
- E. Before beginning work, the dampproofing subcontractor shall inspect surfaces to receive the dampproofing and shall notify the Engineer in writing of any serious defects or conditions that will interfere with, or prevent a satisfactory installation. The beginning of application work shall imply acceptance of the surfaces. Surfaces to be dampproofed, shall be cleaned free of dust, dirt, grease, paint, smears, etc. Caulk and point large cracks, open holes, joints, around pipes, etc. Surfaces shall be dry at time of application of dampproofing.

END OF SECTION

## SECTION 09900

## PROTECTIVE COATINGS AND PAINTING

## PART 1 - GENERAL

- A. The Contractor shall furnish all labor and materials to complete preparation of surfaces, protective coating application, painting and complete clean up of all new materials. Included in this work are concrete, masonry, metal and wood as specified herein.

## PART 2 - PRODUCTS

## 2.01 MATERIALS AND APPLICATION

- A. The paint and paint products shall be Tnemec, or equal. Should substitutions be requested; dry millage, system compatibility, number of coats and generic type shall not be less than specified herein. Testing of coating materials at the Owner's expense may be required by the Project Representative on the contents of any or all containers.
- B. Colors shall be selected by the Owner.
- C. All paints and coatings shall be brought to the jobsite in the original unopened and labeled container of the paint manufacturer. Paints and coatings shall be applied in accordance with the manufacturer's detailed instructions. All materials required to complete the painting portion of the contract shall be stored in an area where the minimum temperature is 70°F.
- D. If thinning is necessary or desired for any application, the coating applied shall be built up to the same thickness specified with undiluted material. When thinning is desired, approval and inspection by the Project Representative is required. When thinning is approved, only those products of the manufacturer supplying coating, for the particular thinning purpose shall be permitted. Thinning shall be done strictly in accordance with the manufacturer's instruction.
- E. Paint and coating shall be applied to substances with ambient and substrate temperature no less than five (5)°F above those temperatures recommended by the paint manufacturer. Paint and coatings shall not be applied if relative humidity exceeds 85%.
- F. ALL SURFACES SHALL BE PREPARED SO THEY ARE SMOOTH, CLEAN AND DRY. PAINT SHALL NOT BE APPLIED UNTIL THE PREPARED SURFACES ARE APPROVED BY THE PROJECT REPRESENTATIVE.

Surface preparation methods in the field shall include one or more of the following:

Sand Blasting (dry) SSPC-10	Solvent Cleaning
Brush Blasting	Power Tool Cleaning

Wet Sand Blasting  
Detergent Cleaning  
Galvanized Metal - Trisodium phosphate with water

Approval of the surface preparation method shall be as directed by the Project Representative subsequent to inspection of such substrate.

- G. All ferrous metal to be primed in the shop shall have all rust, dust and scale, as well as all other foreign substances, removed by sandblasting. Cleaned metal shall be primed immediately after cleaning to prevent new rusting. All ferrous metals not primed in the shop shall be sandblasted in the field prior to the application of the primer, pre-treatment or paint. Ferrous metal portions of stored equipment shall have all rust, dust and scale, as well as all other foreign substances removed by sandblasting. The aforementioned sandblasting shall be SSPC- 10 specification. All metals, whether to be shop or field primed, shall be wiped with a tack rag as required by the Project Representative, prior to the application of the pre-treatment and/or primer.
- H. All concrete surfaces shall be cleaned of all dust, form oil, curing compounds and materials added while rubbing and other foreign matter. Concrete block masonry shall have all efflorescence, dirt, rust, oil and grease removed. Prior to applying the first coat, any nails, wire or other exposed metal shall be cleaned and spot primed.
- I. Drying time between coats shall be in strict accordance with the paint manufacturer's detailed instructions.
- J. Plaster and drywall surfaces shall be sand papered smooth, and scratches, cracks and abrasions shall be satisfactorily eliminated before priming.
- K. One (1) gallon of coating as originally furnished by the manufacturer, must not cover a greater square foot area than instructed by the manufacturer's label, no matter what method of application is chosen. Deficiencies in film thickness shall be corrected by the application of an additional coat(s) of paint. On masonry, application rates will vary according to the surface texture; however, in no case shall the manufacturer's stated coverage rate be exceeded. On porous surfaces, it shall be the contractor's responsibility to achieve a protection and decorative finish either by decreasing the coverage rate or by applying additional coats of paint. When non-ferrous substrates are coated, the contractor shall inform the Project Representative in writing and twenty-four (24) hours in advance to assure the quantity of coating applied to a given substrate.
- L. The Contractor shall paint all new equipment and piping with a finish coat.
- M. All existing structures, equipment, and piping which is to remain on-site will be prepared as stated previously and repainted with new structures, equipment, and piping. Existing paint and rust is to be removed and the surfaces inspected by the Project Representative before new primer and paint is applied.

## PART 3 - EXECUTION

### 3.01 PROTECTION AND CLEANING

- A. Before painting is started in an area, finish carpentry including corrections and adjustments, shall have been completed, all glazing installed and the building cleaned of all debris, thoroughly broom cleaned and dusted out. All plastering and drywall shall be finished and shall be thoroughly dry.
- B. Door knobs and escutcheons, before painting is begun, shall be protected either by covering them with cloth or by removal from the doors. Electrical switch plates, receptacle covers and thermostat covers shall be removed prior to the application of paint. These covers shall not be replaced until the final coat of paint is thoroughly dry and inspected. All paint spills and splatters shall be wiped off of glass, and care must be exercised to avoid paint splatters on adjoining work and materials. At the completion of the painting, all unpainted work must be left free from paint marks of any kind and any markings or scratches on painted work must have been retouched.
- C. All abutting joints of dissimilar materials, door frames, window frames, metal and plastic attached to and installed in concrete, as well as other seams and joints selected by the Project Representative, shall be caulked as per Project Representative.

### 3.02 WORKMANSHIP

- A. Before commencing work on surfaces of any type, the Contractor shall carefully inspect same and satisfy that they are dry and in all other respects suitable to receive the specified treatment. If the condition of any surface is such that it cannot be made, the Contractor shall not undertake surface preparation until corrections have been made which will provide acceptable surface.
- B. Application of any coating to a surface will constitute acceptance of the surface by the Contractor. If, after treatment, the completed finish (or any portion thereof) blisters, cracks, peels or otherwise shows indication of dampness or other irregular conditions or surface, the Contractor shall, at his own expense, remove the applied treatment and refinish the part affected, to the satisfaction of the Project Representative. The Contractor shall determine dryness of all moisture-holding materials by use of a reliable electronic moisture meter. Moisture test results shall be forwarded to the Project Representative in writing.
- C. Each coat of material applied must be inspected and approved by the Project Representative before the application of the succeeding specified coat; otherwise, no credit for the concealed coat will be given, and the Contractor shall assume the responsibility to re-coat the work in question.
- D. All work shall be done by skilled painters and all workmanship shall be of the highest quality, developing to the fullest the possibility of the materials and the process specified.

- E. Materials shall be thoroughly stirred and evenly spread without runs, skips, sags, streaks, brush marks or other defects. Paint shall be cut sharply to lines. Care shall be exercised to avoid lapping of paint over hardware. Painting around glazed openings shall be done promptly after putty is hard, but before shrinkage cracks occur and shall seal the jointing of putty to glass.
- F. Rebates for glass in wood setting shall be primed before glass is installed.
- G. Tops and bottoms of all wood doors shall have at least three (3) finish coats.
- H. All materials which have been shop-primed shall be properly prepared and spot primed in the field where necessary, before the field prime coat is applied.
- I. All equipment which arrives with a damaged finish coat will be spot primed and then patched, if homogeneity can be achieved, or it must be repainted completely. Any like equipment shall also be re-painted to match the newly repainted equipment, as determined by the Project Representative. The color shall be similar to the original color, as determined by the Project Representative. Field painting must match the original paint system.

### 3.03 MASONRY AND CONCRETE SEALING

After proper surface preparation, all brick work, concrete work, concrete walls, curbs and driveway slabs not painted shall be given one (1) coat of water sealing material. This material shall be Tnemec Prime A Pell 200 or equal.

### 3.04 FERROUS METAL PRIMERS

- A. Non-submerged - Ferrous materials other than pipe, valves and appurtenances, but including structural steel, shall be shop-primed with Tnemec 65-1211 or equal and field touch-up shall be Tnemec 65-1211 or equal. Each coating shall be applied with a minimum total dry millage of 3.0. No coating shall be applied until proper surface preparation is completed.
- B. Submerged - Ferrous materials, other than pipe, valves and appurtenances, shall be shop-primed with Tnemec 66-1211 or equal and field coated with Tnemec 66-1211 or equal. Each coating shall be applied with a minimum total dry millage of 3.0. No coating shall be applied until proper surface preparation is completed. For potable water use TNEMEC 20-1211.
- C. Pipe, valves and appurtenances not buried in the ground shall be shop-primed with Tnemec 37-77 Chem Prime or equal at a minimum rate of 2.0 - 3.0 mils dry film thickness. Field prime coating shall be Tnemec high build epoxy 66 or equal applied at 2.0 - 3.0 mils dry film thickness. No coating shall be applied until proper surface preparation is completed.



- D. Buried pipes, valves and appurtenances shall be shop-primed with Tnemec 37-77 Chem Prime or equal, 2.0 - 3.0 mils dry film thickness. No coating shall be applied until proper surface preparation is completed.

### 3.05 FERROUS METAL FINISH COATING

In addition to the above primers, the Contractor shall complete the following:

- A. Non-submerged - Ferrous materials, including structural steel, pipe, valves, and appurtenances, shall be coated with a field-applied intermediate coat of Tnemec Series 66 Epoxoline at a minimum dry film thickness of 3.0 mils. This also includes galvanized surfaces. This should be followed with a finish coat of Tnemec Series 66 Epoxoline, for interior and Tnemec Series 74, for exterior at a dry film thickness of 2.0-3.0 mils. No coating shall be applied until proper surface preparation is completed.
- B. Submerged - Ferrous materials, other than pipe, valves and appurtenances, shall be coated with two (2) coats of Tnemec high build epoxy 66 or equal at 3.0-5.0 mils dry film thickness per coat. No coating shall be applied until proper surface preparation is completed. For potable water a Tnemec series 20 shall be used.
- C. Pipe, valves and appurtenances not buried in the ground and not exposed to direct (outdoors) sunlight shall be given a field finish coat of Tnemec high build epoxy 66 or equal system at 3 mils dry film thickness. No coating shall be applied until proper preparation is completed.

Pipes, valves and appurtenances installed outdoors shall be finished as outlined for non-submerged ferrous material.

- D. Buried pipes, valves and appurtenances shall be given two (2) field finish coats of Tnemec 46-413 coal tar epoxy or equal at the rate of 8.0 mils dry thickness per coat. No coating shall be applied until proper surface preparation is completed.

### 3.06 PIPING MARKERS AND SAFETY SIGNS

- A. The piping markers shall be formed from laminated plastic capable of withstanding normal washing to remove grease, oil, chemicals, etc. without discoloration, loss of gloss, staining, or other damage. All printing shall be sealed with butyrate plastic film. For pipe smaller than 3/4-inch in diameter, provide brass tags 1-1/2 inches in diameter with depressed 1/4-inch black-filled letters above 1/2-inch high black filled letters. Markers for pipe 3/4-inch to 6 inches in diameter, inclusive, shall be pre-formed to completely wrap around the pipe requiring no adhesives. Markers for pipe larger than 6 inches in diameter shall be pre-formed to the contour of the pipe and held in place with stainless steel spring fasteners. The size of lettering on each marker shall conform to ANSI A13.1. Each marker shall contain a descriptive legend as shown in the Pipe and Sign Color Schedule and a flow direction arrow.

- B. The markers shall be located adjacent to each valve and "tee", at each branch and riser takeoff, at each wall, floor and ceiling penetration, and at 25-foot intervals of horizontal piping. Manufacturers shall be the W.H. Brady Company, Seton Name Plate Corporation, or approved equal.

### 3.07 PAINTING SCHEDULE

- A. The following table lists the type of surface, generic coating, type of coating and the minimum coats of paint. The Owner will select all colors to be used on this project. Manufacturer's numbers listed are those of Tnemec Company.

Type of Surface	Generic Type	Number of Coats	Minimum Dry Mils Thickness Tnemec Per Coat Reference	Paint Number	Primer Number
Exterior Concrete And CMU	Elastomeric	2	3.0	156	
Interior Concrete Block	Block Filler Epoxy Finish	1 2	3.0 3.0	130 Envirofil 66	
Drywall	Primer Finish	1 2	3.0 3.0	51-792PVA 66	Sealer
Plywood and other interior surfaces other than masonry	Primer Finish	1 2	3.0 3.0	36-603 23	See Mfr's Recommend.

Type of Surface	Generic Type	Number of Coats	Minimum Dry Mils Thickness Tnemec Per Coat Reference	Paint Number	Primer Number
Submerged or high moisture exposure (nonferrous & ferrous)	Epoxy Primer Epoxy Finish	1 2	4.0 4.0	66 66	See Mfr.'s Recommend.
Indoor ferrous and other meta					
Non-ferrous Metal interior	Epoxy Primer Epoxy Finish	1 1	3.0 3.0	66 66	66-1211
Non-ferrous Metal exterior	Epoxy Finish Polyurethane Primer	2 1	3.0 2.0	66 74 or 75	66-1211

Type of Surface	Generic Type	Number of Coats	Minimum Dry Mils Thickness Tnemec Per Coat Reference	Tnemec Paint Number	Primer Number
Wood-Exterior			<u>Re:Sec. 2</u>		
PVC-Interior	Epoxy/Primer Polyamide Finish	1 1	3.0	66	See Mfr.'s Recommend
PVC-Exterior	Epoxy/Primer Polyurethane Finish	1 1	3.0 2.0	66 74 or 75	See Mfr.'s Recommend

#### PIPE AND SIGN COLOR SCHEDULE

##### PIPE AND DESCRIPTIVE LEGEND

LEGEND	COLOR	LETTERING COLOR	BACKGROUND COLOR
Raw Sewage	Dark Grey GR 28	Black	Green
Natural Gas	Red SC05	Black	Yellow
Compressed Air	Green EN09	Black	Yellow
Potable Water	Blue SC06	Black	Green
Sump Discharge	Grey	Black	Green
Vent	Grey	Black	Green
Seal Water	Blue	Black	Green
Conduit	To Match Wall or Ceiling	N/A	N/A

### 3.08 COATING PROCEDURES

- A. All coating work shall meet the requirements of the coating manufacturer.
- B. All surfaces to be coated shall be in the proper condition to receive the specified coatings before any coatings are applied. Do not sandblast any more surface than can be primed within the same working day that the sandblasting is done. Round off all sharp edges and rough welds. Remove all burrs and weld spatter. Remove oil, grease and heavy deposits of surface contaminants by solvent or detergent cleaning. All surfaces shall be clean, dry and free of any dirt, dust, grease, oils, salts, and other deleterious substances before coatings are applied.
- C. Whatever metal is cleaned during a working day shall be coated with primer on the same working day.
- D. Coat all interior and exterior weld seams surfaces by the brush method on field prime coat and field intermediate coats.
- E. Coatings shall be applied in such a manner to produce as uniform a thickness of coat and as complete a coverage as possible, free of lap marks.
- F. Each coat shall have air drying period of at least 24 hours.
- G. The dry film thickness specified shall be obtained. Additional coats shall be applied at the Contractor's expense, if required to achieve the specified dry film thickness.
- H. Only good, clean brushed and equipment shall be used. Clean all brushed, rollers, buckets and spray equipment at the end of each coating period.
- I. Do not start filling the coated tank with water before the coatings have properly dried or cured. The minimum drying or curing time allowed shall be not less than seven days at 75 F.

### 3.09 STERILIZATION

Disinfection of the water storage facilities shall conform to AWWA D105, Chlorination Method 3. The general procedure is as follows:

- A. Clean and sterilize the interior of each tank prior to placing the tank in service. Place water containing 50 ppm of available chlorine in each tank in such a quantity (approximately 5% of the total storage volume) that the chlorine concentration will be 2 ppm when the tank is filled.
- B. Hold the water containing 50 ppm of chlorine for 6 hours before the tank is filled. Hold

the tank full for 24 hours. Collect and submit samples of water from the tank for bacteriological analysis. If the bacteriological quality of the water in the tank is not satisfactory to the State Board of Health, repeat the sterilization procedure. Repeat the sterilization procedure until the bacteriological quality of the water in the tank is satisfactory to the State Board of Health.

- C. When the water in a tank has a bacteriological quality satisfactory to the State Board of Health, all highly chlorinated water shall then be purged from the drain piping. Then the tank may be put into service without draining the remaining water used to disinfect the tank.

END OF SECTION

SECTION 11010

WATER BOOSTER PUMPING STATIONS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The Contractor shall furnish and install three (3) above ground water booster pumping stations, with all the necessary piping, controls, telemetry and appurtenances as shown on the plans and as specified herein. The station shall be complete with all necessary equipment installed in a concrete masonry building as shown on plans.

1.2 RELATED SECTIONS

- A. 01300- Submittals
- B. 01600 - Material and Equipment
- C. 05500 - Miscellaneous Metals
- D. 07000 - Thermal and Moisture Protection
- E. 09900 - Painting

PART 2 - PRODUCTS

2.1 OPERATING CONDITIONS

- A. The pump station shall be capable of delivering the fluid medium at the following capacities and heads when operating at 0 feet minimum suction pressure.

PUMP #1 & #2 – Smith Branch, BPS

Design GPM 90 @ 223 feet TDH;  
Maximum GPM 150 @ 120 feet TDH;  
Maximum discharge pressure 290 feet;  
Efficiency at design GPM 58%;  
NPSH requirements shall not exceed 10 feet  
at design GPM.

PUMP #1 & #2 – Little Brushy, BPS

Design GPM 40 @ 288 feet  
Maximum discharge pressure 350 feet;

Efficiency at design GPM 57.1%;  
 NPSH requirements shall not exceed 10 feet  
 at design GPM.

PUMP #1 & #2 – Oakland Ridge, BPS

Design GPM 350 @ 121 feet  
 Maximum discharge pressure 230 feet  
 Efficiency at design GPM 57%  
 NPSH requirements shall not exceed 10 feet  
 at design GPM.

- B. The pump driver shall be a standard, A.C. induction motor, open drip-proof construction, of the vertical shaft, normal thrust type and shall be 5 h.p. for Smith Branch, 3 h.p. for Little Brushy, and 30 h.p. for Oakland Ridge, and all shall be 3500 rpm and suitable for 1 phase, 60 hertz, 230 volt electrical service.
- C. The Contractor shall furnish to Owner one (1) spare motor for each station as called for in Paragraph 2.04 B above.

2.2 BOOSTER PUMP - GENERAL

- A. The booster pumps employed within the water booster pumping station shall meet the hydraulic and driver data as set forth in the specification section titled, "OPERATING CONDITIONS". The booster pumps will be installed in the field under the direction and at the cost of the station manufacturer. The installation of the booster pumps shall be as shown on the plans covering this project.
- B. Prior to acceptance of an equipment proposal covering the packaged water booster pumping station, detailed data shall be furnished the engineer and shall include the following booster pump information and shall meet Section 1300 of these specifications:
  - 1. Performance Curve showing expected performance at points other than the design conditions. Curve shall show head, capacity, efficiency, and horsepower based on performance and shall cover the complete operating range of the pump from zero capacity to the maximum capacity. The curve is to also include a net positive suction head required curve.
  - 2. Drawings of the proposed equipment giving general dimensions sufficient to determine how the equipment is to be supported and if it will fit within the space available.

2.3 BOOSTER PUMPS - CENTRIFUGAL DIFFUSER TYPE, MULTI-STAGE - VERTICAL



- A. The booster pumps employed within the booster pump station shall be of the vertical centrifugal diffuser type, multi-stage, designed specifically for low flow-high operation. The pumps shall conform to the detailed specifications as set forth below and shall be Goulds Series Aquaforce SSV or approved equal.
- B. Pump - The pump suction/discharge chamber, motor stool and pump shaft coupling shall be constructed of cast iron. The impellers, pump shaft, diffuser chambers, outer discharge sleeve and impeller seal rings or seal ring retainers shall be constructed of stainless steel. The impellers shall be secured directly to the pump shaft by means of a stainless steel tapered split cone and locking nut or by a splined shaft arrangement. Intermediate and lower shaft bearings shall be bronze or tungsten carbide and ceramic. Pumps shall be equipped with a high temperature mechanical seal assembly with tungsten carbide seal face mounted in stainless steel seal components.
- C. Motor - The pump motor shall be sized to insure the pump is non-overloading when operating on the specified pump curve. The motor shall be of the horsepower, voltage, phase and cycle as shown on the drawings. Motor design shall be of the open drip proof with a Nema C face design operating at a nominal 3450 rpm with a minimum service factor of 1.15. Lower motor bearings shall be adequately sized to insure long motor life.

## 2.4 PIPING

- A. All internal transmission piping shall conform to A.S.T.M. A-53(CW) for nominal pipe size 4" and smaller and A.S.T.M. A-53(ERW) Grade B for nominal pipe size 5 inch and larger. Butt welded fittings shall conform to A.S.T.M. A-106. Forged steel flanges shall conform to A.S.T.M. specification A-181, Grade 1 and ASA B16.5.

Size 10 inch and below - Schedule 40

Size 12 inch and above - Standard weight (.375" wall)

## 2.5 BUTTERFLY VALVES

- A. The isolating valves used throughout the equipment capsule will be of the wafer design. The body of each isolating valve will be constructed of cast iron ASTM-126 and be equipped with a minimum of four (4) alignment holes with which to pass mating flange studs so as to assure proper butterfly alignment within the piping system. The valve disc will be constructed of bronze ASTM-B148-9C and be machined to close tolerances on both the flats and O.D. to assure drop tight shut off and reduce operating torque. The valve stems will be constructed of phosphate coated carbon steel ASTM-108 Grade 1040 and the stem bushings will be non-metallic. The disc will be affixed to the shaft by a pair of taper pins. The valve seat will be a phenolic backed EPDM resilient seat designed to be easily field replaceable.

- B. Valve sized six (6) inches and smaller shall be equipped with lever operator and 10 degree increment throttling plate. Valve sized eight (8) inches and larger shall be equipped with a weatherproof, heavy duty, gear operator complete with a position indicator.

## 2.6 COMPRESSION COUPLINGS

- A. The booster station piping shall include a compression type, flexible coupling to prevent binding and facilitate removal of associated equipment where shown on the plans for this item. In lieu of a compression coupling, a Uni-Flange or a flanged coupling adapter (FCA) may be used.

## 2.7 PRESSURE GAUGES

- A. All pressure gauges within the booster pumping station shall have 4-1/2" minimum diameter faces. The case shall be black, flanged back type with close type ring and clear glass face. The gauge connections shall be at the bottom of the gauge and will be 1/4" N.P.T. The gauge internal construction shall include phosphor bronze bourdon tube with a brass movement, bronze bushed independently mounted. Pressure gauge range and scale graduations shall be in feet of water and psi as follows:
  - B. INLET PRESSURE - 0 to 150 psi, 10 psi figure intervals, with graduating marks every 1 psi.
  - C. OUTLET PRESSURE - 0 to 250 psi, 20 psi figure intervals, with graduating marks every 2 psi.
- D. All gauges will be mounted on a 3' x 3' x 3/4" piece of plywood off the pipeline and be flexible 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 sensing point will not be accepted.

## 2.8 PUMP CHECK VALVES

- A. The pump check valves shall be pilot controlled, hydraulically operated, diaphragm type automatic control valves. Each main valve shall be furnished with a resilient replaceable seat. Each control pilot shall be a four-way solenoid control electrically interlocked with the booster pump controls and operate on a 120 volt, 60 cycle AC power source. The pump-check valves shall provide field adjustable slow opening and closing plus emergency closing on a power outage. Each valve shall be equipped with an indicating rod and limit switch assembly. The valves shall be sized as shown on the plan and be angle/globe pattern, flanged to meet ANSI Class 125 and have a maximum pressure rating of 175 psi.

- B. The pump check valves shall be provided with a sustaining control pilot. The control pilot shall be a direct acting, adjustable, spring loaded normally closed pilot designed to throttle the main valve to maintain the sensed pressure at the pilot spring setting. The sensed pressure shall be the suction header/the pump discharge.

## 2.9 NON-SLAM CHECK VALVES

- A. Each pump discharge pipe run shall include a dual disc, wafer style non-slam check valve with torsion spring induced closure. The body shall be of one piece construction incorporating a vulcanized synthetic seal. Seal design must allow for positive seating at both low and high pressures. This shall be achieved by a minimal seal contact at low pressure with progressively increased contact at higher pressures. Disc shall fully overlap the synthetic seal, preventing pressure indentations. Opening and closing of the valve must utilize a lift and pivot action to prevent seal wear and insure long seal life. The stop and pivot pins shall be stabilized by use of synthetic spheres to prevent wear and vibration during operating conditions. Pressure classification shall be per ANSI B16.1, 125 lb. class with full pressure rating of specification. Materials of construction to be cast iron body ASTM A126 class B, with vulcanized BUNA-N seal, aluminum bronze discs ASTM B148-9A, stainless steel spring type 316 or 17-7 PH, and 316 stainless steel pins and thrust bearings.

## 2.10 RELIEF VALVE

- A. The relief valve shall be pilot controlled, hydraulically operated, diaphragm type automatic control valve. The main valve shall be furnished with a resilient, replaceable, spring loaded, normally closed pilot designed to close the main valve whenever the sensed pressure is below the pilot spring setting. The relief valve shall function to limit the discharge header pressure to the value set into the control pilot. The valve shall be sized as shown on the plan and be angle/globe pattern, flanged to meet ANSI Class 125 and have a maximum pressure rating of 175 psi.

## 2.11 SUCTION LINE STRAINERS

- A. Each pump run shall include a semi-steel basket type flanged strainer of a size as shown on the plans. The flange pattern shall conform to 125 pound ANSI standards. The strainer body and cover material shall be hi-grade cast iron equal to ASTM specification A126-61T Class B. The strainer cover will be complete with strong-back clamp device for quick easy access to strainer basket.

## 2.12 CONTROL PANEL

### CONTROL

Pump operation shall be controlled by radio telemetry. This telemetry equipment shall be supplied by the owner, and installed by others in the booster pump station. Pumps shall cycle on and off via call signals from telemetry system. Installation shall be the responsibility of the contractor.

### SAFETY CONTROL

This control shall be provided by bellows type, snap action pressure switches. The switch action pressure switches. The switch action shall be actuated by a single brass bellows. Each switch assembly shall be complete with internal switches to cover the control function. Each internal switch shall be independently adjustable so as to provide from 2.0 psi to full scale control differential. Switches are to be provided to control the following functions.

1. Low suction cut-out,

One (1) 4 1/2 inch dial diameter pressure gauge as previously described shall be mounted adjacent to the discharge control pressure switches.

Three (3) 4 1/2 dial pressure gauge as previously described shall be mounted adjacent to the low suction control pressure switches. Gauges shall be one before the strainers, and two after the strainers. Each pump will have a low suction shutdown circuitry / pressure switch.

Pressure switches and gauges shall be mounted in tandem, on a plate, as near to their respective pressure source as is practical. Switches and gauges will not be allowed within the electrical control panel. Hydraulic sensing lines shall be plumbed to the switches and gauges so the switch functions can be checked. All switch and gauge assemblies shall be complete with shut off valve and pulsation dampener.

### ELECTRICAL APPARATUS - SWITCH GEAR

The electrical apparatus shall consist of all equipment associated with motor control and motor starting, including the equipment used to protect the electrical facilities. All circuit breakers, motor starters, time delay relays and control relays, shall be incorporated into one (1) NEMA 1 control panel. The electrical service shall be 230 volt, 3 phase, 60 cycle 4 wire.

There shall be provided, thermal-magnetic trip circuit breakers as required below:

Two (2) Branch Breakers, one each per pump

Eight (8) Auxiliary Circuit Breakers, as follows:

- |                          |                                |
|--------------------------|--------------------------------|
| 1. Controls              | 5. Exhaust Fans (Blower 1 & 2) |
| 2. Lights                | 6. Convenience Outlets         |
| 3. Heater (Heater 1 & 2) | 7. Spare                       |
| 4. Chemical Pump         | 8. Telemetry                   |

Pump starting equipment shall be single (1) phase, full voltage, IEC rated, magnetic starters connecting the pump motor directly across the line complete with overload relay.

All electrical work shall be done in accordance with applicable electric codes.

Elapsed run timers shall be provided for each pump mounted in the panel face, to indicate in hours, the amount of time each pump has been in operation.

Pump alternation will be done by telemetry.

**Provisions shall be made to include switchgear for a portable generator during extended power outages.**

### ELECTRICAL APPARATUS - DEVICES

Time delay relays shall be provided to perform the following functions:

1. Low Suction Timer – one per pump
2. Valve Fail Circuits - one per pump

The time delay relays shall be solid state plug in type. Interchangeability of the timers shall not disturb control wiring. Timers shall be provided with a red neon light to indicate timing cycle. The timers shall be adjustable.

Valve circuits shall be provided for each pump, wired so that the pumps will start and stop, against a closed valve.

Hand-off-automatic switches shall be IEC, 3 position maintained and be located on the main control panel door and control the following circuits:

1. Pump #1
2. Exhaust Fans

Indicating lights to indicate equipment operation shall be IEC, with a full voltage pilot light. Indicating lights shall be provided in the colors and functions as follows:

1. Red - Low Suction Pressure
2. Green - Pump #1 in Operation
3. Red - Pump #1 valve fail

Pump controller shall provide the following dry contacts status to telemetry:

1. Pump 1 Run
2. Pump 1 Low Suction
3. Lift Station flood Float
4. Pump 1 HOA Auto

## PART 3 EXECUTION

### 3.1 FACTORY START-UP SERVICE

- A. After the water booster pump station has been completely installed including the electrical service and has been put under pressure by the Contractor, then a factory service representative will be scheduled to visit the jobsite and put the booster station into trouble free, automatic operation. The service representative will be a regular employee of the booster pump station manufacturer.
  
- B. The service representative will spend one (1) full day at the jobsite. In addition to his start-up duties, he shall explain and demonstrate the operation of the booster pump station to a representative of the owner. The service representative at this time shall pass over to the owner's representative two (2) bound copies of the booster pump station maintenance and operation manual.
  
- C. A complete service report shall be made out and signed by the factory service representative and a representative of either the owner or project engineer. Copies of the start-up report will be distributed as follows: one (1) copy each to the manufacturer's project file, consulting engineers project file, contractors project file and the owners equipment file.

END OF SECTION

SECTION 15020

GATE VALVES

PART 1 - GENERAL

1.1 SUMMARY

- A. Gate valves for buried pipelines shall be iron body, bronze mounted, resilient-seated gate valves with non-rising stems having either parallel or inclined seats in accordance with AWWA C509, "Resilient-Seated Gate Valves for Water Service."
- B. Mechanical joint bell ends will be used in buried pipelines of mechanical joint and rubber seal type joint cast iron. Bell and flange ends will be used in exposed cast iron piping at the locations shown on the construction drawings.

1.2 SUBMITTALS

- A. Manufacturer's Data:
  - 1. Material and component data.
  - 2. Performance data.
  - 3. Product warranties.
- B. Submit in accordance with Section 01300.

1.03 RELATED SECTIONS

- A. 01300 - Submittals
- B. 01600 - Materials and Equipment.
- C. 01610 - Transportation and Handling

PART 2 -PRODUCTS

2.1 OPERATING NUTS

Gate valves for buried pipelines shall be furnished with two (2) inch square wrench nuts. Nuts shall have a flanged base upon which shall be cast an arrow two (2) inches long showing the direction of opening, and the word "OPEN" in one-half (1/2) inch or larger letters, shall be cast on the nut to indicate clearly the direction to turn the wrench when opening the valve.

## 2.2 HANDWHEELS

Hand-wheels may be specified for operating valves in exposed piping on the construction drawings. The hand-wheels shall have an arrow and the word "OPEN", cast thereon, to clearly indicate the direction the hand-wheel is to be turned to open the valve. The diameter of the hand-wheel shall conform to the following dimensions for the various size gate valves.

Size of Valve	Diameter of Hand-wheel
4"	10"
6"	12"
8"	14"
10" and 12"	18"
16" and 18"	22"
24" and 30"	30"

## 2.3 HORIZONTAL MOUNTING

Gate valves in size sixteen (16) inches and larger may be installed in the horizontal position. Bronze tracks, rollers, and scrapers will be provided for valves to be installed in the horizontal position. Horizontal valves for pressure lines shall be furnished with beveled gear operators. The gear cases for buried service shall be totally enclosed, and the gear cases for exposed piping in a vault shall be of the extended type.

## 2.4 BYPASS VALVES

Bypasses shall be furnished on valves when so specified on the proposal sheets or shown on the construction drawings. The bypass valve shall be furnished of the same type as the main line valve to which it is fitted. The size requirements of the bypass shall be as follows:

Valve Diameter - Inches	Bypass Diameter - Inches
16-20	3
24-30	4
26-42	6
48	8

## 2.5 RISING STEM VALVES

Outside screw and yoke rising stem valves shall conform to all of the requirements of AWWA C509 except for the rising stem mechanism. The OS and Y valves shall have



a rugged cast iron yoke machined to provide accurate stem alignment. The OS and Y valves shall be furnished with hand-wheels. OS and Y valves shall only be installed where shown on the drawings.

## 2.6 UNDERWRITERS VALVES

Gate valves for fire protection systems shall be manufactured in conformance to the requirements of the Underwriters Laboratories, Inc., and the Associated Factory Mutuals Laboratories. Gate valves which support an indicator post shall contain a flange of the indicator post base. Such valves are specified on the construction drawings and shall bear the inspection label of the Underwriters Laboratories, Inc. Gate valves shall be M&H, Mueller or approved equal.

## PART 3 - EXECUTION

### 3.1 SPECIAL DETAILS

The details of other valve requirements and valve appurtenances such as special ends and materials, position indicators, floor stands, cylinders, chain operators, and extension stems and guides are described on the construction drawings.

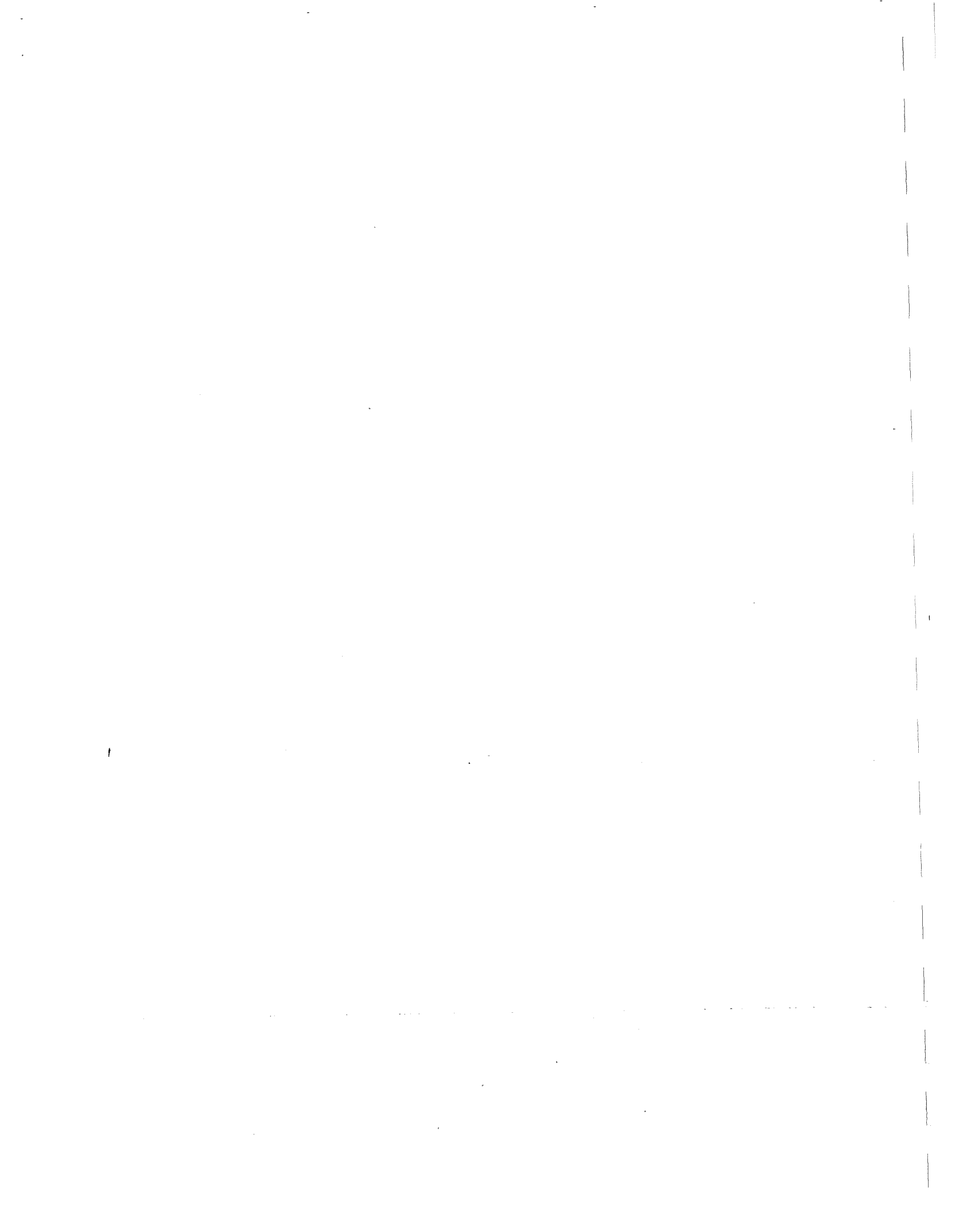
### 3.2 SETTING GATE VALVES

Gate valves shall be installed of the size and the location as shown on the construction drawings. Vertical valves shall be set plumb and horizontal valves installed so that the valve body is level. The valves shall be set to the new pipe in the manner specified for cleaning, laying, and jointing pipe. Mechanical joint, rubber compression seal, or bell and spigot shall be used for buried pipelines. Other types of joints for pipelines within structures will be shown on the construction drawings.

### 3.3 SPARE PARTS

The Contractor shall furnish the Owner one (1) valve rebuild/maintenance kit for each size and type of valve. Each Contractor shall also furnish the Owner one (1) 'T' type valve wrench.

END OF SECTION



SECTION 15060  
AIR RELEASE VALVES  
(WATER)

PART 1 GENERAL

1.01 SUMMARY

A. Description of Work:

1. Provide air release valves as specified in this section and shown on Drawings.

1.02 SUBMITTALS

A. Manufacturer's Data:

1. Material and component data.
2. Performance data.
3. Product warranties.

B. Submit in accordance with Section 01300

1.03 RELATED SECTIONS

- A. 01300 - Submittals
- B. 01600 - Materials and Equipment
- C. 01610 - Transportation and Handling

1.04 QUALITY ASSURANCE

A. Experience

1. Supplier shall have been manufacturing air release valves for a period of at least five (5) years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. GA Industries: Figure 910, Val-Matic Model 15 or approved equal.

2.02 AIR RELEASE VALVE

- A. ASTM A126 Class B cast iron body with screwed inlet and outlet

1. Valve shall be designed to withstand minimum 150 PSI pressure.
- C. Provide a stainless steel orifice of a diameter suitable for use at a maximum working pressure of 150 PSI.
- D. Stainless steel linkage and float
- E. Replaceable Buna-N seat
- F. The air release valve shall be mounted on 3/4", Schedule 40, galvanized steel riser pipe.
- G. The air release valve enclosure shall be constructed of an 18-inch diameter by 30-inch depth concrete, or ribbed PVC meter box.

The air release valve enclosure cover shall be of cast iron construction, 4" deep with a non-recessed lid, with cast letters "WATER" and a pentagon lock nut, Mueller H-10810 or equal as approved by the Engineer.

## 2.03 VALVE OPERATION

- A. The valve shall function to prevent the collection of air in pipelines by automatically releasing accumulated air while the system is pressurized.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. Install valve in accordance with manufacturer's written instructions and approved submittals.
- B. The riser pipe shall be connected to the water main by use of a service clamp, Mueller double strap, I.P. thread, neoprene gasket, and a corporation stop having a Mueller thread inlet and inside I.P. thread outlet, Mueller Number H10045 or equal as approved by the Engineer.
- C. The riser shall also have a 3/4", bronze gate valve with a tee-handle, solid wedge type, inside I.P. threads, suitable for a 150 psig working water pressure, Mueller H-10914 or equal as approved by the Engineer.

END OF SECTION

## SECTION 15070

## BLOW-OFF VALVE ASSEMBLY

## PART I GENERAL

## 1.01 SUMMARY

- A. Blow-off valves shall be installed in accordance with the Standard Details and the specifications at locations shown on the plans and in other locations as directed by the Engineer.
- B. In general, blow-off valves are located at the end of mains for the purpose of clearing the main of sediment, obstacles, or impure water.

## 1.02 SUBMITTALS

- A. Manufacturer's Data:
  - 1. Material and component data.
  - 2. Performance data.
  - 3. Product warranties.
- B. Submit in accordance with Section 01300

## 1.03 RELATED SECTIONS

- A. 01300 - Submittals
- B. 01600 - Materials and Equipment
- C. 01610 - Transportation and Handling

## PART 2 PRODUCTS

- A. The pipe from the main to the flush valve shall be of the same material and size as the main and connected to the main by means of a tee, or installed at the end of line.
- B. Do not use a corporation stop for this connection.
- C. The gate valve for the blow-off connection shall be a AWWA type gate valve with adjustable valve box, same size as main water line with two inch operating nut, mechanical joint connections Mueller A-2380-8 or equal as approved by the Engineer. The gate valve and the 90° elbow riser fitting must be securely

anchored with concrete to prevent movement.

- D. All pipe beyond the gate valve shall be galvanized iron pipe, Schedule 40, with Class 150 malleable iron fittings, or Class 200 PVC with a cap at end of pipe riser. Pipe and PVC fittings shall be same size as main line.
- E. The flush valve enclosure shall be constructed of an 18" diameter by 30" depth concrete, or PVC meter box as approved by the Engineer.
- F. The cover shall be of cast iron construction, 4" deep with a non-recessed lid, with cast letters "WATER" and a pentagon lock nut Mueller H-10310, or equal as approved by the Engineer.
- G. A cast iron flap valve, Neenah #R-5004 or approved equal, shall be installed with stainless steel screen on each blowoff assembly.

### PART 3 EXECUTION

- A. The cost for the gate valve and other listed appurtenances herein and/or on detail and supplied with blow-off valve assembly shall be included in unit price of blow-off valve assembly. No separate payment will be made for gate valves used with blow-off valves.

... END OF SECTION

SECTION 15080  
STANDARD SERVICES

PART 1 GENERAL

1.01 SUMMARY

- A. The work to be performed under this section shall include all labor, materials, equipment, excavation, backfill and testing necessary for the proper installation of all service connections. Details of service installations is shown in the Standard Details Section of the drawings.
- B. No attempt was made to show precise meter setting locations on the plans and the Contractor shall not place any service connection without approval of the location and type by the Engineer. However, in general the meter setting shall be set inside the customer property line and off of State, County, or Township Road Right of Way.
- C. The service shall include: A service clamp, corporation stop, service pipe, meter setting equipment, meter box and cover. If called for on the drawings or directed by the Engineer, a pressure reducing valve may be required.

1.02 RELATED SECTIONS

- A. 01300 - Submittals

PART 2 PRODUCTS

2.01 SERVICE CLAMP

All service clamps shall be single-strap type, Ford S70 furnished with neoprene gaskets cemented in place. Clamps shall be of the proper size for the pipe with which they are to be used. Clamps shall have a tapered AWWA thread, and shall be suitable for a minimum working water pressure of 250 PSIG. Clamps shall be as manufactured by the Ford Company or equal as approved by the Engineer.

2.02 CORPORATION STOP

All taps for service connections shall be made in the upper half of the main with equipment designed for this purpose. No tap shall be closer than one foot from any joint in the main. Corporation stops shall be of the appropriate size for each service. Unless noted otherwise, all services shall be 1 inch. Corporation stops shall have a male AWWA threaded inlet, and an outlet suitable for connection to the service pipe. Corporation stops shall be 110 compression connection, Ford Catalog No. F-1002 Pack

Joint or equal, if PVC Service Pipe is specified. If polybutylene service pipe is specified, Ford Catalog No. F1000 or equal shall be utilized. Insert stiffeners of proper length shall be provided with corporation stop if plastic pipe is used.

### 2.03 SERVICE PIPE

Service pipe shall be Class 200, polyethylene, N.S.F. approved. Service pipe shall run from the corporation stop to the inlet of the meter setting equipment. Service pipe for standard services shall be jacked or driven under paved roads with minimum polyethylene casing with a diameter of ½" to 1" larger than outside diameter of the service line. Open trenches will not be permitted. Should the Contractor chose to use steel casing, it shall be done at no additional cost to the Owner. The jacking, boring, or pushing of service lines under state, county, or private roads or driveways is not a pay item. The unit price bid for service pipe shall include costs for jacking, pushing or boring service pipe as an incidental expense.

### 2.04 METER BOX AND COVER

- A. A meter box with cover shall be provided for each service and shall be as near the property line as possible and shall be located as directed by the Engineer on the customer side of road. The meter box shall be concrete pipe (Class III), extruded ribbed PVC (0.450 inch minimum wall thickness), or polyethylene (0.300 inch wall thickness) construction. The size shall be 18" in diameter by 24" deep unless otherwise specified or required by the meter size.
- B. The meter box cover shall be of cast iron construction, four inches deep with a non-recessed lid, with electronic read hole, with cast letters "WATER METER" and a standard waterworks pentagon lock nut Mueller M-10816 or equal as approved by the Engineer. A minimum of one multiple wrench Mueller M-10820, or equal as approved by the Engineer, shall be supplied to the Owner for each 50 meter box installations. This wrench is not a separate pay item.
- C. Meter boxes and covers shall be set with backfill neatly compacted in place. In yards and other maintained areas, the top of the meter box cover shall be 1/2 inch to 1 inch above original grade, otherwise 2 inches above original grade.

### 2.05 METER SETTING EQUIPMENT

- A. The meter setting equipment shall consist of a copper meter yoke, with an inlet and outlet suitable for connection to the service pipe specified. The meter yoke shall be provided with a plain stop. Unless otherwise specified or required for the service, the yoke shall accept a 5/8 inch by 3/4 inch meter as specified below. A 1 inch by 5 foot long section of the specified service pipe shall be installed on the customer side of the meter. The cost of this service pipe "pigtail" shall be included with the unit price bid for meter setting.



- B. Copper meter yokes shall have angle ball valve inlet, double check valve outlet and 7" rise. Regular meter yokes shall be Ford VBHH72-7W-44-33 or approved equal. If the meter setting is to include an individual PRV, the tandem yoke shall be Ford TVBHH72-7W-44-33 or approved equal.
- C. Meter yokes shall be supplied with two (2) end connections with baskets per meter setting. End connections shall be Ford Pack Joint or equal for 1" CTS or as required based upon type of service pipe used. Insert stiffeners (of approved length) shall be furnished and installed for each inlet and outlet meter setting service pipe connection.

2.06 PRESSURE REDUCING VALVE (INDIVIDUAL)

When called for on the drawings or when directed by the Engineer, the Contractor shall install a pressure reducing valve prior to the meter, with strainer, equal to the size of the service. This valve shall be placed inside the meter box according to the standard drawings. Pressure reducing valves shall be A.W. Cash Company, No. E24U or Watts Catalog No. U5-B, or approved equal.

PART 3 EXECUTION

NOT USED.

- END OF SECTION -



## SECTION 15085

DISPLACEMENT TYPE DOMESTIC WATER METERS  
(5/8", 3/4" or - 1" Size)

## PART 1 GENERAL

## 1.01 SUMMARY

The work to be performed under this section shall include furnishing water meters.

## 1.02 RELATED SECTIONS

- A. 01300 - Submittals
- B. 01600 - Materials and Equipment

## PART 2 PRODUCTS

## 2.01 TYPE

- A. Furnish Magnetic Drive, Sealed Register, Positive Displacement Oscillating Piston Type cold water meters with Radio Read capability.
- B. Size and Length

Unless specified otherwise on the drawings, meters shall be 5/8" x 3/4" and must conform to American Water Works Standard C-700 or C-708 as most recently revised. Meters shall be Invensys model SR-11 with Radio Read AMR System, with ECR/WP and meter transceiver unit or Engineer approved equal.

## 2.02 CASES

- A. All Meters shall have a non-corrosive Water Works bronze outer case with a separate measuring chamber which can be easily removed from the case. All meters shall have cast on them, in raised characters, the size and direction of flow through the meter. Case Iron frost bottoms, or bronze bottoms shall be provided on 5/8", 3/4" and 1". All main cases and direct reading registers shall be guaranteed against defects in materials and workmanship for twenty-five (25) years from date of shipment.
- B. All external bolts and washers shall be of corrosion resistant material and be easily removed from the main case.

## 2.03 REGISTERS - HERMETICALLY SEALED

The register must be of straight reading type and have a large test or sweep hand. It shall read in gallons of volume. All reduction gearing shall be contained in a

permanently hermetically sealed, tamperproof enclosure made from a corrosion resistant material and will be secured to the upper main case by means of a locking device located in the interior of the meter so the register cannot be removed externally. The sealed register shall be guaranteed against defects in materials and workmanship for fifteen (15) years from date of shipment.

## 2.04 MEASURING CHAMBER

- A. The measuring chamber shall be of Water Works bronze or a suitable synthetic polymer and shall not be cast as part of the main case. All piston assemblies shall be interchangeable in all measuring chamber assemblies of the same size. The chamber's bottom plate shall be held in place without the use of fasteners.
- B. There shall be no stuffing box. The motion of the piston will be transmitted to the sealed register through the use of a direct magnetic drive without any intermediate mechanical coupling.
- C. All meters must be provided with a corrosion resistant strainer which is easily removable from the meter without the meter itself being disconnected from the pipeline.
- D. Change gears will not be allowed to calibrate the meter. All registers of a particular registration and meter size shall be identical and completely interchangeable.
- E. Meters shall conform to current AWWA test flow and accuracy standards.
- F. Meters shall operate up to a working pressure of 150 pounds per square inch, without leakage or damage to any parts. The accuracy shall not be affected when operating at this pressure due to possible distortion.

## PART 3 EXECUTION

### 3.01 GUARANTEE

- A. Quotations shall be accepted only from those companies who are actively engaged in the manufacturing of all parts for their meter in the United States of America and who have a minimum of five years of satisfactory operating experience with their meter. All meters will be guaranteed against defects in materials and workmanship for a period of one (1) year from date of installation.

END OF SECTION

SECTION 15140  
SUPPORTS AND ANCHORS

- 1 PART 1 GENERAL
  - 1.1 SECTION INCLUDES
    - A. Pipe and equipment hangers and supports.
    - B. Sleeves and seals.
  - 1.2 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION
    - A. Placement of roof curbs.
  - 1.3 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION
    - A. Supply of roofing, pipe, duct and equipment supports for placement by this Section.
  - 1.4 RELATED SECTIONS
    - A. Section 09900 - Painting.
    - B. Section 15410 - Piping.
    - C. Section 15430 – Piping Specialties.
    - D. Section 15890 – Ductwork
  - 1.5 REFERENCES
    - A. ASME B31.9 - Building Services Piping
    - B. ASTM F708 - Design and Installation of Rigid Pipe Hangers.
    - C. MSS SP58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
    - D. MSS SP69 - Pipe Hangers and Supports - Selection and Application.
    - E. MSS SP89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
  - 1.6 SUBMITTALS

- A. Submit under provisions of Section - Submittals.
- B. Shop Drawings: Indicate system layout with location and detail of special hangers.
- C. Product Data: Provide manufacturers catalog data including load capacity.
- D. Design Data: Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers.
- E. Manufacturer's Installation Instructions: Indicate special procedures and assembly of components.

## 1.7 REGULATORY REQUIREMENTS – NOT USED

## 2 PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Commercially made:
  - 1. Grinnell
  - 2. B-Line
  - 3. PHD Manufacturing

### 2.2 PIPE HANGERS AND SUPPORTS

- A. Piping - Water:
  - 1. Conform to ASME B31.9, ASTM F708, MSS SP58, MSS SP69 and MSS SP89.
  - 2. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch: Malleable iron or Carbon steel, adjustable swivel, split ring.
  - 3. Wall Support for Pipe Sizes to 3 Inches: As specified on Drawings.
  - 4. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange.

### 2.3 ACCESSORIES

- A. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.

## 2.4 INSERTS

- A. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

## 2.5 FLASHING

- A. Metal Flashing: 26 gage thick aluminum.
- B. Metal Counter-flashing: 22 gage thick aluminum.

## 2.6 SLEEVES

- A. Sleeves for Pipes Through Non-fire Rated Floors: PVC Schedule 80, one size larger of specified pipe size.
- B. Sleeves for Pipes Through Non-fire Rated Walls, Footings, and Potentially Wet Floors: PVC Schedule 80, one size larger of specified size.
- C. Stuffing Insulation: Glass fiber type, non-combustible.
- D. Caulking.

## 2.7 FABRICATION

- A. Size sleeve large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping, when required.
- B. Hangers to be fabricated for process piping as noted on Plans.
- C. Provide hangers and supports as specified

## 3 PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions or as directed by Engineer.

### 3.2 INSERTS

- A. Provide inserts and sleeves to General Contractor for placement in concrete formwork.
- B. Provide inserts and sleeves for placement in masonry walls.
- C. Where inserts are omitted, install stainless steel anchors similar to Hilt's Quick Bolts. Minimum size one half inch diameter with a minimum of 2 inch embedded in concrete. Use clips of stainless steel for securing anchor. Consult with Engineer on specific applications.

### 3.3 PIPE HANGERS AND SUPPORTS

- A. Manufactured name brand hangers.
  - 1. Support piping as scheduled.
  - 2. Place hangers within 12 inches of each horizontal elbow.
  - 3. Use hangers with 1 ½ inch minimum vertical adjustment.
  - 4. Hangers shall be selected whereby pipe movement will not disengage supported pipe and insulation can run there hanger with appropriate saddle. Do not size for direct hanger contact with pipe.

### 3.4 FLASHING

- A. Provide flexible flashing and metal counter-flashing where piping and ductwork penetrate weather or waterproofed roofs.
- B. Flash floor drains in floors with topping over finished areas with lead, 10 inches clear on sides with minimum 36 x 36 inch sheet size. Fasten flashing to drain clamp device.

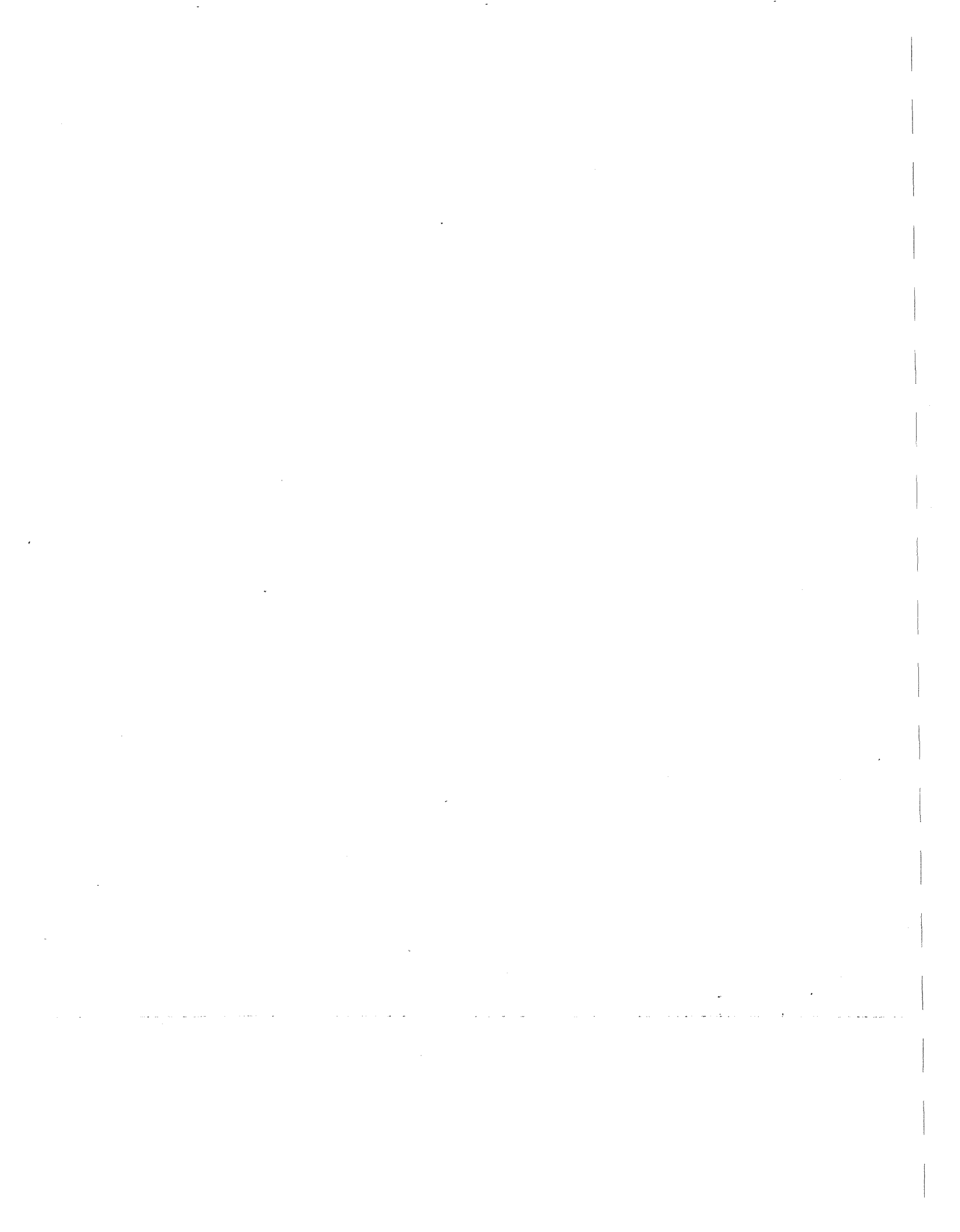
### 3.5 SLEEVES

- A. Set sleeves in position in formwork. Provide reinforcing around sleeves.
- B. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- C. Extend sleeves through floors 1 inch above finished floor level. Calk sleeves.
- D. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with stuffing or fire stopping insulation as required and calk air tight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- E. Install stainless steel escutcheons at finished surfaces.



- F. Where sleeves, pipe, conduit stubs and other penetration are provided in this work for installation of materials in the future, seal all such penetrations with a removable seal. Use intrumescent seal for all penetrations with plastic pipe, plastic material or other plastic mechanical and electrical items.

END OF SECTION



SECTION 15410

PIPING

1 PART 1 GENERAL

1.1 WORK INCLUDED

- A. Pipe and pipe fittings.
- B. Valves.

1.2 RELATED WORK

- A. Section 02221 - Excavation, Trenching and Backfilling for Utility Systems.
- B. Section 02701 - Polyvinyl Chloride Pipe (Water mains)
- C. Section 02720 - Pressure Pipelines Installation
- D. Section 02722 - Ductile Iron Pipe
- E. Section 09900 - Painting.
- F. Section 15140 - Supports and Anchors.
- G. Section 15430 - Piping Specialties.

1.3 REFERENCES

- A. ASTM D1785 - (1999) Poly (PVC) plastic pipe schedules 40, 80, & 120.
- B. ASTM D2466 - (1999) Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
- C. ASTM D2855 - (1996) Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
- D. Kentucky State Plumbing Law, Regulations and Code. (If above pipe listings conflict with The Kentucky Plumbing Code, Contractor shall install products listed in the Code.

1.4 SUBMITTALS FOR REVIEW

- A. Section 01300 - Submittals: Procedures for submittals.
- B. Product Data: Provide catalog illustrations of valves, sizes, dimensions, trim, and material type.

1.5 SUBMITTALS FOR INFORMATION

- A. Section 01300 - Submittals: Procedures for submittals.
- B. Manufacturer's Instructions: Indicate installation methods and procedures.

1.6 SUBMITTALS AT PROJECT CLOSEOUT

- A. Section 01700 - Contract Closeout.
- B. Maintenance Data: Include valve replacement parts, trim exploded view and list of suppliers within area including names, phone numbers and addresses.
- C. Warranty: Submit manufacturers warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience. Manufacturer must still be in business.

1.8 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.9 DELIVERY, STORAGE, AND PROTECTION

- A. Section 01600 - Material and Equipment: Transport, handle, store, and protect products.
- B. Accept fixtures on site in factory packaging. Inspect for damage.
- C. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

## 1.10 WARRANTY

- A. Section 01740 - Warranties.
- B. Provide one year manufacturer warranty for electrical operated equipment.

## 1.11 EXTRA MATERIALS

- A. Section 01700 - Contract Closeout.
- B. Supply one set of valve trim.

## 2 PART 2 PRODUCTS

## 2.1 WATER PIPING, ABOVE GRADE

- A. PVC Pipe: ASTM D1785 Schedule 80, solvent cement ASTM D2855, joints/fittings ASTM D2466. NSF 61-91 rating for piping.

## 2.2 ACCEPTABLE MANUFACTURERS - GATE VALVES

- A. Grinnell Fig 2910 \*\* 200# bronze ½"-2", threaded \*\*.
- B. Stockham Fig B-105 \*\* 125# bronze ¼"-3" threaded\*\*.
- C. Hammond Fig IB617 \*\* 125# bronze ¼"-3", threaded \*\*.
- D. Substitutions: Under provisions of Section 15010.

## 2.3 GATE VALVES

- A. Up to 2 Inches: Bronze body, non-rising stem and handwheel, inside screw, solid wedge or disc or threaded ends.

## 2.4 ACCEPTABLE MANUFACTURERS - GLOBE VALVES

- A. Grinnell Fig 3200 \*\* 1/8"-2" 125# bronze, bronze disc, threaded \*\*.
- B. Grinnell Fig 3210 \*\* 1/2"-2" 125# bronze, teflon disc, threaded \*\*.
- C. Watts Fig B4000 \*\* 1/8"-3" 125# bronze, bronze disc, threaded \*\*.
- D. Hammond 1B412 \*\* 1/4"-2" 300# bronze, bronze disc, threaded \*\*.
- E. Substitution: Under provision of Section 15010.

2.5 GLOBE VALVES

- A. Up to 2 Inches: Bronze body, rising stem and handwheel, inside screw, renewable composition disc, screwed ends, with backseating capacity.

2.6 ACCEPTABLE MANUFACTURERS - BALL VALVES

- A. Watts B-6800 \*\* 1/4"-2" brass, brass ball, PTFE seat, threaded, full port \*\*.
- B. Hammond 8301 \*\* 1/4"-2" brass, brass ball, TFE seat, threaded \*\*.
- C. Appollo 70-100 series \*\* 1/4"-3" bronze, brass ball, RTFE seat, threaded \*\*.

2.7 BALL VALVES

- A. Up to 3 Inches: Stainless steel body, stainless steel ball, Teflon seats and stuffing box ring, lever handle and balancing stops threaded ends.

2.8 ACCEPTABLE MANUFACTURERS - WATER PRESSURE REDUCING VALVES

- A. Watts            Model No. 25AUB
- B. Wilkins        Model No. BR4
- C. FEBCO         Model No. 8254
- D. Substitutions: None acceptable.

2.9 WATER PRESSURE REDUCING VALVES

- A. Up to 2 Inches: Bronze body, stainless steel and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded double union ends. Set at 30 psi.

3 PART 3 EXECUTION

3.1 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to pump header discharge.

3.2 INSTALLATION

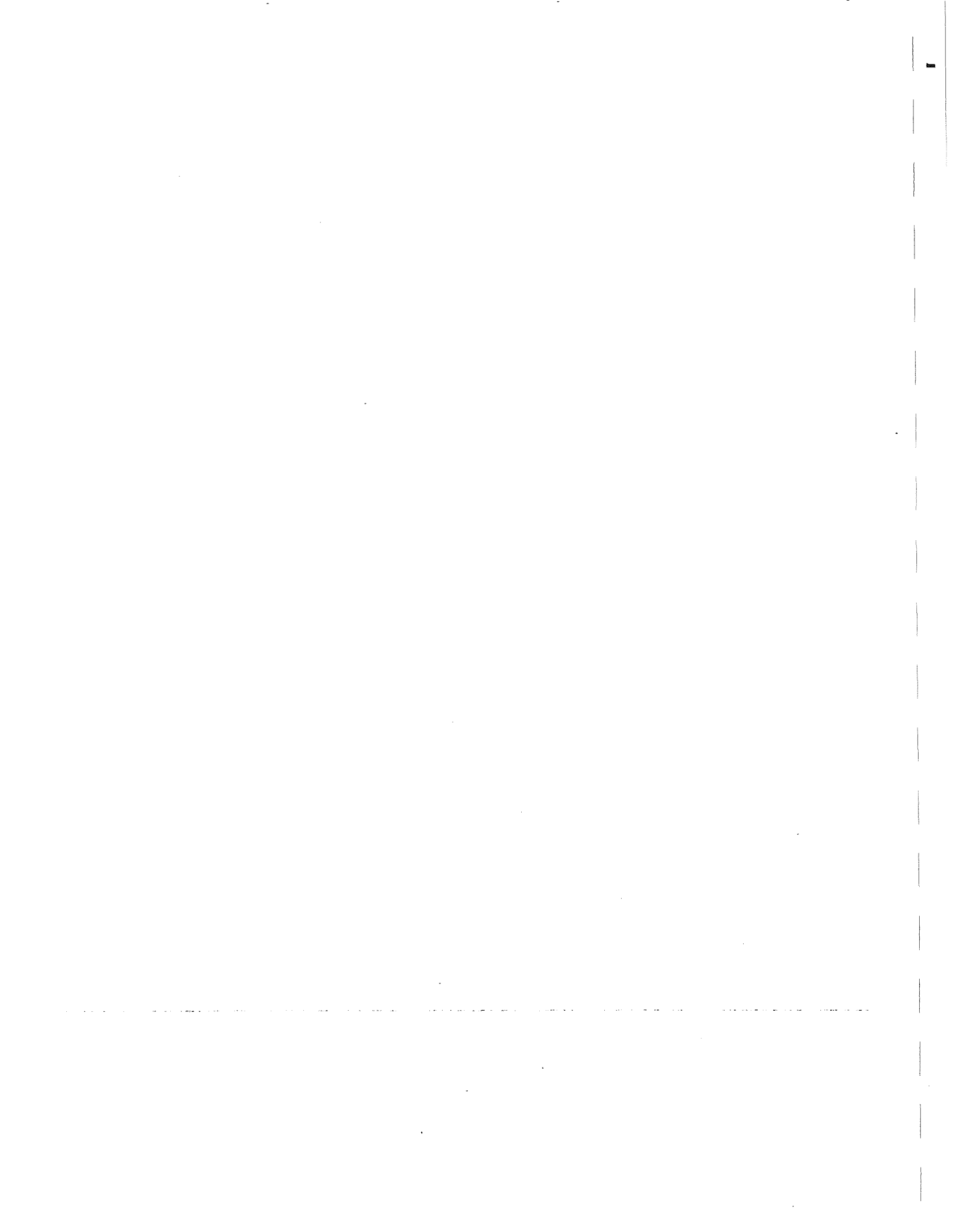
A. Domestic Water

1. All piping shall be installed according to Kentucky Plumbing Code, latest edition.
2. Route piping in orderly manner.
3. Install piping with proper slope to nearest open faucet whereby system can be drained leaving no pockets of water in system.
4. Install piping to allow for expansion and contraction.
5. Install pipe hangers per Code. Reference Section 15140.
6. Install valves with stems upright or horizontal, not inverted.

3.3 APPLICATION

- A. Use grooved mechanical couplings and fasteners only in accessible locations.
- B. Install unions downstream of valves.
- C. Install ball valves for shut-off and for bypass as noted on plans.

END OF SECTION





SECTION 15430  
PIPING SPECIALTIES

- 1 PART 1 GENERAL
- 1.1 SECTION INCLUDES
  - A. Floor Drains. (FD).
  - B. Hose Bibs. (HB)
  - C. Backflow Preventions (BP)
- 1.2 RELATED SECTIONS
  - A. Section 15140 -- Supports and Anchors.
  - B. Section 15410 - Piping.
  - C. Section 16180 - Equipment Wiring Systems: Electrical characteristics and wiring connections.
- 1.3 REFERENCES
  - A. ASME A112.21.1M - (1998) Floor Drains.
  - B. ASSE 1011 - (1995) Hose Connection Vacuum Breakers.
  - C. AWWA C511 - (1997) Backflow Prevention Devices - Reduced Pressure Principle and Double Check Valve Types.
- 1.4 SUBMITTALS FOR REVIEW
  - A. Section 01300 - Submittals: Procedures for submittals.
  - B. Product Data: Provide catalog illustrations of specified items, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- 1.5 SUBMITTALS FOR INFORMATION
  - A. Section 01300 - Submittals: Procedures for submittals.
  - B. Manufacturer's Instructions: Indicate installation methods and procedures.

1.6 SUBMITTALS AT PROJECT CLOSEOUT

- A. Section 01700 - Contract Closeout.
- B. Maintenance Data: Include fixture trim exploded view and replacement parts lists. Also list closest supplier's name, address, phone number and if wholesaler or retailer.
- C. Warranty: Submit manufacturer's warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.

1.8 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.9 DELIVERY, STORAGE, AND PROTECTION

- A. Section 01600 - Material and Equipment: Transport, handle, store, and protect products.
- B. Accept fixtures on site in factory packaging. Inspect for damage.
- C. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.10 WARRANTY

- A. Section 01740 - Warranties.
- B. Provide five-year manufacturer warranty for electrical operated equipment.

1.11 EXTRA MATERIALS

- A. Section 01700.- Contract Closeout.
- B. Supply two sets of repair parts for backflow preventor.

## 2 PART 2 PRODUCTS

## 2.1 FLOOR DRAINS

A. Floor Drain (FD-1): Design based on Zurn Model Z 550.

## 1. Other Manufacturers:

- |    |                |                    |
|----|----------------|--------------------|
| a. | J.R. Smith     | Model: 2110 Y.     |
| b. | Josam          | Model: Model 32100 |
| c. | Substitutions: | None Acceptable.   |

2. ANSI A112.21.1; lacquered cast iron two piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable nickel-bronze strainer.

## 2.2 FLAP VALVE

A. Flap Valve – Design based on Neenah CIR – 5004 with SS. Screen on discharge.

## 1. Other Manufacturers:

- |    |            |             |
|----|------------|-------------|
| a. | J.R. Smith | Model 7070  |
| b. | Zurn       | Model Z1091 |

2. Provide with SS screen on discharger

3. Substitutions: None Acceptable.

## 2.3 HOSE BIBS

A. Interior: (for use only when chlorinator room provided.)

- |    |                     |          |                 |
|----|---------------------|----------|-----------------|
| 1. | In pump room        | Woodford | Model Y26       |
| 2. | In chlorinator room | Woodford | Model 26P       |
| 3. | Substitutions:      |          | None Acceptable |

## 2.4 DOUBLE CHECK VALVE ASSEMBLY

A. Manufacturers:

- |    |                |                          |
|----|----------------|--------------------------|
| 1. | Wilkins        | Model 950XLT (3/4" line) |
| 2. | Watts          | Model 007                |
| 3. | Febco          | Model 800                |
| 4. | Substitutions: | None Acceptable.         |

B. AWWA C511: Bronze body with corrosion resistant internal parts and S.S. springs; two independently operating check valves with intermediate atmospheric vents.

C. Provide matching air gap with 1" outlet pipe discharging to floor.

## 2.5 PRESSURE GAUGES

A. Manufacturer:

1. Omega –  
High side of regulator – 0-300 psi; dial 2-1/2" standard case style 1000.  
Low side of regulator – 0-100 psi; dial 2-1/2" standard case style 1000.

B. Substitutions: None Acceptable.

## 3 PART 3 EXECUTION

### 3.1 PREPARATION

A. Coordinate forming of floor construction to receive drains to required invert elevations.

### 3.2 INSTALLATION

A. Install specialties in accordance with manufacturer's instructions to permit intended performance.

B. All backflow preventors will be installed fully accessible and the drip mechanism will be piped to a floor drain or open receptacle.

END OF SECTION

SECTION 15835

TERMINAL HEAT TRANSFER UNITS

- 1 PART 1 GENERAL
- 1.1 SECTION INCLUDES
  - A. Electric heaters.
- 1.2 RELATED SECTIONS
  - A. Section 16180 - Equipment Wiring Systems: Electrical characteristics and wiring connections. Installation of room thermostats. Electrical supply to units.
- 1.3 REFERENCES
  - A. NFPA 70 - National Electrical Code.
- 1.4 SUBMITTALS FOR REVIEW
  - A. Section 01300 - Submittals: Procedures for submittals.
  - B. Product Data: Provide typical catalog of information including arrangements.
  - C. Shop Drawings:
    - 1. Indicate cross sections of cabinets and typical elevations.
    - 2. Submit schedules of equipment and enclosures typically indicating length, access doors and comparison of specified heat required to actual heat output provided.
    - 3. Indicate mechanical and electrical service locations and requirements.,
- 1.5 SUBMITTALS FOR INFORMATION
  - A. Section 01300 - Submittals: Procedures for submittals.
  - B. Manufacturer's Instructions: Indicate installation instructions and recommendations.
- 1.6 SUBMITTALS AT PROJECT CLOSEOUT
  - A. Section 01700 - Contract Closeout: Procedures for submittals.
  - B. Project Record Documents: Record actual locations of components and locations of access doors in radiation cabinets required for access or valving.

- C. Operation and Maintenance Data: Include manufacturers descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listings.
- D. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owners name and registered with manufacturer.

## 1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

## 1.8 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

## 1.9 WARRANTY

- A. Section 01700 - Contract Closeout.
- B. Provide five year manufacturers warranty for unit heater.

## 2 PART 2 PRODUCTS

### 2.1 ELECTRIC RADIANT HEATERS (EUH-1)

Use only when chlorinator injections room specified.

- A. Manufacturer: Q-Mark, Model KCJ-104.
- B. Other acceptable manufacturers offering equivalent products.
  - 1. Marley
  - 2. Chromalox
  - 3. Modine
  - 4. Substitutions: Not permitted.
- C. Heating Elements: Corrosion resistant element with aluminum fins bonded to element. Element shall be centered, anchored and shall float freely on each and through high temperature bushings.
- D. Element cover: A 12-gauge steel, perforated cover shall protect the heating element. The element cover shall have at least a 50% punched hole open area.

- E. Enclosure: The element cover enclosure, control compartment cover, back plate and exterior surface cover shall be coated with a corrosion resistant finish to protect surfaces exposed in a chlorine atmosphere.
- F. Controls: A double pole disconnect switch shall be provided for local shut off. A single pole thermostat shall be provided with adjustments from 55° to 100°F and shall be accessible without removal of control compartment cover.
- G. Listing: U.L. Listed.
- H. Electrical:
  - 1. 240 V - 1Ø - 2 pole.
  - 2. 1.0 KW @ 4.4 amps.

## 2.2 ELECTRIC UNIT HEATERS (EUH-2)

- A. Manufacturer: Q-Mark Model MUH03-21.
- B. Other acceptable manufacturers offering equivalent products.
  - 1. Marley.
  - 2. Chromalox.
  - 3. Modine.
  - 4. Substitutions: Not permitted.
- C. Heating element: Aluminum-finned, copper clad steel sheath heating elements.
- D. Control Transformer: Line voltage standard. Controls T-Stat.
- E. Reset: Automatic reset linear thermal cut-out, capillary design.
- F. Single speed fan switch.
- G. Fan delay: Fan delay allows element to heat up before fan cuts in.
- H. Listings: Meets U.L., NEC, OSHA & U.L. file No. E21609.
- I. Electrical:
  - 1. 240 volts - 1Ø 2 pole.
  - 2. 5kw @ 21 amps.
  - 3. 350 c.f.m. @ 800 f.p.m.

### 3 PART 3 EXECUTION

#### 3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install equipment exposed to finished areas after walls and ceiling are finished and painted. Avoid damage.
- C. Protection: Provide finished cabinet units with protective covers during balance of construction.
- D. Electric radiant heater: Install as indicated on plans. Run electric down through 6-inch CMU and provide a J-box at point where electric connections made to unit. Security mount to wall using toggle bolts.
- E. Electric unit heater: Mount hanging bracket from ceiling. Secure unit heater on mounting bracket. Run flex electric to point of connection on unit for electric. Mount T-stat\ on wall as noted on plans 60" up at F.F. all control wiring shall be concealed.
- F. Install electric heating equipment including devices furnished by manufacturer but not factory-mounted. Furnish copy of manufacturer's wiring diagram submittal. Install electrical wiring in accordance with manufacturer's submittals and Section 16180.

#### 3.2 CLEANING

- A. After construction is completed, including painting, clean exposed surfaces of units. Vacuum clean coils and inside of cabinets.
- B. Touch-up marred or scratched surfaces of factory-finished cabinets, using finish materials furnished by manufacturer.

END OF SECTION



SECTION 15870

POWER VENTILATORS

1 PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Roof exhausters.

1.2 RELATED SECTIONS

- A. Section 15890 - Ductwork.
- B. Section 16180 - Equipment Wiring Systems: Electrical characteristics and wiring connections.
- C. Section containing execution requirements for roof mounting curbs specified by this section.

1.3 REFERENCES

- A. Section containing requirements for references and standards.
- B. AMCA 99 - Standards Handbook.
- C. AMCA 261 - Directory of Products Licensed to Bear the AMCA Certified Ratings Seal.
- D. AMCA 300 - Test Code for Sound Rating Air Moving Devices.
- E. AMCA 301 - Method of Publishing Sound Ratings for Air Moving Devices.
- F. NEMA MG1 - Motors and Generators.
- G. NFPA 70 -- National Electric Code.
- H. SMACNA -- Low Pressure Duct Construction Standards.

1.4 SUBMITTALS FOR REVIEW

- A. Section Submittals: Procedures for submittals.
- B. Product Data: Provide data on fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels at rated capacity, and electrical characteristics and connection requirements.

1.5 SUBMITTALS FOR INFORMATION

- A. Section Submittals: Procedures for submittals.
- B. Manufacturer's Instructions: Indicate installation instructions.

1.6 SUBMITTALS AT PROJECT CLOSEOUT

- A. Sections describing Operation and Maintenance Data, Warranties and Procedures for submittals.
- B. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.
- C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

1.8 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., or other testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

2 PART 2 PRODUCTS

2.1 ROOF EXHAUSTERS AND VENTILATORS

- A. Manufacturer: Carnes Model VUDK-06, upblast.
- B. Other acceptable manufacturers offering equivalent products.
  - 1. Jenn-Fan.
  - 2. Penn.
  - 3. Greenheck.
  - 4. Substitutions: None acceptable.
- C. Product Requirements:
  - 1. Performance Ratings: Conform to AMCA 210 and bear the AMCA Certified Rating Seal.
  - 2. Sound Ratings: AMCA 301, tested to AMCA 300, and bear AMCA Certified Sound Rating Seal.
  - 3. Fabrication: Conform to AMCA 99.

- D. Performance: 300 CFM @ 3/8" S.P. design Actual. Capacity 343 CFM, 3/8" SP. @ 1,400 RPM.
- E. Fan Unit: Direct driven as indicated, with spun aluminum housing; resilient mounted motor; ½ inch mesh, 0.62 inch thick aluminum wire birdscreen; square base to suit roof curb with continuous curb gaskets.
- F. Roof Curb: 12 inch high self-flashing of aluminum with continuously welded seams, built-in cant strips, hinged curb adapter, and factory installed nailer strip. NOTE: Roof curb height to be measured above top surface of roof and other components. Under work to achieve nominal 12 inch height; minimum acceptable clear height 10 inches.
- G. Disconnect Switch: Factory wired, non-fusible, in housing for thermal overload protected motor and wall mounted switch.
- H. Backdraft Damper: Gravity actuated, aluminum multiple blade construction, felt edged with offset hinge pin, nylon bearings.
- I. Where noted provide all aluminum or non-ferrous non-sparking construction. 120% drive factor.

### 3 PART 3 EXECUTION

#### 3.1 INSTALLATION

- A. Install per manufacturer's instructions.
- B. Secure exhausters with stainless steel lag screws to roof curb or structure.
- C. Extend ducts to roof into roof curb.
- D. Fans mounted such that attached ductwork blocks normal service access shall be provided with a ductwork access door or doors as needed for full service access.
- E. Install backdraft dampers on inlet to roof and wall exhausters.

#### 3.2 SCHEDULES

- A. See Drawings.

END OF SECTION



## SECTION 15890

## DUCTWORK

- 1 PART 1 GENERAL
  - 1.1 SECTION INCLUDES
    - A. Metal ductwork.
    - B. Duct cleaning.
  - 1.2 RELATED SECTIONS
    - A. Section 09900 - Painting: Weld priming, weather resistant, paint or coating.
    - B. Section 15140 - Supports and Anchors: Sleeves.
    - C. Section 15940 - Air Inlets and Outlets.
  - 1.3 REFERENCES
    - A. ASTM A 167 – (1999) Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
    - B. ASTM B209 – (2000) Aluminum and Aluminum-Alloy Sheet and Plate.
    - C. AWS D9.1 - Welding of Sheet Metal.
    - D. SMACNA HVAC Duct Construction Studs - (1997) HVAC Duct Construction Standards – Metal and Flexible.
  - 1.4 PERFORMANCE REQUIREMENTS
    - A. No variation of duct configuration or sizes permitted except by written permission.
  - 1.5 QUALITY ASSURANCE
    - A. Perform Work in accordance with SMACNA - HVAC Duct Construction Standards - Metal and Flexible.
  - 1.6 QUALIFICATIONS
    - A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum ten years experience.

- B. Installer: Company specializing in performing the work of this section with minimum five years experience.

## 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.
- B. Maintain temperatures during and after installation of duct sealants.

## 2 PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Aluminum Ducts: ASTM B209; aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061- T6 or of equivalent strength.
- B. Stainless Steel Ducts: ASTM A167, Type 304.
- C. Fasteners: Rivets, bolts, or sheet metal screws.
- D. Sealant:
  - 1. Non-hardening, water resistant, fire resistive, compatible with mating materials; liquid used alone or with tape, or heavy mastic.

### 2.2 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- B. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows are used, provide air foil turning vanes.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

## 3 PART 3 EXECUTION

### 3.1 INSTALLATION

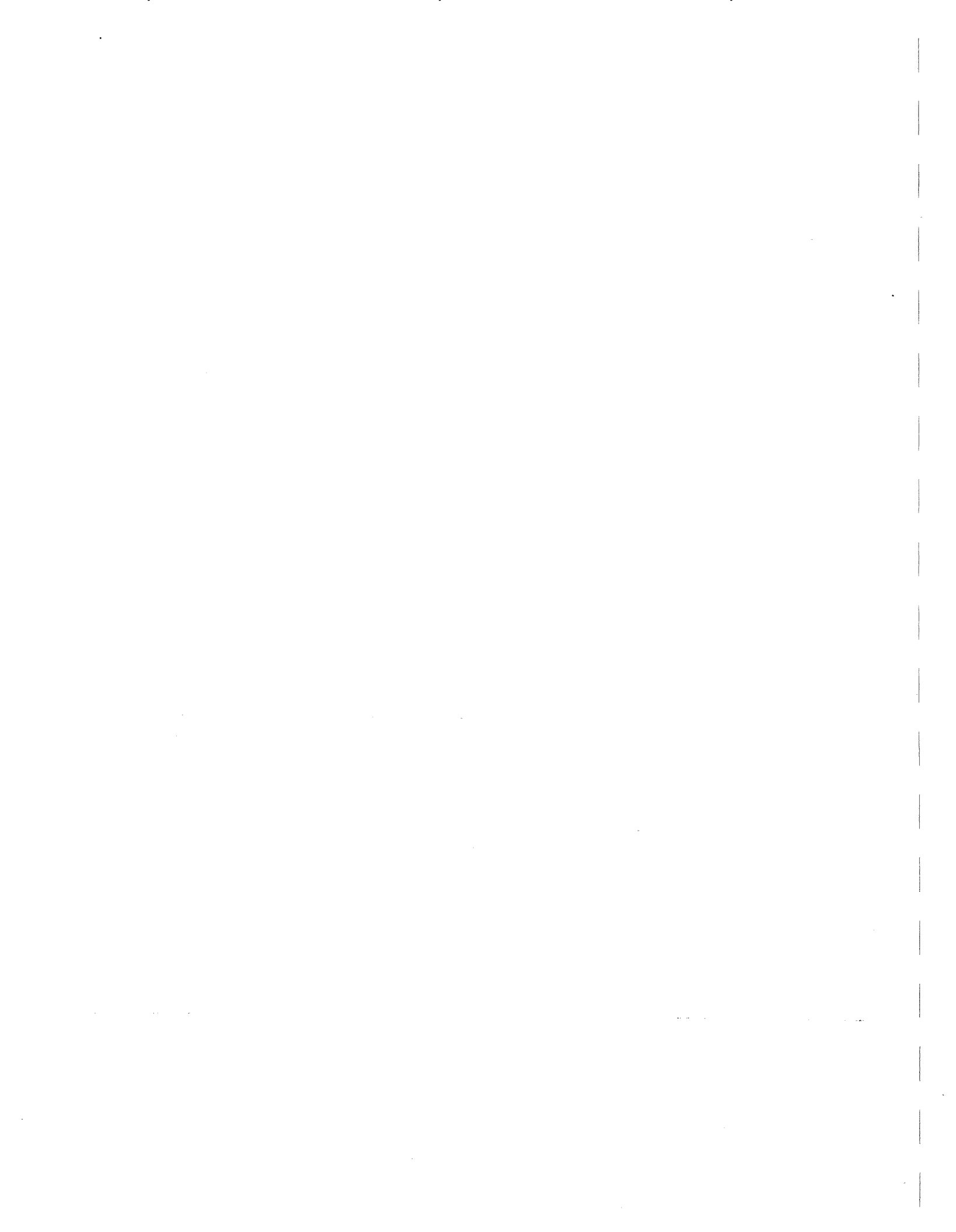
- A. Install in accordance with manufacturer's instructions.
- B. Install and seal ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

- C. Duct Sizes are inside clear dimensions.
- D. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

3.2 CLEANING

- A. Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air, clean half the system at a time.

END OF SECTION





SECTION 15940

AIR OUTLETS AND INLETS

- 1 PART 1 GENERAL
- 1.1 SECTION INCLUDES
  - A. Louvers.
- 1.2 REFERENCES
  - A. ADC 1062 - Certification, Rating and Test Manual.
  - B. AMCA 500 - Test Method for Louvers, Dampers and Shutters.
  - C. ARI 650 - Air Outlets and Inlets.
  - D. ASHRAE 70 - Method of Testing for Rating the Air Flow Performance of Outlets and Inlets.
  - E. BOCA – BOCA National Mechanical Code.
  - F. NFPA 70 - National Electrical Code.
  - G. NFPA 90A - Installation of Air Conditioning and Ventilating Systems.
  - H. SMACNA – HVAC Duct Construction Standard - (1997) HVAC Duct Construction Standards – Metal and Flexible.
- 1.3 SUBMITTALS
  - A. Submit under provisions of Division 1.
  - B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.
- 1.4 PROJECT RECORD DOCUMENTS
  - A. Submit under provisions of Division 1.
  - B. Record actual locations of air outlets and inlets.

1.5 QUALITY ASSURANCE

- A. Test and rate air outlet and inlet performance in accordance with ADC Equipment Test Code 1062 and ASHRAE 70.
- B. Test and rate louver performance in accordance with AMCA 500.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

2 PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Anemostat.
- B. Tuttle & Bailey.
- C. Carnes.

2.2 LOUVER – Storm Proof Design.

- A. Design based on Carnes Model FLDA with gravity damper secured on inside with adjustable S.P. weight.
- B. Frame: Aluminum extensions – 6063-T5 alloy, 4” thick.
- C. Blades: “J” hook shape extrusions, storm proof.
- D. Bird Screen: Standard ½” x ½” 19-gauge S.S. wire.

2.3 WALL DAMPER

- A. Adjustable gravity operated damper set in 4” thick extruded aluminum frame.
- B. Damper to have adjustable S.P. weight.
- C. Adjustment damper from 1/8” S.P. to ½” S.P.
- D. Size to equal 16” x 16”.

3 PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Check location of outlets and inlets and make necessary adjustments in position to conform with features, symmetry, and location.

END OF SECTION



SECTION 16010

BASIC MECHANICAL/ELECTRICAL REQUIREMENTS

CONTRACT NO. 9

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. General Requirements specifically applicable to Division 16.

1.2. CONTRACT DOCUMENTS

- A. The Instructions to Bidders, General and Special Conditions and all other Contract Documents shall apply to the Electrical Contractor's work as well as to each of his subcontractor's work.
- B. Each Contractor is directed to familiarize himself in detail with all documents pertinent to this Contract. In case of conflict between these General Provisions and the General and/or Special Conditions, the affected Contractor shall contact the Engineer for clarification and final determination.

1.3. WORK SEQUENCE

- A. Construct Work in sequence under provisions of this specification.
- B. Schedule power outages with owners' representative.

1.4. COORDINATION

- A. Coordinate the Work specified in this Division under provisions of this specification.
- B. Prepare drawings showing proposed rearrangement of Work to meet job conditions, including changes to Work specified under other Sections. Obtain permission of Engineer/ Engineer before proceeding.

1.5. REFERENCES

- A. ANSI/IEEE C2 - National Electrical Safety Code.
- B. ANSI/NFPA 70 - National Electrical Code.
- C. NECA - Standard of Installation.

## 1.6. REGULATORY REQUIREMENTS

- A. Conform to ANSI/NFPA 70 as incorporated in the Kentucky Building Code.
- B. Conform to ANSI/IEEE C2.
- C. Conform to Kentucky Building Code.
- D. Conform to 702 KAR 4:070.
- E. Inspections: Contractor is to pay for electrical inspection and is to provide a final certificate of inspection.

## 1.7. SUBMITTALS

- A. Submit inspection and permit certificates under provisions of this specification.
- B. Include certificate of final inspection and acceptance from authority having jurisdiction.
- C. Submit shop drawings as specified in other divisions of this specification.
  - 1. Shop drawings and/or manufacturer's descriptive literature shall have the Engineer project numbers indicated thereon and shall be clearly referenced to the specification section number, schedule, materials, etc., so the Engineer may readily determine the particular item the Contractor or subcontractor proposes to furnish. Each submission shall also contain Date Submitted. If shop drawings and/or other items are transmitted by correspondence, each item of correspondence shall bear the Engineer project number.
  - 2. The Contractor shall submit with such promptness as to cause no delay in his own work or in that of any other Contractor, with a two (2) week allowance for the Engineer's review, eight (8) copies plus those required by the Contractor and his suppliers, of all Shop drawings and schedules required for the work of the various trades, and the Engineer shall pass on them with reasonable promptness, making desired corrections relating to the design concept. The Contractor shall make any corrections required by the Engineer, and if the Engineer so requests file with him eight (8) corrected copies and furnish such other copies as may be needed. The Engineer's approval of such drawings or schedules shall not relieve the Contractor from responsibility for deviations from drawings or specifications, unless he has in writing called to the Engineer's attention such deviations at the time of submission, nor shall it relieve him from responsibility for errors of any sort in shop drawings or schedules. The term "as specified" will not be acceptable as shop drawings must be submitted on all equipment.

3. The Contractor shall request that shop drawings be prepared by the subcontractors and be submitted to him for approval. The Contractor shall correct the shop drawings in colored pencil, if necessary, return them to the subcontractor for correction, then submit correct shop drawings in their final form to the Engineer for approval. All shop drawings must not only bear the Contractor's stamp of approval, but shall show evidence that he has thoroughly checked each drawing submitted. Any drawings submitted without this evidence and stamp of approval will not be considered and will be returned to the Contractor for proper resubmission.
4. Schedules, brochures or equipment, operating instructions and manuals, material literature, etc. shall be processed by the Contractor and submitted to the Engineer for approval in the same manner as outlined herein for shop drawings.
5. The Contractor shall maintain at least one (1) set of all approved shop drawings and specification documents at the site for reference.

## PART 2 – PRODUCTS

### 2.1. MATERIALS AND EQUIPMENT

- A. Materials and Equipment: Acceptable to the authority jurisdiction as suitable for the use intended.
- B. Unregistered Bidders are required to obtain 10 day prior approval.

## PART 3 - EXECUTION

### 3.1. WORKMANSHIP

- A. Install Work using procedures defined in NECA Standard of Installation.

END OF SECTION





SECTION 16111  
CONDUIT  
CONTRACT NO. 9

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Rigid metal conduit.
- B. Flexible metal conduit.
- C. Liquidtight flexible metal conduit.
- D. Electrical metallic tubing.
- E. Thickwall nonmetallic conduit.
- F. Fittings and conduit bodies.

1.2 RELATED SECTIONS

- A. Section 16130 - Boxes.
- B. Section 16170 - Grounding and Bonding.
- C. Section 16190 - Supporting Devices.
- D. Section 16195 - Electrical Identification.

1.3 REFERENCES

- A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
- B. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
- C. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- D. ANSI/NFPA 70 - National Electrical Code.
- E. NECA "Standard of Installation."
- F. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.4 DESIGN REQUIREMENTS

- A. Conduit Size: ANSI/NFPA 70.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide for metallic conduit, flexible metal conduit, liquidtight flexible metal conduit, metallic tubing, nonmetallic conduit, fittings, conduit bodies.

1.6 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01720.
- B. Accurately record actual routing of conduits larger than 2 inches.

1.7 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle Products to site under provisions of Section 01600.
- B. Accept conduit on site. Inspect for damage.
- C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- D. Protect PVC conduit from sunlight.

1.9 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Verify routing and termination locations of conduit prior to rough-in.
- C. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

## PART 2 - PRODUCTS

## 2.1 CONDUIT REQUIREMENTS

- A. Minimum Size: 3/4 inch unless otherwise specified.
- B. Underground Installations:
  - 1. More than Five Feet from Foundation Wall:
  - 2. Use thickwall nonmetallic conduit with galvanized rigid steel elbows through concrete slab.
  - 3. Within Five Feet from Foundation Wall:
  - 4. Use thickwall nonmetallic conduit with galvanized rigid steel elbows through concrete slab.
- C. In or Under Slab on Grade:
  - 1. Use thickwall nonmetallic conduit with galvanized rigid steel elbows through concrete slab.
  - 2. Minimum Size: 3/4 inch.
- D. Outdoor Locations, Above Grade:
  - 1. Use rigid steel and intermediate metal conduit.
- E. Wet and Damp Locations:
  - 1. Use thickwall nonmetallic conduit.
- F. Dry Locations:
  - 1. Concealed: Use electrical metallic tubing.
  - 2. Exposed: Use electrical metallic tubing.

## 2.2 RIGID METAL CONDUIT

- A. Manufacturers:

1. Allied Tube & Conduit.
2. Wheatland Tube Co.
3. Triangle PWC, DAC.
4. Substitutions: Under provisions of Section 01300.

B. Rigid Steel Conduit: ANSI C80.1.

C. Intermediate Metal Conduit (IMC): Rigid steel.

D. Fittings and Conduit Bodies: ANSI/NEMA FB 1; material to match conduit.

### 2.3 FLEXIBLE METAL CONDUIT

A. Manufacturers:

1. Alflex Corp.
2. AFC Co.
3. Electri-Flex Corp.
4. Substitutions: Under provisions of Section 01300.

B. Description: Interlocked steel construction.

C. Fittings: ANSI/NEMA FB 1.

### 2.4 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Manufacturers:

1. Alflex Corp.
2. AFC Co.
3. Electri-Flex Corp.
4. Substitutions: Under provisions of Section 01300.

B. Description: Interlocked aluminum construction with PVC jacket.

C. Fittings: ANSI/NEMA FB 1.

### 2.5 ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:

1. Allied Tube & Conduit.
2. Wheatland Tube Co.
3. Triangle PWC, DAC.
4. Substitutions: Under provisions of Section 01300.

B. Description: ANSI C80.3; galvanized tubing.

C. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel, compression type.

## 2.6 THICKWALL NONMETALLIC CONDUIT

- A. Manufacturers:
  - 1. Carlon.
  - 2. Cantex Industries.
  - 3. Electri-Flex Corp.
  - 4. Substitutions: Under provisions of Section 01300.
- B. Description: NEMA TC 2; Schedule 40 PVC.
- C. Fittings and Conduit Bodies: NEMA TC 3.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install conduit in accordance with NECA "Standard of Installation."
- B. Install nonmetallic conduit in accordance with manufacturer's instructions.
- C. Arrange supports to prevent misalignment during wiring installation.
- D. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- E. Group related conduits; support using conduit rack. Construct rack using steel channel.
- F. Fasten conduit supports to building structure and surfaces under provisions of Section 16190.
- G. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports
- H. Do not attach conduit to ceiling support wires.
- I. Arrange conduit to maintain headroom and present neat appearance.
- J. Route conduit parallel and perpendicular to walls.
- K. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- L. Route conduit in and under slab from point-to-point.

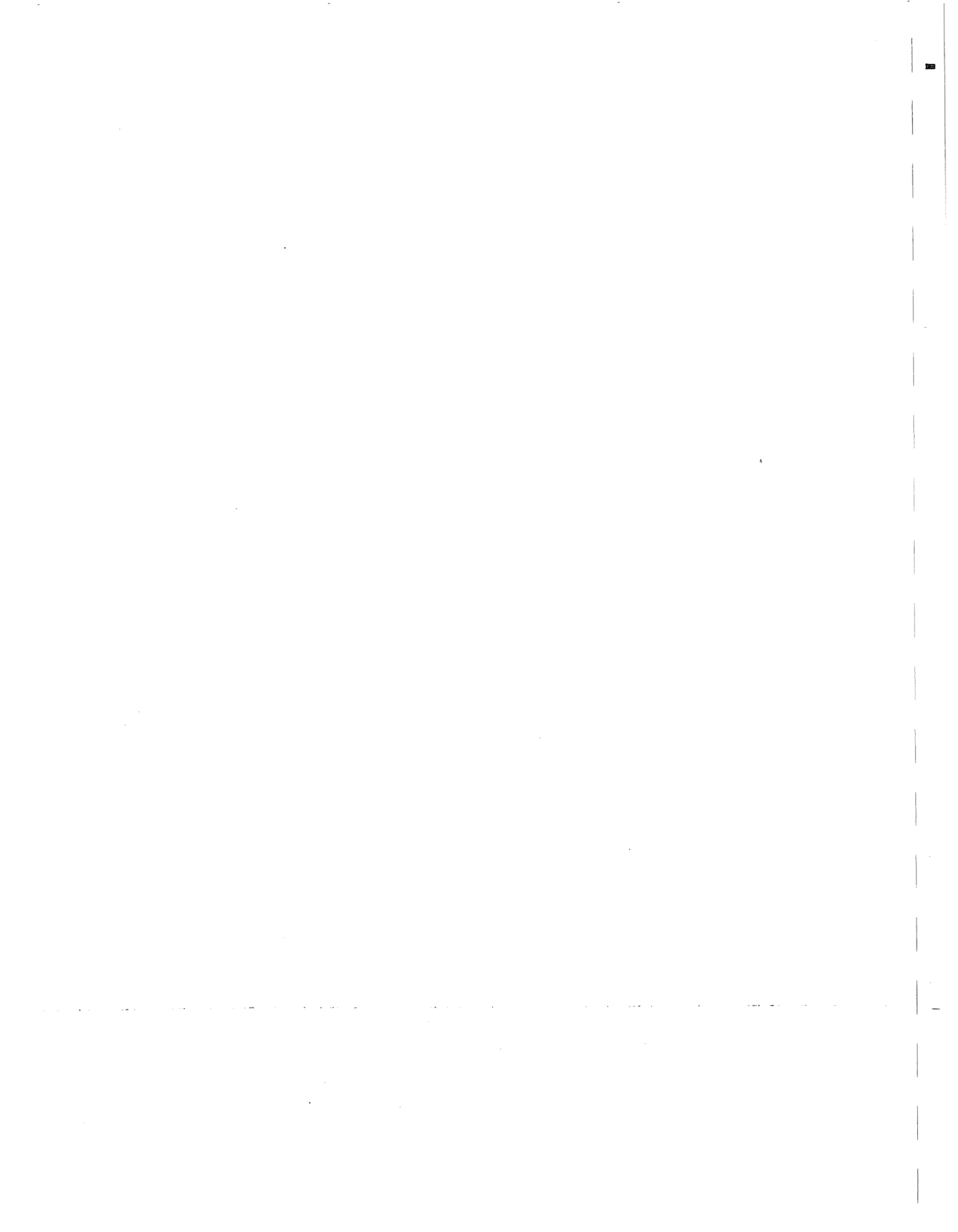
- M. Do not cross conduits in slab.
- N. Provide two coats of asphaltum paint on all underground or underslab metal conduits.
- O. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).
- P. Cut conduit square using saw or pipecutter; de-burr cut ends.
- Q. Bring conduit to shoulder of fittings; fasten securely.
- R. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- S. Use conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations.
- T. Install no more than equivalent of four 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender or factory elbows for bends in metal conduit larger than 2 inch size.
- U. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- V. Provide suitable fittings to accommodate expansion and deflection where conduit crosses control and expansion joints.
- W. Provide suitable pull string in each empty conduit except sleeves and nipples.
- X. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- Y. Ground and bond conduit under provisions of Section 16170.
- Z. Exposed surface mounted conduit feeding device boxes in finished areas shall be mounted securely to wall with one-hole straps and offset at device box connections. Conduit hangers with exposed bolts used to space the conduit from the wall shall not be acceptable for this type installation.

### 3.2 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements.
- B. Route conduit through roof openings for piping and ductwork or through suitable

roof jack with pitch pocket. Coordinate location with roofing installation.

END OF SECTION





SECTION 16123  
BUILDING WIRE AND CABLE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Building wire and cable.
- B. Wiring connectors and connections.

1.2 RELATED SECTIONS

- A. Section 16111 - Conduit.
- B. Section 16130 - Boxes.
- C. Section 16195 - Identification.

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide for each cable assembly type.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years documented experience.

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.7 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Conductor sizes are based on copper.
- C. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.
- D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

#### 1.8 COORDINATION

- A. Determine required separation between cable and other work.
- B. Determine cable routing to avoid interference with other work.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS - BUILDING WIRE AND CABLE

- A. Capital Wire and Cable.
- B. General Cable.
- C. Carol.
- D. Substitutions: Under provisions of Section 01300.

#### 2.2 BUILDING WIRE AND CABLE

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: ANSI/NFPA 70, Type THHN/THWN.

#### 2.3 WIRING CONNECTORS

- A. Split Bolt Connectors:
  - 1. Burndy.
  - 2. IlSCO.
  - 3. Kearney.

4. Substitutions: Under provisions of Section 01300.
- B. Solderless Pressure Connectors:
1. Buchanan.
  2. Ideal.
  3. Thomas & Betts.
  4. Substitutions: Under provisions of Section 01300.
- C. Spring Wire Connectors:
1. Buchanan.
  2. Ideal.
  3. Thomas & Betts.
  4. Substitutions: Under provisions of Section 01300.
- D. Compression Connectors:
1. Buchanan.
  2. Ideal.
  3. Thomas & Betts.
  4. Substitutions: Under provisions of Section 01300.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.

### 3.2 WIRING METHODS

- A. Concealed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
- B. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
- C. Above Accessible Ceilings: Use only building wire, Type THHN/THWN insulation, in raceway.
- D. Wet or Damp Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
- E. Exterior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.

- F. Underground Installations: Use only building wire, Type THHN/THWN insulation, in raceway.

### 3.3 INSTALLATION

- A. Install products in accordance with manufacturers instructions.
- B. Use solid conductor for feeders and branch circuits 12 AWG and smaller.
- C. Use stranded conductors for control circuits.
- D. Use conductor not smaller than 12 AWG for power and lighting circuits.
- E. Use conductor not smaller than 16 AWG for control circuits.
- F. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 100 feet.
- G. Pull all conductors into raceway at same time.
- H. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- I. Protect exposed cable from damage.
- J. Support cables above accessible ceiling, using spring metal clips or plastic cable ties to support cables from structure or ceiling suspension system. Do not rest cable on ceiling panels.
- K. Use suitable cable fittings and connectors.
- L. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- M. Clean conductor surfaces before installing lugs and connectors.
- N. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- O. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
- P. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
- Q. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.

- R. Terminate stranded conductors under screws using crimp-on wire terminals. Wrapping stranded wire around screw stem and tightening shall not be permitted.

#### 3.4 INTERFACE WITH OTHER PRODUCTS

- A. Identify wire and cable under provisions of Section 16195.
- B. Identify each conductor with its circuit number or other designation indicated on Drawings.

#### 3.5 FIELD QUALITY CONTROL

- A. Inspect wire and cable for physical damage and proper connection.
- B. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
- C. Verify continuity of each branch circuit conductor.

END OF SECTION



SECTION 16130

BOXES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Wall and ceiling device boxes.
- B. Pull and junction boxes.

1.2 RELATED SECTIONS

- A. Section 16140 - Wiring Devices: Wall plates in finished/unfinished areas.
- B. Section 16160 - Cabinets and Enclosures.

1.3 REFERENCES

- A. NECA - Standard of Installation.
- B. NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.
- C. NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- D. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- F. NFPA 70 - National Electrical Code.

1.4 SUBMITTALS FOR CLOSEOUT

- A. Operation and Maintenance Data: Submittals for Project closeout.
- B. Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.

- B. Provide Products listed and classified by Underwriters Laboratories, Inc., as suitable for the purpose specified and indicated.

## PART 2 - PRODUCTS

### 2.1 DEVICE BOXES (RECESSED)

- A. Sheet Metal Device Boxes: NEMA OS 1, galvanized steel.
  - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
  - 2. Concrete Ceiling Boxes: Concrete type.
- B. Nonmetallic Device Boxes: NEMA OS 2.
- C. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer. Provide threaded hubs.
- D. Wall Plates for Finished/Unfinished Areas: As specified in Section 16140.

### 2.2 DEVICE BOXES (SURFACE)

- A. Cast Aluminum Device Boxes: NEMA FB 1, aluminum.
  - 1. Surface mounted device boxes shall be cast aluminum box with threaded conduit openings. Exterior of box shall be smooth with unused conduit openings filled with flush sealing plugs. Exterior of box, surface conduit and hangers shall be painted to match wall finish. Standard wall plates as specified in Section 16140 shall be used. Wall plate size shall be selected to match the exterior dimension of the box as closely as possible to avoid overhanging edge of box. Box shall be mounted using mounting ears in wet locations and mounted through holes in the back of the box in dry locations.
- B. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer for wet locations.

### 2.3 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- B. Hinged Enclosures: As specified in Section 16160.

## PART 3 - EXECUTION



### 3.1 INSTALLATION

- A. Install boxes in accordance with NECA "Standard of Installation."
- B. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- C. Set wall mounted boxes at elevations to accommodate mounting heights indicated.
- D. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Adjust box location up to 10 feet if required to accommodate intended purpose.
- E. Orient boxes to accommodate wiring devices oriented as specified in Section 16140.
- F. Maintain headroom and present neat mechanical appearance.
- G. Install boxes to preserve fire resistance rating of partitions and other elements.
- H. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.
- I. Align adjacent wall mounted device boxes for switches, thermostats, and similar devices.
- J. Use flush mounted device box in finished areas.
- K. Locate flush mounted device box in masonry wall to require cutting wall of masonry unit in block opening only. Coordinate masonry cutting to achieve neat opening.
- L. Do not install flush mounted boxes back-to-back in walls; provide minimum 6 inches separation. Provide minimum 24 inches separation in acoustic rated walls.
- M. Secure flush mounted boxes to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- N. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- O. Use adjustable steel channel fasteners for hung ceiling outlet box.
- P. Do not fasten boxes to ceiling support wires.

- Q. Support boxes independently of conduit.
- R. Use gang box where more than one device is mounted together. Do not use sectional box.
- S. Use gang box with plaster ring for single device outlets.
- T. Use cast device box in exterior locations exposed to the weather and other wet locations.
- U. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

### 3.2 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate installation of device boxes for equipment connected under Section 16180.

### 3.3 ADJUSTING

- A. Section 01650 - Testing, Adjusting, and Balancing: Adjusting installed work.
- B. Adjust flush-mounting devices to make front flush with finished wall material.
- C. Install knockout closures in unused box openings.

### 3.4 CLEANING

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 16141  
WIRING DEVICES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Wall switches.
- B. Receptacles.
- C. Device plates and box covers.

1.02 REFERENCES

- A. NEMA WD 1 - General-Purpose Wiring Devices.
- B. NEMA WD 5 - Specific-Purpose Wiring Devices.

1.03 RELATED SECTIONS

- A. 01300 - Submittals.
- B. 01600 - Materials and Equipment.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - WALL SWITCHES.

- A. Hubbell.
- B. Pass & Seymour.
- C. Arrow Hart.
- D. Slater.

2.02 WALL SWITCHES

- A. Wall Switches for Lighting Circuits and Motor Loads Under 1/2 HP: NEMA WD; 1 AC general use snap switch with toggle handle, rated 20 amperes and 120 volts AC. Handle: Ivory plastic.
- B. Pilot Light Type: Lighted handle.

C. Locator Type: Lighted handle.

#### 2.03 ACCEPTABLE MANUFACTURERS - RECEPTACLES

- A. Hubbell.
- B. Pass & Seymour.
- C. Arrow Hart.
- D. Slater.

#### 2.04 RECEPTACLES

- A. Convenience and Straight-blade Receptacles: NEMA WD 1.
- B. Locking-Blade Receptacles: NEMA WD 5.
- C. Convenience Receptacle Configuration: NEMA WD 1; Type 5-20 R, ivory plastic face.
- D. Specific-use Receptacle Configuration: NEMA WD 1 or WD 5; type as indicated on Drawings, ivory plastic face.
- E. GFCI Receptacles: Duplex convenience receptacle with integral ground fault current interrupter.

#### 2.05 ACCEPTABLE MANUFACTURERS - WALL PLATES

- A. Hubbell.
- B. Pass & Seymour.
- C. Arrow Hart.
- D. Slater.

#### 2.06 WALL PLATES

- A. Cover Plates: Stainless Steel.
- B. Weatherproof Cover Plate: Gasketed cast metal with hinged gasketed device covers.

### PART 3 EXECUTION

3.01 INSTALLATION

- A. Install wall switches 48 inches above floor, OFF position down.
- B. Install convenience receptacles 18 inches above floor, grounding pole on bottom.
- C. Install specific-use receptacles at heights shown on Contract Drawings.
- D. Install stainless steel plates on outlet boxes and junction boxes in unfinished areas, and on surface-mounted outlets.
- E. Install devices and wall plates flush and level

END OF SECTION



SECTION 16195  
ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Nameplates.
- B. Wire and cable markers.

1.2 RELATED SECTIONS

- A. Section 16130 - Boxes.

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide catalog data for nameplates, labels, and markers.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 - PRODUCTS

2.1 NAMEPLATES

- A. Nameplates: Engraved three-layer laminated plastic, white letters on black background.
- B. Locations:
  - 1. Each electrical distribution and control equipment enclosure.

2. Communication cabinets.
3. Motor Starters.

C. Letter Size:

1. Use 1/8 inch letters for identifying individual equipment and loads.
2. Use 1/4 inch letters for identifying grouped equipment and loads.

## 2.2 WIRE MARKERS

A. Manufacturers:

1. Panduit.
2. Brady.
3. Thomas & Betts.
4. Substitutions: Under provisions of Section 01300.

B. Description: Tape, split sleeve, or tubing type wire markers.

C. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes and each load connection.

D. Legend:

1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
2. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on drawings

## 2.3 UNDERGROUND WARNING TAPE

A. Manufacturers:

1. Panduit.
2. Thomas & Betts.
3. Thor Enterprises.
4. Substitutions: Under provisions of Section 01300.

B. Description: 4 inch wide plastic tape, colored red with suitable warning legend describing buried electrical lines.

## PART 3 - EXECUTION



3.1 PREPARATION

- A. Degrease and clean surfaces to receive nameplates.

3.2 APPLICATION

- A. Install nameplate parallel to equipment lines.
- B. Secure nameplate to equipment front using adhesive.
- C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.
- D. Identify underground conduits using underground warning tape. Install one tape per trench at 3 inches below finished grade.

END OF SECTION



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SECTION 16440  
DISCONNECT SWITCHES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Disconnect switches.
- B. Fuses.
- C. Enclosures.

1.2 REFERENCES

- A. ANSI/UL 198C - High-Intensity Capacity Fuses; Current Limiting Types.
- B. ANSI/UL 198E - Class R Fuses.
- C. FS W-F-870 - Fuseholders (For Plug and Enclosed Cartridge Fuses).
- D. FS W-S-865 - Switch, Box, (Enclosed), Surface-Mounted.
- E. NEMA KS 1 - Enclosed Switches.

1.3 SUBMITTALS

- A. Submit product data under Section 01300 - Submittals.
- B. Include outline drawings with dimensions, and equipment ratings for voltage, capacity, horsepower, and short circuit.

1.4 RELATED SECTION

- A. Section 01600 - Materials and Equipment.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - DISCONNECT SWITCHES

- A. Square D.
- B. General Electric.
- C. Westinghouse.

- D. Substitutions: Approved equal.

## 2.2 DISCONNECT SWITCHES

- A. Fusible Switch Assemblies: NEMA KS 1; FS W-S-865; quick- make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse Clips: FS W-F-870. Designed to accommodate Class R fuses.
- B. Nonfusible Switch Assemblies: NEMA KS 1; Type HD; GD; FS W-S-865; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
- C. Enclosures: NEMA KS 1; Type 1 or 3R.

## 2.3 ACCEPTABLE MANUFACTURERS - FUSES

- A. Buss.
- B. Littelfuse.
- C. Gould.
- D. Substitutions: Approved equal.

## 2.4 FUSES

- A. Fuses 600 Amperes and Less: ANSI/UL 198C, Class J or RK1; current limiting, dual-element, time delay, one-time fuse, 250 and 600 volt.
- B. Interrupting Rating: 200,000 rms amperes.

# PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Install disconnect switches where indicated on Drawings.
- B. Install fuses in fusible disconnect switches.

END OF SECTION

SECTION 16470

PANELBOARDS

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. Distribution panelboards.
- B. Branch circuit panelboards.

1.2. RELATED SECTIONS

- A. Section 16190 - Supporting Devices.
- B. Section 16195 - Electrical Identification: Engraved nameplates.

1.3. REFERENCES

- A. NECA (National Electrical Contractors Association) "Standard of Installation."
- B. NEMA AB 1 - Molded Case Circuit Breakers.
- C. NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies.
- D. NEMA KS 1 - Enclosed Switches.
- E. NEMA PB 1 - Panelboards.
- F. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- G. NFPA 70 - National Electrical Code.

1.4. SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency. Include instructions for

storage, handling, protection, examination, preparation, installation, and starting of Product.

1.5. PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01700.
- B. Record actual locations of Products; indicate actual branch circuit arrangement.

1.6. OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of Section 01700.
- B. Maintenance Data: Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.7. QUALITY ASSURANCE

Perform Work in accordance with NECA Standard of Installation.

1.8. QUALIFICATIONS

Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.9. REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and indicated.

1.10. MAINTENANCE MATERIALS

- A. Provide maintenance materials under provisions of Section 01700.
- B. Provide two of each panelboard key.

~~PART 2-- PRODUCTS~~

2.1. MANUFACTURERS

- A. Square D.

- B. General Electric.
- C. Westinghouse/Cutler Hammer.
- D. Substitutions: Under provisions of Section 01300.

## 2.2. DISTRIBUTION PANELBOARDS

- A. Panelboards: NEMA PB 1, circuit breaker type.
- B. Panelboard Bus: Copper, ratings as indicated. Provide copper ground bus in each panelboard.
- C. Minimum integrated short circuit rating: 22,000 amperes rms symmetrical for 240 volt panelboards, or as indicated.
- D. Molded Case Circuit Breakers: NEMA AB 1. Provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole. Provide circuit breakers UL listed as Type HACR for air conditioning equipment branch circuits.
- E. Molded Case Circuit Breakers with Current Limiters: NEMA AB 1. Provide circuit breakers with replaceable current limiting elements, in addition to integral thermal and instantaneous magnetic trip in each pole.
- F. Controllers: NEMA ICS 2, AC general-purpose Class A magnetic controller for induction motors rated in horsepower, with melting alloy overload relay. Coil operating voltage: 240 volts, 60 Hertz. Size as shown on Drawings. Provide HAND-OFF-AUTO selector, STOP-START pushbutton station, and GREEN indicating light in front cover.
- G. Provide circuit breaker accessory trip units and auxiliary switches as indicated.
- H. Enclosure: As indicated.
- I. Cabinet Front: Surface type, fastened with concealed trim clamps. Provide hinged door with flush lock. Finish in manufacturer's standard gray enamel.

## 2.3. BRANCH CIRCUIT PANELBOARDS

- A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB1, circuit breaker type.
- B. Panelboard Bus: Copper, ratings as indicated. Provide copper ground bus in each panelboard.
- C. Minimum integrated short circuit rating: 22,000 amperes rms symmetrical for 240

volt panelboards, or as indicated.

- D. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled. Do not use tandem circuit breakers.
- E. Enclosure: As indicated.
- F. Cabinet Front: Surface cabinet front with concealed trim clamps, concealed hinge, and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.

### PART 3 – EXECUTION

#### 3.1. INSTALLATION

- A. Install panelboards in accordance with NEMA PB 1.1.
- B. Install panelboards plumb. Provide supports in accordance with Section 16190.
- C. Height: 6 ft to top of panelboard; install panelboards taller than 6 ft with bottom no more than 4 inches above floor.
- D. Provide filler plates for unused spaces in panelboards.
- E. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.
- F. Provide engraved plastic nameplates under the provisions of Section 16195.

#### 3.2. FIELD QUALITY CONTROL

Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION



SECTION 16480

MOTOR CONTROL

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Magnetic motor starters.
- B. Motor control centers.
- C. Motor starter panel boards.

1.02 RELATED WORK

- A. Section 16190 - Supporting Devices: Housekeeping pads.

1.03 REFERENCES

- A. ANSI/NEMA ICS 6 - Enclosures for Industrial Controls and Systems.
- B. ANSI/IEEE 344 - Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations.
- C. ANSI/UL 198C - High-Intensity Capacity Fuses; Current-Limiting Types.
- D. ANSI/UL 198E - Class R Fuses.
- E. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service.
- F. FS W-P-115 - Power Distribution Panel.
- G. FS W-F-870 - Fuseholders (For Plug and Enclosed Cartridge Fuses).
- H. FS W-S-865 - Switch, Box, (Enclosed), Surface-Mounted.
- I. NEMA AB 1 - Molded Case Circuit Breakers.
- J. NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies.
- K. NEMA KS 1 - Enclosed Switches.
- L. NEMA PB 1 - Panel boards.

- M. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panel boards Rated 600 Volts or Less.

#### 1.04 SUBMITTALS

- A. Submit shop drawings and product data under provisions of this specification.
- B. Indicate on shop drawings, front and side views of motor control center enclosures with overall dimensions. Include conduit entrance locations and requirements; nameplate legends; size and number of bus bars per phase, neutral, and ground; electrical characteristics including voltage, frame size and trip ratings, withstand ratings, and time-current curves of all equipment and components.
- C. Provide product data on motor starters and combination motor starters, relays, pilot devices, and switching and overcurrent protective devices.
- D. Submit manufacturers' instructions under provisions of this specification.

#### 1.05 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of this specification.
- B. Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of this specification.
- B. Deliver in 60-inch maximum width shipping splits, individually wrapped for protection, and mounted on shipping skids.
- C. Store and protect products under provisions of this specification.
- D. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- E. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to motor control center components, enclosure, and finish.

## 1.07 SPARE PARTS

- A. Keys: Furnish 3 each to Owner.

## PART 2 PRODUCTS

## 2.01 ACCEPTABLE MANUFACTURERS - MOTOR STARTERS

- A. Square D.
- B. General Electric.
- C. Westinghouse.
- D. Substitutions: Approved equal.

## 2.02 MAGNETIC MOTOR STARTERS

- A. Magnetic Motor Starters: NEMA ICS 2; AC general-purpose Class A magnetic controller for induction motors rated in horsepower.
- B. Full Voltage Starting: Non-reversing type.
- C. Coil Operating Voltage: 120 volts, 60 Hertz.
- D. Size: NEMA ICS 2; size as shown on Drawings.
- E. Overload Relay: NEMA ICS 2; melting alloy.
- F. Enclosure: NEMA ICS 6; Type 1.
- G. Auxiliary Contacts: NEMA ICS 2; two and normally closed field convertible contacts in addition to seal-in contact.
- H. Pushbuttons: NEMA ICS 2; START/STOP in front cover.
- I. Indicating Lights: NEMA ICS 2; RUN: green in front cover.
- J. Selector Switches: NEMA ICS 2; HAND/OFF/AUTO locking type in front cover.
- K. Relays: NEMA ICS 2.

## 2.04 CONTROLLER OVERCURRENT PROTECTION AND DISCONNECTING MEANS

- A. Molded Case Thermal-Magnetic Circuit Breakers: NEMA AB\1; FS W-C-375; circuit breakers with integral thermal and instantaneous magnetic trip in each pole.
- B. Motor Circuit Protector: NEMA AB 1; FS W-C-375; circuit breakers with integral instantaneous magnetic trip in each pole.
- C. Nonfusible Switch Assemblies: NEMA KS 1; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle. Provide interlock to prevent opening front cover with switch in ON position. Handle lockable in OFF position.

## 2.05 ACCEPTABLE MANUFACTURERS - MOTOR CONTROL CENTER

- A. Square D.
- B. General Electric.
- C. Westinghouse.
- D. Substitutions: Approved equal.

## 2.06 MOTOR CONTROL CENTER

- A. Motor Control Centers: NEMA ICS 2; Class I Type A.
- B. Main Overcurrent Protection: As scheduled.
- C. Motor Starters: As scheduled.
- D. Feeder Tap Units: As scheduled.
- E. Voltage Rating: 120/240 volts, three phase, four wire, 60 Hertz.
- F. Horizontal Bussing: Copper with a continuous current rating of 400 amperes. Include copper ground bus entire length of control center.
- G. Vertical Bussing: NEMA ICS 2; copper.
- H. Integrated Equipment Short Circuit Rating: 22K amperes rms symmetrical at 600 volts.
- I. Configuration: Units front mounting only, accessible from the front and rear.

- J. Enclosure: ANSI/NEMA ICS 6; Type 1 or 12.
- K. Finish: Manufacturer's standard gray enamel.
- L. Seismic Requirements: ANSI/IEEE 344; Class I.

#### 2.07 ACCEPTABLE MANUFACTURERS - MOTOR STARTER PANELBOARD

- A. Square D.
- B. General Electric.
- C. Westinghouse.
- D. Substitutions: Approved equal.

#### 2.08 MOTOR STARTER PANELBOARD

- A. Motor Starter Panel boards: NEMA PB 1; circuit breaker type.
- B. Motor Starters: As indicated on Drawings.
- C. Enclosure: NEMA PB 1; Type 1.
- D. Provide surface cabinet front with concealed trim clamps, and hinged door with flush lock. Finish in manufacturer's standard gray enamel.
- E. Provide motor starter panel boards with copper bus, ratings as scheduled on Drawings. Provide copper ground bus in all motor starter panel boards.
- F. Minimum Integrated Short Circuit Rating: 22K amperes rms symmetrical at 240 volts, three phase.

#### 2.09 FUSES

### PART 3 EXECUTION

#### 3.01 INSTALLATION

- A. Install motor control equipment in accordance with manufacturer's instructions.
- B. Motor Starter Panel board Installation: In conformance with NEMA PB 1.1.
- C. Install fuses in fusible switches.

- D. Select and install heater elements in motor starters to match installed motor characteristics.
- E. Motor Data: Provide neatly typed label inside each motor starter enclosure door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating.

END OF SECTION

## **SECTION 7**

### **CONTRACT NO. 9 – WATER SYSTEM IMPROVEMENTS**

#### **CONTRACT AND BOND FORMS**

**AGREEMENT**

**PAYMENT BOND**

**PERFORMANCE BOND**

**CERTIFICATE OF INSURANCE**

**NOTICE OF AWARD**

**NOTICE TO PROCEED**

**CHANGE ORDER**

**PARTIAL PAYMENT REQUEST**

**CERTIFICATE OF SUBSTANTIAL COMPLETION**

**FORM OF WAIVER AND RELEASE OF LIEN**  
(General Contractor)

**FORM OF WAIVER AND RELEASE OF LIEN**  
(Sub-Contractor)





## AGREEMENT BETWEEN OWNER AND CONTRACTOR

THIS AGREEMENT is by and between the Nicholas County Water District ("Owner") and BP Pipeline, LLC ("Contractor"), doing business as a corporation. Owner and Contractor in consideration of the mutual covenants hereinafter set forth, agree as follows:

### ARTICLE 1 –WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: **Contract No. 9 – Water System Improvements**

### ARTICLE 2 – THE PRODUCT

2.01. The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows: **Phase IX – Water System Improvements**

### ARTICLE 3 - ENGINEER

3.01. The Project has been designed by Sisler-Maggard Engineering, PLLC, who is to act as the Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

### ARTICLE 4 – CONTRACT TIMES

#### 4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

#### 4.02 *Days to Achieve Substantial Completion and Final Payment*

A. The Work will be substantially completed within 180 days after the date when the Contract Time commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 180 days after the date when the Contract Time commence to run.

#### 4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and



difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$500 for each day that expires after the time specified in Paragraph 4.02 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$500 for each day that expires after the time specified in Paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

## ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A, 5.01.B, and 5.01.C below:

A. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in this paragraph 5.01.A:

As provided in Paragraph 11.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer as provided in Paragraph 9.07 of the General Conditions. Unit prices have been computed as provided in Paragraph 11.03 of the General Conditions.

### BID SCHEDULE

<u>Item No.</u>	<u>Description</u>	<u>Estimated Unit Quantity</u>	<u>Unit Price</u>	<u>Total Estimated Price</u>
1.	6" W.L. CL 200 PVC Waterline	35,000	\$7.00	\$245,000.00
2.	3" W.L. CL 250 PVC Waterline	1700	\$5.00	\$8,500.00
3.	3" W.L. CL 200 PVC Waterline	24,000	\$4.50	\$108,000.00
4.	2" W.L. CL 200 PVC Waterline	3,100	\$4.00	\$12,400.00
5.	¾" W.L. CL 200 Polyethylene Service Line	7700	\$2.50	\$19,250.00
6.	6" Gate Valves	14	\$600.00	\$8,400.00
7.	4" Gate Valves	1	\$500.00	\$500.00
8.	A. 3" Gate Valves	14	\$450.00	\$6,300.00
9.	2" Gate Valves	7	\$350.00	\$2,450.00
10.	Blowoff Valve Assembly (all sizes)	16	\$750.00	\$12,000.00
11.	Air Release Valve	2	\$500.00	\$1,000.00
12.	Bore & Jack w/ 6" W.L. (12" steel casing)	350	\$60.00	\$21,000.00
13.	Bore & Jack w/ 4" W.L. (10" steel casing)	60	\$50.00	\$3,000.00
14.	Bore & Jack w/ 3" W.L. (6" steel casing)	420	\$50.00	\$21,000.00
15.	Bore & Jack w/ 2" W.L. (4" steel casing)	80	\$50.00	\$4,000.00



Item No.	Description	Estimated Unit Quantity	Unit Price	Total Estimated Price
16.	Casing Pipe (Open cut) (12" SDR 35 PVC @ gas line crossing)	10	\$4.00	\$40.00
17.	Gravel Surface Replacement	500	\$5.00	\$2,500.00
18.	Concrete Encasement	110	\$10.00	\$1,100.00
19.	Tie new 3" to existing 4" WET TAP	1	\$1,200.00	\$1,200.00
20.	Tie new 6" to existing 4" WET TAP	3	\$1,200.00	\$3,600.00
21.	Tie new 6" to existing 6"	1	\$1,200.00	\$1,200.00
22.	Tie new 3" to existing 6" WET TAP	1	\$1,200.00	\$1,200.00
23.	Tie new 4" to existing 4"	2	\$1,000.00	\$2,000.00
24.	5/8" x 3/4" Meter assembly	6	\$700.00	\$4,200.00
25.	Fire Hydrant Assembly w/ G.V.	6	\$2,400.00	\$14,400.00
26.	Reconnect Existing Meter	141	\$300.00	\$42,300.00
27.	Relocate Existing Meter	6	\$500.00	\$3,000.00

ESTIMATED TOTAL OF ALL UNIT PRICE WORK

\$549,540.00

BIDDER agrees to perform all of the Work described in the Specifications and shown on the Plans for the bid price of: five hundred and forty nine thousand, five hundred and forty Dollars and zero cents (\$549,540.00). The Unit Price shall govern. The Owner will make corrections in extensions and additions to determine the Total Bid Amount for Award.

## ARTICLE 6 – PAYMENT PROCEDURES

### 6.01 Submittal and Processing of Payments

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

### 6.02 Progress Payments; Retainage

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 20<sup>th</sup> day of each month during performance of the Work as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements:

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions:



- a. 95 percent of Work completed (with the balance being retainage); and
  - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions.

### *6.03 Final Payment*

A. Upon receipt of the final Application for Payment accompanied by Engineer's recommendation of payment in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay Contractor as provided in Paragraph 14.07 of the General Conditions the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages.

## **ARTICLE 7 – INTEREST**

7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the maximum legal rate.

## **ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS**

8.01 In order to induce Owner to enter into this Agreement Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in Paragraph 4.02 of the General Conditions.
- E. Contractor has obtained and carefully studied (or assumes responsibility for doing so) all additional or supplementary examinations, investigations, explorations, tests, studies,





and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto.

F. Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

I. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

## **ARTICLE 9 – CONTRACT DOCUMENTS**

### **9.01 Contents**

A. The Contract Documents consist of the following:

1. Advertisement for Bids
2. Instructions to Bidders
3. Agreement (pages 1 to 7 inclusive).
4. Performance bond (pages 1 to 3, inclusive).
5. Payment bond (pages 1 to 3, inclusive).
6. Bid bond with Power of Attorney (pages 1 to 2, inclusive)
7. Certificate of Insurance
8. General Conditions (pages 1 to 57, inclusive).



9. Supplementary Conditions (pages 1 to 5, inclusive).
  10. Special Conditions (pages 1 to 13, inclusive).
  11. Specifications as listed in the table of contents of the Project Booklet and dated November 2007.
  12. Drawings consisting of 26 sheets with each sheet bearing the following general title: Contract No. 9 – Water System Improvements and dated June 2008.
  13. Addenda (numbers 1 to 2, inclusive).
  14. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor's Bid (pages 1 to 5, inclusive) with Certifications.
  15. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
    - a. Notice of Award (1 page)
    - b. Notice to Proceed (1 page)
    - c. Work Change Directives.
    - d. Change Order(s).
    - e. Certificate of Substantial Completion
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

## **ARTICLE 10 – MISCELLANEOUS**

### **10.01 Terms**

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

### **10.02 Assignment of Contract**

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be



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

#### 10.03 *Successors and Assigns*

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

#### 10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

#### 10.05 *Other Provisions: NONE*



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

This Agreement is dated \_\_\_\_\_. This Agreement shall not be effective unless and until Agency's designated representative concurs.

OWNER:

Nicholas County Water District

By: Mary Jo McCord *Mary Jo McCord*

Title: Chairman

[CORPORATE SEAL]

Attest: *Tommy Reynolds*

By: \_\_\_\_\_

Title: Secretary

Address for giving notices:

1639 Old Paris Road (SR 32)

Carlisle, KY 41749

CONTRACTOR

BP Pipeline, LLC

By: Tony Palarie *Tony Palarie*

Title: President

[CORPORATE SEAL]

Attest: *William [Signature]*

By: \_\_\_\_\_

Title: \_\_\_\_\_

Address for giving notices:

HC 76 Box 838

Quincy, KY 41166

Agent for service of process:

\_\_\_\_\_

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

Agency Concurrence:

As lender or insurer of funds to defray the costs of this Contract, and without liability for any payments thereunder, the Agency hereby concurs in the form, content, and execution of this Agreement.

Agency: USDA – Rural Development

By: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_





PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

B P Pipeline, LLC

(Name of Contractor)

269 Pebble Lane, Quincy, KY 41166

(Address of Contractor)

Corporation

(Corporation, Partnership or Individual)

, hereinafter called Principal,

and

Great American Insurance Company

(Name of Surety)

580 Walnut Street, Cincinnati, OH 45202

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

Nicholas County Water District

(Name of Owner)

1639 Old Paris Road, Carlisle, KY 41749

(Address of Owner)

hereinafter called OWNER, in the total aggregate sum of Five hundred forty-nine thousand, five hundred forty & no/100----- Dollars (\$ 549,540.00\*\*\*\*\* )

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 \_\_\_\_\_, 2008, a copy of which is hereto attached and made a part hereof for the construction of:

Contract No. 9 – Water System Improvements

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 his obligation shall be void otherwise to remain in full force and effect.

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 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 financial settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied. The OWNER is the only beneficiary hereunder.



IN WITNESS WHEREOF, this instrument is executed in  six   
counterparts, each (Number)

one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_,  
2008.

ATTEST:

B P Pipeline, LLC   
Principal

\_\_\_\_\_  
(Principal Secretary)  
(SEAL)

By:  Tony Palarie   
 269 Pebble Lane  Tony Palarie, Mgn. Member  
(Address)  
 Quincy, KY 41166

Conni Palarie   
Witness as to Principal

269 Pebble Ln.   
(Address)

Quincy, Ky 41166

ATTEST:  
(SEAL)

Great American Insurance Company   
Surety

Timothy R. Perry   
Witness as to Surety

By:  Mary A. Veach   
(Attorney-in-Fact)

P.O. Box 425   
Address

Mary A. Veach   
(Typed Name)

South Shore, KY 41175

P.O. Box 425, South Shore, KY 41175   
(Address)

606-932-3138   
(Phone)

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

If CONTRACTOR is a partnership, all partners shall 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 Kentucky.



PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

B P Pipeline, LLC

(Name of Contractor)

269 Pebble Lane, Quincy, KY 41166

(Address of Contractor)

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

and Great American Insurance Company

(Name of Surety)

580 Walnut Street, Cincinnati, OH 45202

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

Nicholas County Water District

(Name of Owner)

1639 Old Paris Road, Carlisle, KY 41749

(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 Five hundred forty-nine thousand (\$ 549,540.00\*\*\*\*\* ) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, 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 \_\_\_\_\_, 2008, a copy of which is hereto attached and made a part hereof for the construction of:

Contract No. 9 – Water System Improvements

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 of 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 the contract 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 (or with the GOVERNMENT in the event the GOVERNMENT is performing the obligations of the OWNER), 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 for 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 financial 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 six counterparts,  
(number)

each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 2008.

ATTEST:

B P Pipeline, LLC  
Principal

\_\_\_\_\_  
(Principal Secretary)

(SEAL)

By: Tony Palarie (s)  
Tony Palarie  
Mgn. Member

Connie Palarie  
Witness as to Principal

269 Pebble Lane, Quincy, KY 41166  
(Address)

269 Pebble Ln.  
(Address)

Quincy, Ky 41166

Great American Insurance Company  
Surety

ATTEST:

Timothy R. Perry  
Witness as to Surety Timothy R. Perry

By: Mary A. Veach  
Attorney-in-Fact Mary A. Veach

P.O. Box 425  
(Address)

P.O. Box 425  
(Address)

South Shore, KY 41175

South Shore, KY 41175

NOTE: Date of BOND must not be prior to date of CONTRACT. If CONTRACTOR is a partnership, all partners shall 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 Kentucky.



**GREAT AMERICAN INSURANCE COMPANY®**

**Administrative Office: 580 WALNUT STREET • CINCINNATI, OHIO 45202 • 513-369-5000 • FAX 513-723-2740**

The number of persons authorized by this power of attorney is not more than **THREE**

No. 0 18436

**POWER OF ATTORNEY**

**KNOW ALL MEN BY THESE PRESENTS:** That the GREAT AMERICAN INSURANCE COMPANY, a corporation organized and existing under and by virtue of the laws of the State of Ohio, does hereby nominate, constitute and appoint the person or persons named below its true and lawful attorney-in-fact, for it and in its name, place and stead to execute in behalf of the said Company, as surety, any and all bonds, undertakings and contracts of suretyship, or other written obligations in the nature thereof; provided that the liability of the said Company on any such bond, undertaking or contract of suretyship executed under this authority shall not exceed the limit stated below.

Name	Address	Limit of Power
RONALD B. LEMASTER	ALL OF	ALL
TIMOTHY R. PERRY	SOUTH SHORE, KENTUCKY	\$10,000,000
MARY ANN VEACH		

This Power of Attorney revokes all previous powers issued in behalf of the attorney(s)-in-fact named above.

IN WITNESS WHEREOF the GREAT AMERICAN INSURANCE COMPANY has caused these presents to be signed and attested by its appropriate officers and its corporate seal hereunto affixed this **27TH** day of **SEPTEMBER**, 2007  
Attest **GREAT AMERICAN INSURANCE COMPANY**

STATE OF OHIO, COUNTY OF HAMILTON - ss:

DAVID C. KITCHIN (513-412-4602)

On this **27TH** day of **SEPTEMBER**, 2007, before me personally appeared DAVID C. KITCHIN, to me known, being duly sworn, deposes and says that he resides in Cincinnati, Ohio, that he is the Divisional Senior Vice President of the Bond Division of Great American Insurance Company, the Company described in and which executed the above instrument; that he knows the seal of the said Company; that the seal affixed to the said instrument is such corporate seal; that it was so affixed by authority of his office under the By-Laws of said Company, and that he signed his name thereto by like authority.

This Power of Attorney is granted by authority of the following resolutions adopted by the Board of Directors of Great American Insurance Company by unanimous written consent dated March 1, 1993.

*RESOLVED: That the Divisional President, the Divisional Senior Vice President, the several Divisional Vice Presidents and Divisional Assistant Vice Presidents, or any one of them, be and hereby is authorized, from time to time, to appoint one or more Attorneys-in-Fact to execute on behalf of the Company, as surety, any and all bonds, undertakings and contracts of suretyship, or other written obligations in the nature thereof; to prescribe their respective duties and the respective limits of their authority; and to revoke any such appointment at any time.*

*RESOLVED FURTHER: That the Company seal and the signature of any of the aforesaid officers and any Secretary or Assistant Secretary of the Company may be affixed by facsimile to any power of attorney or certificate of either given for the execution of any bond, undertaking, contract or suretyship, or other written obligation in the nature thereof, such signature and seal when so used being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.*

**CERTIFICATION**

I, RONALD C. HAYES, Assistant Secretary of Great American Insurance Company, do hereby certify that the foregoing Power of Attorney and the Resolutions of the Board of Directors of March 1, 1993 have not been revoked and are now in full force and effect.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_



# ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
08/25/2008

PRODUCER (606)932-3138 FAX (606)932-3055

Ron LeMaster Insurance, Inc.  
930 Main Street  
P.O. Box 425  
South Shore, KY 41175

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.

INSURED B P Pipeline, LLC  
HC 76, Box 838  
Quincy, KY 41166

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: State Auto Mutual	25135
INSURER B: Kentucky Employers Mut. Ins.	042
INSURER C:	
INSURER D:	
INSURER E:	

## 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.

SR ADD'L LTR INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
A	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR	PBP235546402	10/17/2007	10/17/2008	EACH OCCURRENCE \$ 1,000,000
					DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000
					MED EXP (Any one person) \$ 5,000
					PERSONAL & ADV INJURY \$ 1,000,000
					GENERAL AGGREGATE \$ 2,000,000
					PRODUCTS - COMP/OP AGG \$ 2,000,000
					GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS	BAP215680402	10/17/2007	10/17/2008	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000
					BODILY INJURY (Per person) \$
					BODILY INJURY (Per accident) \$
					PROPERTY DAMAGE (Per accident) \$
	GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$
					OTHER THAN EA ACC AGG \$
A	EXCESS/UMBRELLA LIABILITY <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE	PBP235546402	10/17/2007	10/17/2008	EACH OCCURRENCE \$ 5,000,000
					AGGREGATE \$ 5,000,000
					\$
					\$
3	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below	341845	10/17/2007	10/17/2008	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				

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

Phase IX - Contract No. 9 Water System Improvements

## CERTIFICATE HOLDER

Nicholas County Water District  
1639 Old Paris Road  
Carlisle, KY 41749

## CANCELLATION

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

AUTHORIZED REPRESENTATIVE

Mary Veach *Mary Veach*





NOTICE OF AWARD

TO: BP Pipeline, LLC  
HC 76 Box 838  
Quincy, KY 41166

PROJECT Description: The project includes but is not limited to, the construction of:

Contract No. 9 – Water System Improvements

The OWNER has considered the BID submitted by you for the above described WORK in response to its Advertisement for Bids dated June 24, 2008, and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of \$ 549,540.00.

You are required by the Instructions 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 22 day of July, 2008.

Nicholas County Water District  
By: Mary Jo McCord  
<sup>Owner</sup>  
Mary Jo McCord  
Title: Chairman

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

By BP Pipeline, LLC

this the \_\_\_\_\_ day of \_\_\_\_\_, 2008.

By: Tony Palarie

Title: Tony Palarie, President



NOTICE TO PROCEED

TO: B.P. Pipeline, LLC  
(Contractor)

DATE: October 21, 2008

ADDRESS:

HC 76 Box 838  
Quincy, KY 41166

OWNER'S PROJECT NO.: 05001  
PROJECT: Water System Improvements  
OWNER'S CONTRACT NO.: Contract No. 9

You are hereby notified to commence WORK in accordance with the Agreement dated October 21, 2008, on or before November 3, 2008, and you are to complete the WORK within 180 consecutive calendar days thereafter. The date of completion of all WORK is therefore May 1 2009.

Nicholas County Water District  
Owner

By: Mary Jo McCord

Name: Mary Jo McCord

Title: Chairman

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

B.P. Pipeline, LLC

this the 21st day of October, 2008

By: Tony Palarie

Title: Tony Palarie, President



CHANGE ORDER

Order No. \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Agreement Date: \_\_\_\_\_

NAME OF PROJECT: Contract No. 9 – Water System Improvements

OWNER: Nicholas County Water District

CONTRACTOR: \_\_\_\_\_

The following changes are hereby made to the CONTRACT DOCUMENTS:

Description of Changes (Supplemental Plans and Specifications Attached)	DECREASE In Contract Price	INCREASE In Contract Price
TOTALS NET CHANGE IN CONTRACT PRICE		

**Justification:**

Change to CONTRACT PRICE:

Original CONTRACT PRICE \$ \_\_\_\_\_

Current CONTRACT PRICE adjusted by previous CHANGE ORDER \$ \_\_\_\_\_

The CONTRACT PRICE due to this CHANGE ORDER will be increased by: \$ \_\_\_\_\_

The new CONTRACT PRICE including this CHANGE ORDER will be \$ \_\_\_\_\_

Change to CONTRACT TIME:

The CONTRACT TIME will be increased by \_\_\_\_\_ calendar days.

The date for completion of all work will be \_\_\_\_\_ [Date].

This document will become a supplement to the contract and all provisions will apply hereto.

Approvals Required:

To be effective this Order must be approved by the Funding agency if it changes the scope or objective of the PROJECT, or as may otherwise be required by the SUPPLEMENTAL GENERAL CONDITIONS.

Requested by: \_\_\_\_\_  
(Contractor) Date

Recommended by: \_\_\_\_\_  
Sisler-Maggard Engineering, PLLC. Date

Ordered by: \_\_\_\_\_  
Nicholas County Water District Date

Approved by: \_\_\_\_\_  
Rural Development Date



PAY REQUEST FORM  
WILL BE FURNISHED ON DISC  
BY THE ENGINEER  
AT PRE-CONSTRUCTION CONFERENCE





CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER's Project No: \_\_\_\_\_ ENGINEER's Project No.: 05001  
Project Contract No. 9 – Water System Improvements

CONTRACTOR \_\_\_\_\_  
Contract For \_\_\_\_\_

This Certificate of Substantial completion applies to all Work under the Contract Documents or to the following specified parts thereof:

To \_\_\_\_\_ Nicholas County Water District  
OWNER

And To \_\_\_\_\_ CONTRACTOR

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on

\_\_\_\_\_  
DATE OF SUBSTANTIAL COMPLETION

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within 0 days of the above date of Substantial Completion.



The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance, and warranties shall be as follows:

RESPONSIBILITIES:

OWNER:

\_\_\_\_\_  
\_\_\_\_\_

CONTRACTOR:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

---

The following documents are attached to and made a part of this Certificate:

---

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

---

Executed by ENGINEER on \_\_\_\_\_ 2008

\_\_\_\_\_  
Sisler-Maggard Engineers, PLLC.  
ENGINEER

By: \_\_\_\_\_

Joseph F. Sisler, P.E., P.L.S.

CONTRACTOR accepts this Certificate of Substantial Completion on \_\_\_\_\_ 2008

\_\_\_\_\_  
CONTRACTOR

By: \_\_\_\_\_

OWNER accepts this Certificate of Substantial Completion on \_\_\_\_\_ 2008

\_\_\_\_\_  
Nicholas County Water District  
OWNER

By: \_\_\_\_\_



FORM OF WAIVER AND RELEASE OF LIEN  
(General Contractor)

TO WHOM IT MAY CONCERN:

WHEREAS, the undersigned has performed or furnished, is performing, or furnishing, or will perform or furnish labor or material, fuel, equipment, tools, etc., in connection with the construction of \* \_\_\_\_\_ for\*\* \_\_\_\_\_  
\_\_\_\_\_ at\*\* \_\_\_\_\_  
\_\_\_\_\_.

NOW, THEREFORE, THESE PRESENTS WITNESS, that the undersigned, for a good and valuable consideration to the undersigned well and truly paid at or before the signing and delivery hereof, the receipt whereof is hereby acknowledged, does hereby waive, release and relinquish any and all claims, liens and rights and claims of liens which the undersigned now has, or may hereafter have, on or against the said premises and the building, plant, equipment and machinery of their Owner, \*\*\* \_\_\_\_\_  
\*\*\* \_\_\_\_\_, or on or against\*\*\* \_\_\_\_\_  
\_\_\_\_\_, on account of labor performed or to be performed or material, fuel, equipment, tools, etc., furnished or to be furnished by the undersigned for use in or in connection with the construction and erection of said project; so that\*\*\* \_\_\_\_\_  
\_\_\_\_\_, its successors and assigns, shall and my have, hold and enjoy the same freed and discharged now has or might or could have if these presents had not been made.

IN WITNESS WEREOF, the undersigned has hereunto set his hand and seal this \_\_\_\_\_  
\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Name of General Contractor

By \_\_\_\_\_  
Signature of Officer or Partner

\_\_\_\_\_  
Title or Officer

WITNESS:

\_\_\_\_\_  
\*Insert name of building or project  
\*\*Insert address of building project  
\*\*\*Insert name of Owner



FORM OF WAIVER AND RELEASE OF LIEN  
(Sub-Contractor)

TO WHOM IT MAY CONCERN:

WHEREAS, the undersigned has performed or furnished, is performing, or furnishing or will perform or furnish labor or material, fuel, equipment, tools, etc., in connection with the construction

of \* \_\_\_\_\_ for\*\* \_\_\_\_\_  
\_\_\_\_\_ at\*\* \_\_\_\_\_  
\_\_\_\_\_.

NOW, THEREFORE, THESE PRESENTS WITNESS, that the undersigned, for a good and valuable consideration to the undersigned well and truly paid at or before the signing and delivery hereof, the receipt whereof is hereby acknowledged, does hereby waive, release and relinquish any and all claims, liens and rights and claims of liens which the undersigned now has, or may hereafter have, on or against the said premises and the building, plant, equipment and machinery of their Owner, \*\*\* \_\_\_\_\_

\*\*\* \_\_\_\_\_, or on or against\*\*\*\* \_\_\_\_\_  
\_\_\_\_\_, its successors and assigns, or on or against the General Contractor\*\*\* \_\_\_\_\_, his or its heirs, executors, administrators, successors and assigns, under the laws of the Commonwealth of Kentucky, on account of labor performed or to be performed, or material, fuel, equipment, tools, etc., furnished or to be furnished by the undersigned for use in or in connection with the construction and erection of said building; so that the said\*\*\* \_\_\_\_\_, its successors and assigns, shall may have, hold and enjoy same freed and discharged from all liens, claims and demands whatsoever which the undersigned now has or might or could have if these presents had not been made.

IN WITNESS WEREOF, the undersigned has hereunto set his hand and seal this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

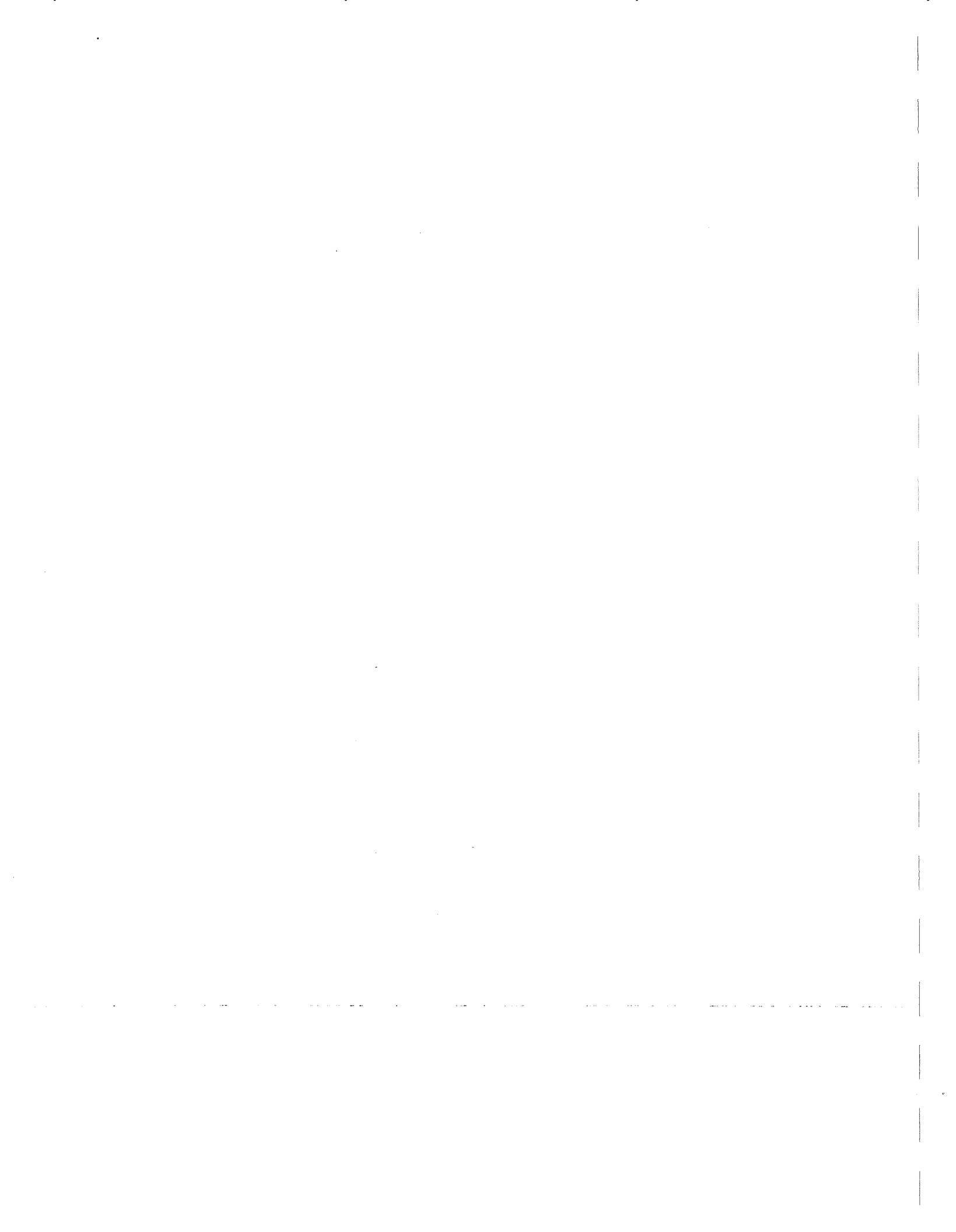
\_\_\_\_\_  
Name of Sub-Contractor

By \_\_\_\_\_  
Signature of Officer or Partner

\_\_\_\_\_  
Title or Officer

WITNESS:

- \_\_\_\_\_
- \*Insert name of building or project
- \*\*Insert address of building project
- \*\*\*Insert name of Owner
- \*\*\*\*Insert name of General Contractor





**SECTION 8**  
**CONTRACT No. 9**  
**WATER SYSTEM IMPROVEMENTS**  
**BID FORMS AND BID BONDS**

**BID FORMS INCLUDING  
SUBCONTRACTORS & MANUFACTURERS LIST**

**BID BOND WITH POWER OF ATTORNEY**

**COMPLIANCE STATEMENT (RD Form 400-6)**

**CERTIFICATE FOR CONTRACTS, GRANTS AND LOANS**

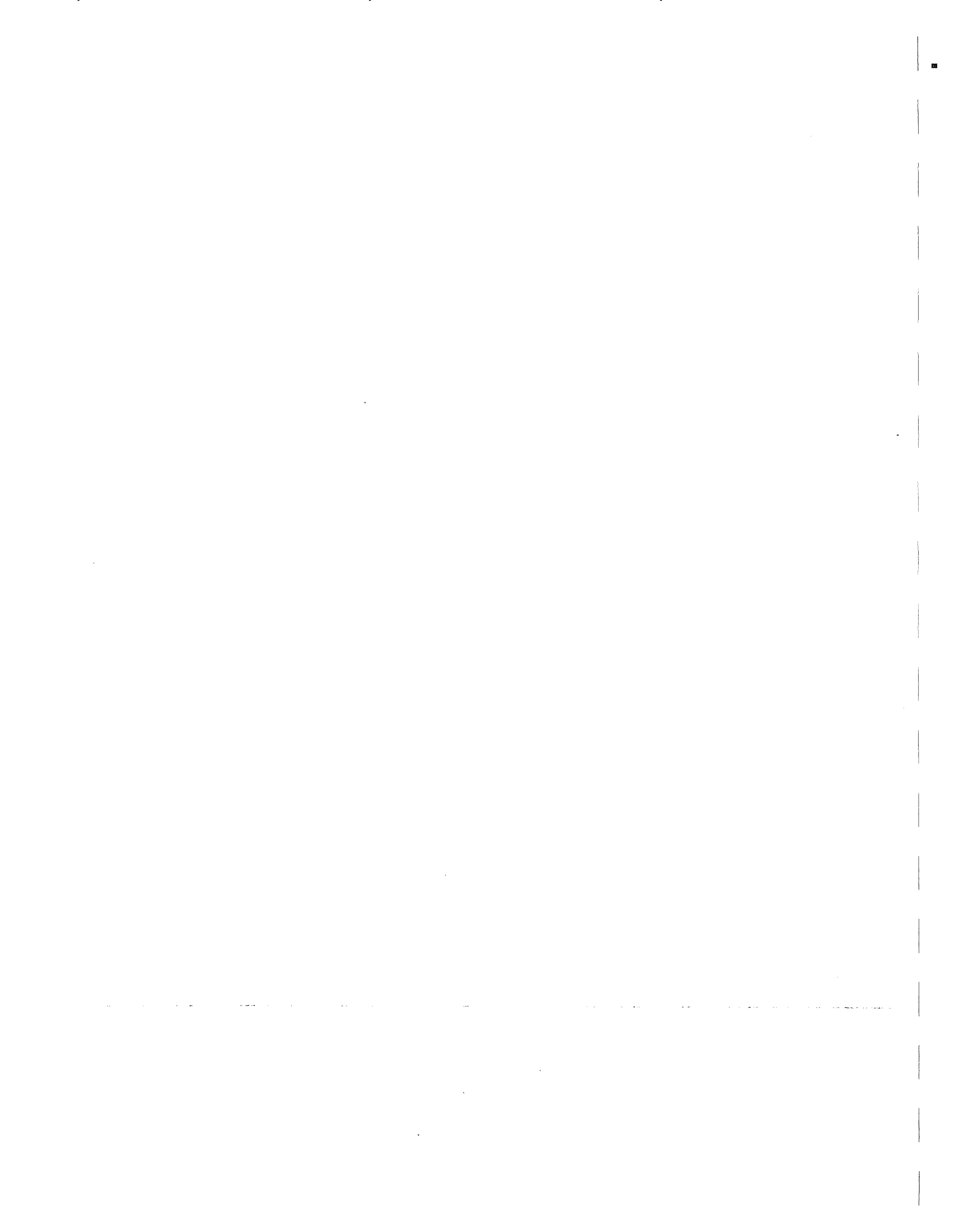
**CERTIFICATION OF BIDDER REGARDING EQUAL EMPLOYMENT  
OPPORTUNITY**

**CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER  
RESPONSIBILITY MATTERS**

**BIDDER'S QUALIFICATIONS STATEMENT**

Forms presented in this Section 8 must be used. No Substitutes will be allowed.  
An extra set of the above forms will be furnished to each plan holder for preparation of bids.

**All of the above forms must be submitted with bids on each contract.**



**BID FORM**

**Nicholas County Water District  
Contract No. 9 – Water System Improvements**

**ARTICLE 1 – BID RECIPIENT**

- 1.01 This Bid is submitted to:  
  
Nicholas County Water District  
1639 Old Paris Road (SR 32)  
Carlisle, Kentucky 41749
- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

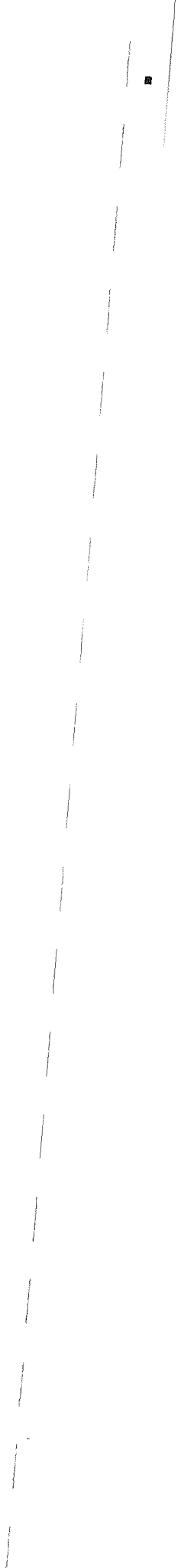
**ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS**

- 2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

**ARTICLE 3 – BIDDER’S REPRESENTATIONS**

- 3.01 In submitting this Bid, Bidder represents that:
  - A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.
 

<u>Addendum No.</u>	<u>Addendum Date</u>
<u>1</u>	<u>6-11-08</u>
<u>2</u>	<u>6-18-08</u>
_____	_____
  - B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.
  - C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.
  - D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in SC-4.02, and (2) reports and drawings of Hazardous Environmental Conditions that have been identified in SC-4.06.
  - E. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data



concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.

F. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.

I. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

#### **ARTICLE 4 – FURTHER REPRESENTATIONS**

4.01 Bidder further represents that:

A. this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

#### **ARTICLE 5 – BASIS OF BID**

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):



## BID SCHEDULE

## CONTRACT NO. 9 – WATER SYSTEM IMPROVEMENTS

ITEM NO.	ITEM DESCRIPTION	UNIT QUANTITY	UNIT COST	TOTAL COST
1.	6" W.L. CL 200 PVC Waterline	35,000 LF	7. <sup>00</sup>	245,000
2.	3" W.L. CL 250 PVC Waterline	1,700 LF	5. <sup>00</sup>	8,500
3.	3" W.L. CL 200 PVC Waterline	24,000 LF	4. <sup>50</sup>	108,000
4.	2" W.L. CL 200 PVC Waterline	3,100 LF	4. <sup>00</sup>	12,400
5.	¾" W.L. CL 200 Polyethylene Service Line	7,700 LF	2. <sup>50</sup>	19,250
6.	6" Gate Valves	14 EA	600. <sup>00</sup>	8,400
7.	4" Gate Valves	1 EA	500. <sup>00</sup>	500
8.	3" Gate Valves	14 EA	450. <sup>00</sup>	6,300
9.	2" Gate Valves	7 EA	350. <sup>00</sup>	2,450
10.	Blowoff Valve Assembly (all sizes)	16 EA	750. <sup>00</sup>	12,000
11.	Air Release Valve	2 EA	500. <sup>00</sup>	1,000
12.	Bore & Jack w/ 6" W.L. (12" steel casing)	350 LF	60. <sup>00</sup>	21,000
13.	Bore & Jack w/ 4" W.L. (10" steel casing)	60 LF	50. <sup>00</sup>	3,000
14.	Bore & Jack w/ 3" W.L. (6" steel casing)	420 LF	50. <sup>00</sup>	21,000
15.	Bore & Jack w/ 2" W.L. (4" steel casing)	80 LF	50. <sup>00</sup>	4,000
16.	Casing Pipe (Open cut) (12" SDR 35 PVC @ gas line crossing)	10 LF	4. <sup>00</sup>	40
17.	Gravel Surface Replacement	500 S.Y.	5. <sup>00</sup>	2,500
18.	Concrete Encasement	110 LF	10. <sup>00</sup>	1,100
19.	Tie new 3" to existing 4" WET TAP	1 EA	1200. <sup>00</sup>	1,200
20.	Tie new 6" to existing 4" WET TAP	3 EA	1200. <sup>00</sup>	3,600
21.	Tie new 6" to existing 6"	1 EA	1200. <sup>00</sup>	1,200
22.	Tie new 3" to existing 6" WET TAP	1 EA	1200. <sup>00</sup>	1,200
23.	Tie new 4" to existing 4"	2 EA	1000. <sup>00</sup>	2,000
24.	5/8" x ¾" Meter assembly	6 EA	700. <sup>00</sup>	4,200
25.	Fire Hydrant Assembly w/ G.V.	6 EA	2400. <sup>00</sup>	14,400
26.	Reconnect Existing Meter	141 EA	300. <sup>00</sup>	42,300
27.	Relocate Existing Meter	6 EA	500. <sup>00</sup>	3,000
<b>TOTAL OF ALL BID PRICES:</b>				<b>\$ 549,540.<sup>00</sup></b>

BIDDER agrees to perform all of the Work described in the Specifications and shown on the Plans for the bid price of Five Hundred Forty-Nine Thousand Five Hundred Forty \_\_\_\_\_ dollars and NO \_\_\_\_\_ cents (\$ 549,540.<sup>00</sup> ). The Unit Price shall govern. The Owner will make corrections in extensions and additions to determine the Total Bid Amount for Award.





Unit Prices have been computed in accordance with Paragraph 11.03B of the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

**ARTICLE 6 – TIME OF COMPLETION**

- 6.01 Bidder agrees that the Work will be substantially complete within 180 calendar days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 14.07.B of the General Conditions within 180 calendar days after the date when the Contract Times commence to run
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the Contract Times. Bidder further agrees to pay as liquidated damages, the sum of \$500 each consecutive calendar day thereafter as provided.

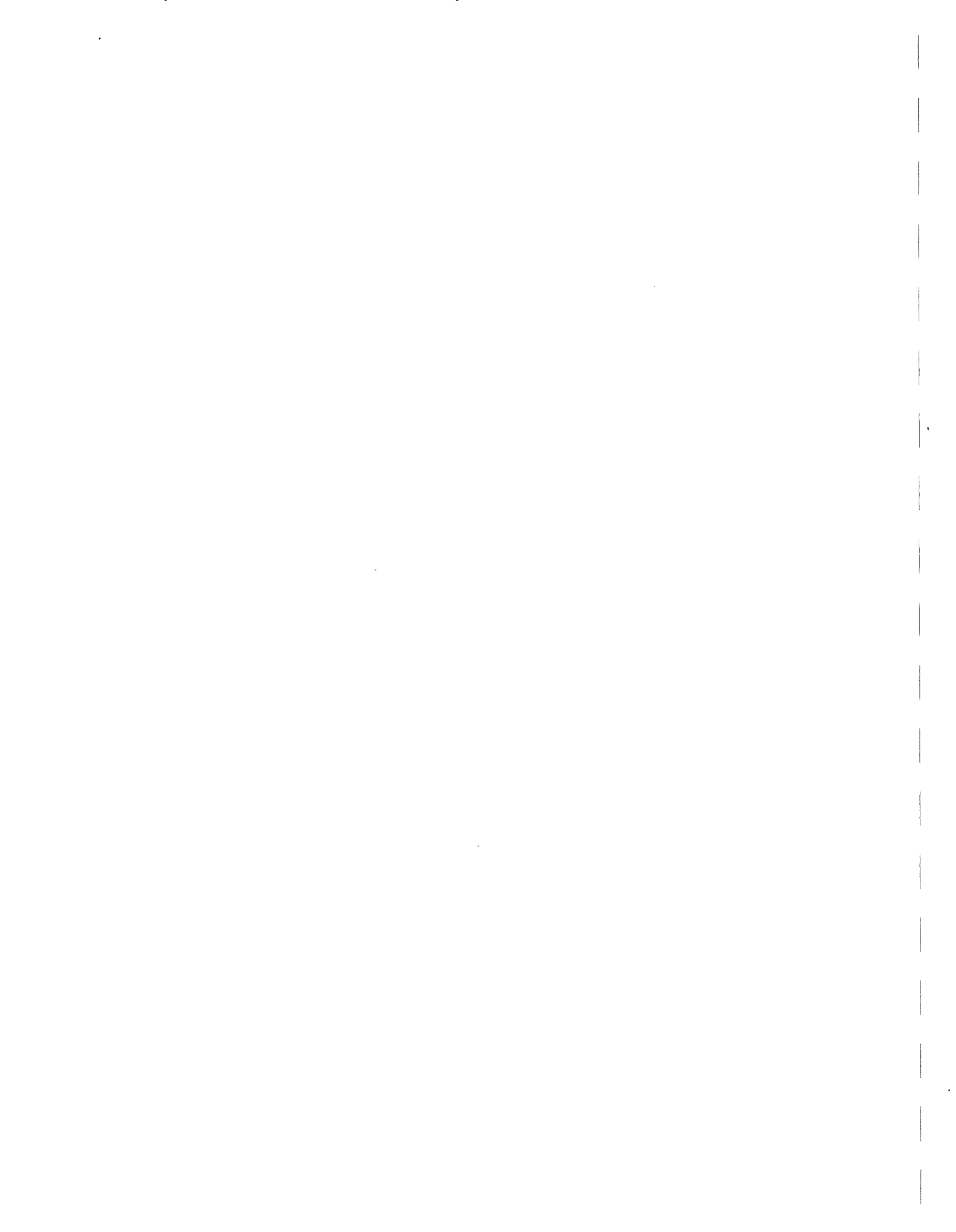
**ARTICLE 7 – ATTACHMENTS TO THIS BID**

- 7.01 The following documents are attached to and made a condition of this Bid:
  - A. Required Bid security in the form of Bid Bond or Certified Check equal to 5% of Bid
  - B. List of Proposed Subcontractors
  - C. List of Proposed Suppliers
  - D. List of Project References
  - E. Required Bidder Qualification Statement with Supporting Data
  - F. Affidavit of Non-Collusion
  - G. Compliance Statement (Form FmEA 400-6)  
Certificate of Bidder Regarding Equal Employment Opportunity  
Certificate of Bidder concerning labor standards and prevailing wage requirements  
Certificate regarding debarment, suspension, and other responsibilities

**ARTICLE 8 – DEFINED TERMS**

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

**ARTICLE 9 – BID SUBMITTAL**



BIDDER: B. P. Pipeline, LLC

BY: Tony Palari

TYPED NAME: Tony Palari

TITLE: Managing Member

(Seal - If bid is by a corporation)

ADDRESS: 269 Pebble Ln. Quincy, Ky 41164

DATE SIGNED: 6-23-08

PHONE NO.: 606-757-2055

FAX NO.: 606-757-2070

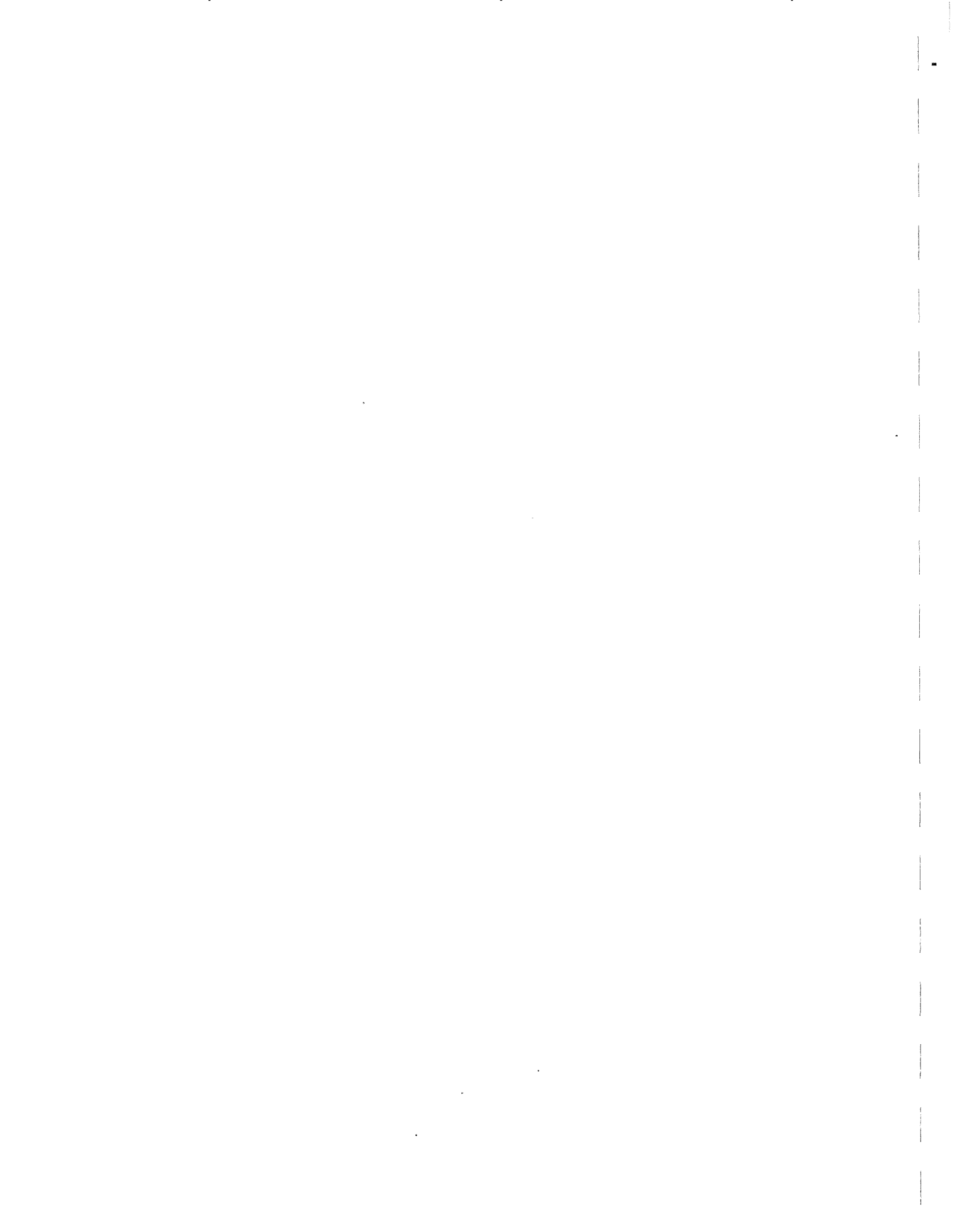
SUBCONTRACTORS

Page 5 of 7

Addendum No. 2 - June 18, 2008







**CONTRACT NO. 9 – WATER SYSTEM IMPROVEMENTS**

Following is a list of material that the Bidder proposed to use in the work of the proposed Contract. Failure to submit a completed list may be cause for rejection of the Bid.

NAME OF MANUFACTURER	DESCRIPTION OF MATERIAL
North American	PVC
	Hydrants
	Valves

(Add supplementary pages if necessary)





COMPLIANCE STATEMENT

This statement relates to a proposed contract with Nicholas County Water District

*(Name of borrower or grantee)*

who expects to finance the contract with assistance from either the Rural Housing Service (RHS), Rural Business-Cooperative Service (RBS), or the Rural Utilities Service (RUS) or their successor agencies, United States Department of Agriculture (whether by a loan, grant, loan insurance, guarantee, or other form of financial assistance). I am the undersigned bidder or prospective contractor, I represent that:

1.  I have,  have not, participated in a previous contract or subcontract subject to Executive Order 11246 (regarding equal employment opportunity) or a preceding similar Executive Order.
2. If I have participated in such a contract or subcontract,  I have,  have not, filed all compliance reports that have been required to file in connection with the contract or subcontract.

If the proposed contract is for \$50,000 or more and I have 50 or more employees, I also represent that:

3.  I have,  have not previously had contracts subject to the written affirmative action programs requirements of the Secretary of Labor.
4. If I have participated in such a contract or subcontract,  I have,  have not developed and placed on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor.

I understand that if I have failed to file any compliance reports that have been required of me, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to either the RHS, RBS or RUS, or to the office where the reports are required to be filed.

I also certify that I do not maintain or provide for my employees any segregated facilities at any of my establishments, and that I do not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I certify further that I will not maintain or provide for my employees any segregated facilities at any of my establishments, and that I will not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I agree that a breach of this certification is a violation of the Equal Opportunity clause in my contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. I further agree that (except where I have obtained identical certifications for proposed subcontractors for specific time periods) I will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause; that I will retain such certifications in my files; and that I will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods): (See Reverse).

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*According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays the valid OMB control number. The valid OMB control number for this information collection is 0575-0018. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.*

---



**NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS FOR  
CERTIFICATIONS OF NON-SEGREGATED FACILITIES**

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R. 7439, may 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding \$ 10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

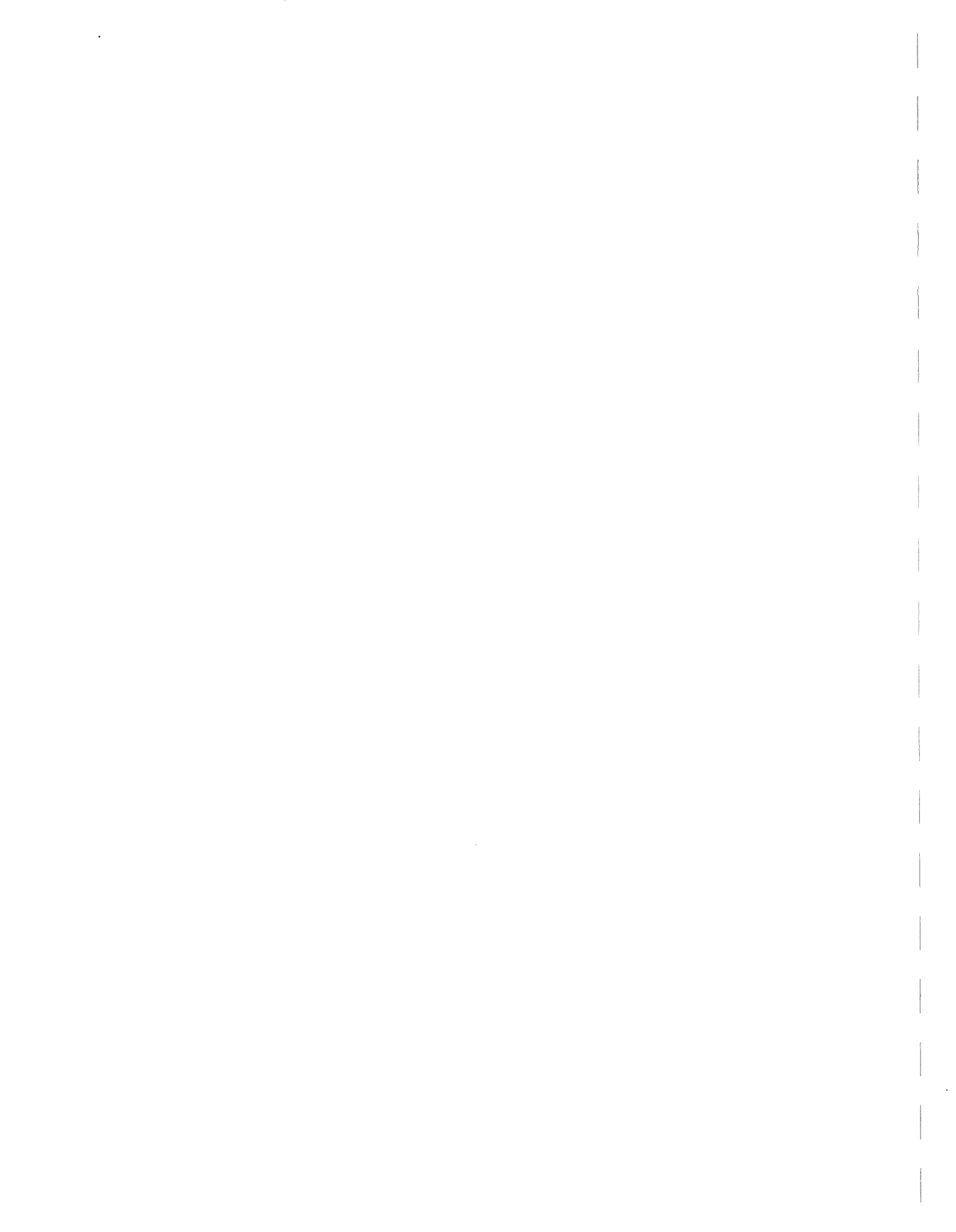
NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Date 09-17-2008

  
\_\_\_\_\_  
(Signature of Bidder or Prospective Contractor)

269 Pebble Ln. Quincy, Ky 41166

*Address (including Zip Code)*



U.S. DEPARTMENT OF AGRICULTURE

Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989 Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed covered transaction.

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
(a) are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
(b) have not within a three-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
(c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
(d) have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

B.P. Pipeline, LLC

Contract No. 9 - Water Syst

Organization Name

PR/Award Number or Project Name

Tony Palarie - Mananging Member, Connie Palarie - Member

Name(s) and Title(s) of Authorized Representative(s)

Tony Palarie, Connie Palarie
Signature(s)

9/17/08

Date



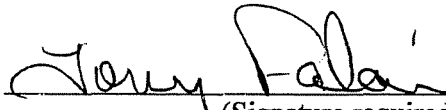
**EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION**  
**FOR**  
**NICHOLAS COUNTY WATER DISTRICT**  
**CARLISLE, KENTUCKY**  
**CONTRACT 9**  
**PHASE IX – WATER SYSTEM IMPROVEMENTS**  
**PROJECT NO. 05001**

I, Tony Palarie, Managing Member  
(print name) (title)

of B.P. Pipeline, LLc  
(firm)

hereby certify that my firm is an equal opportunity employer and is in compliance with all applicable local, state, and federal Equal Employment Opportunity laws.

Respectfully submitted,

By:   
(Signature required)

Tony Palarie  
(Name printed or typed)

Title: Managing Member

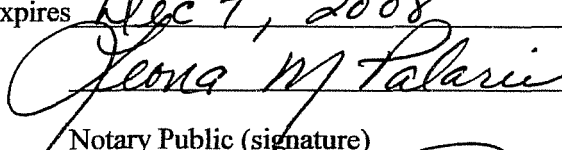
Date: 09/17/08

STATE OF ]  
] SS  
COUNTY OF ]

I, the undersigned notary public within and for the state and county aforesaid, do hereby certify that the foregoing instrument of writing was this day produced to me in said state, and county by Shenup Co. Kentucky and was acknowledged and delivered by him/her to be his/her act and deed.

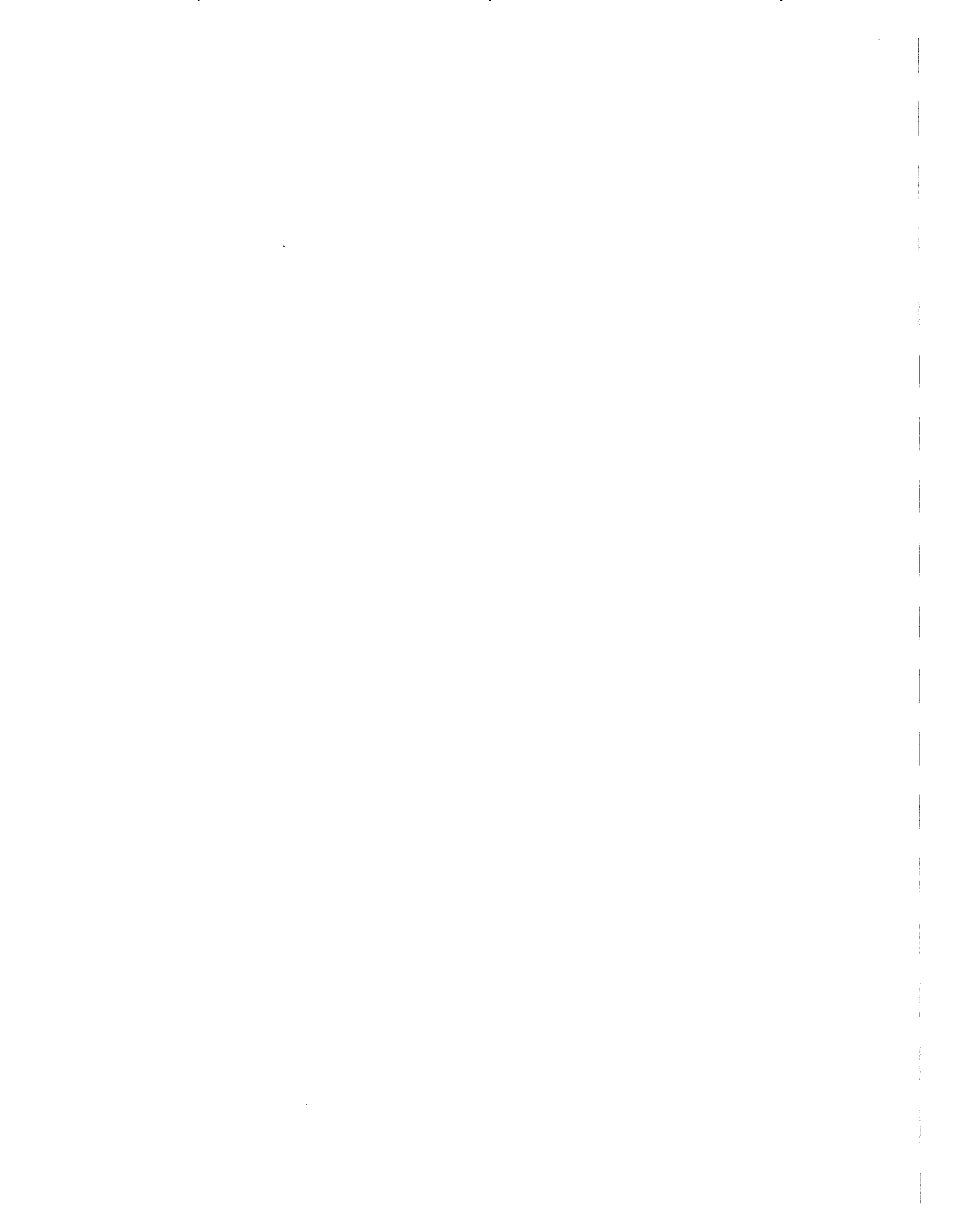
WITNESS by my hand this 17 day of Sept, 2008.

My Commission expires Dec 7, 2008, 2008?

  
Notary Public (signature)

LEONA M. PALARIE

Notary Public (Name typed or printed)





**SPECIFICATIONS AND CONTRACT DOCUMENTS**

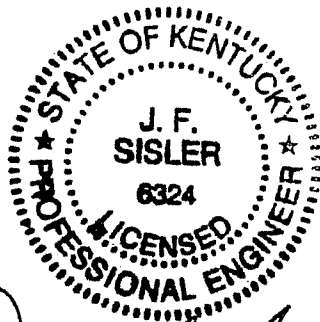
**FOR**

**NICHOLAS COUNTY WATER DISTRICT**

**CARLISLE, KENTUCKY**

**PHASE IX – CONTRACT NO. 10**

**150,000 GALLON ELEVATED WATER TANK**



*Joseph F. Sisler*

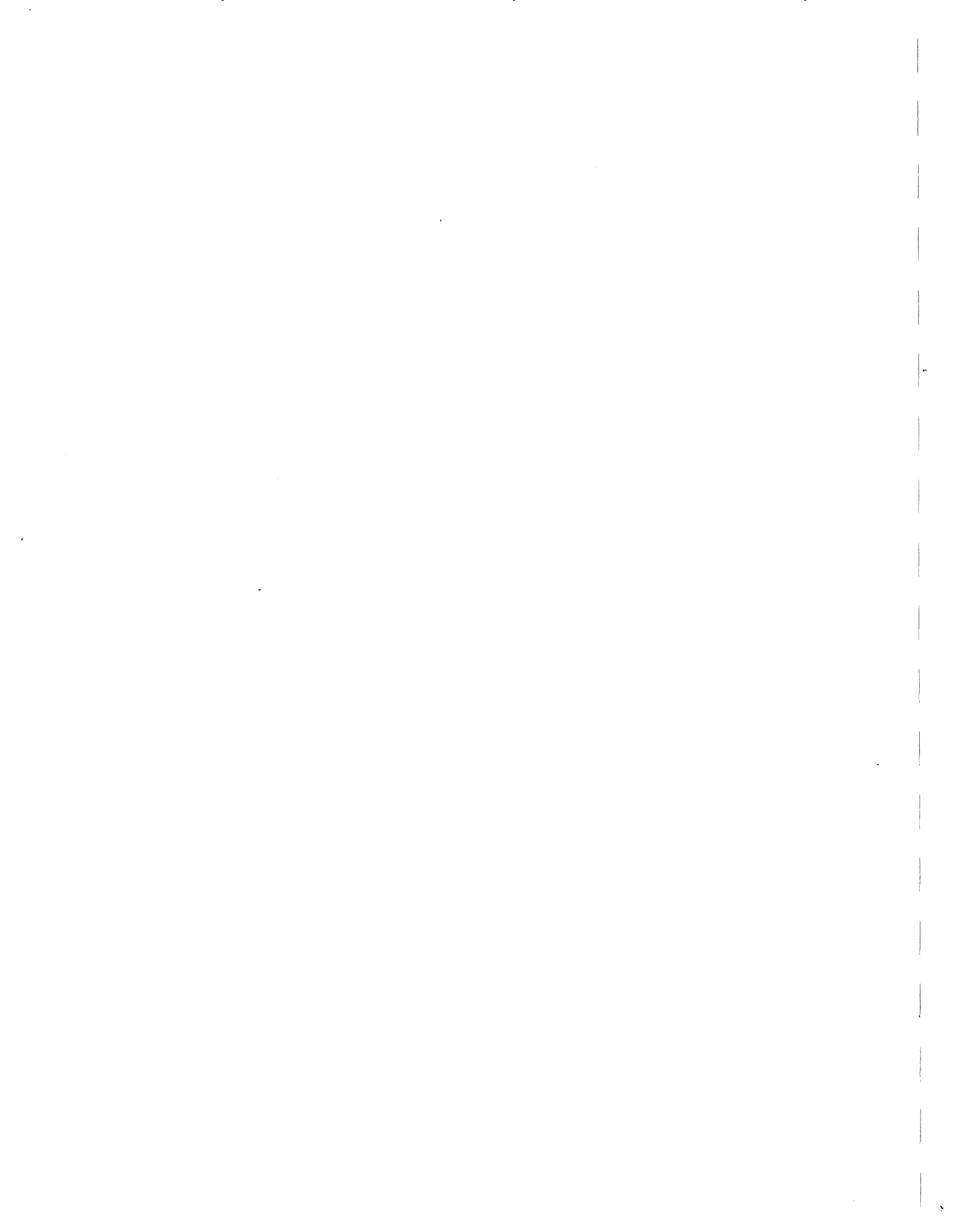
**FOR CONSTRUCTION**

**SEPTEMBER 2008**

**SME PROJECT CODE: 05001**

**SISLER-MAGGARD ENGINEERING, PLLC**

ENGINEERING • SURVEYING  
220 EAST REYNOLDS ROAD, SUITE A3  
LEXINGTON, KENTUCKY 40517  
(859) 271-2978 FAX (859) 271-5670



SPECIFICATIONS AND CONTRACT DOCUMENTS

NICHOLAS COUNTY WATER DISTRICT

CONTRACT NO. 10 – 150,000 GALLON ELEVATED WATER TANK

BID OPENING: JUNE 24, 2008, 4:00 P.M. LOCAL TIME

**ADDENDUM NO. 1**

June 18, 2008

**SPECIFICATIONS**

**Section 3 – Rural Development General Conditions & Supplemental Conditions**

Revised Page 2 of 4 of the Supplemental Conditions attached

**Section 6 – Technical Specifications**

Section 01580 – Project Identification and Sign

Revised – 3 pages

Section 09901 – Surface Preparation & Coating

Revised – 7 pages

Section 13501 – 150,000 Gallon Elevated Water Tank

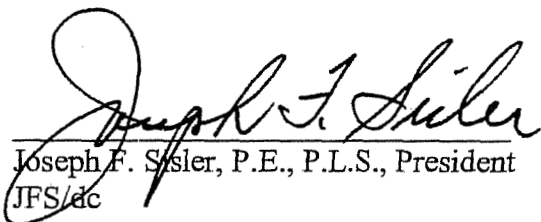
Revised – 6 pages

**DRAWINGS**

Sheets 1, 2, and 3 revised

**Bidders for this Contract must acknowledge this Addendum No. 1 on the bid documents.**

Sisler – Maggard Engineering, PLLC

  
Joseph F. Sisler, P.E., P.L.S., President  
JFS/dc

w/enclosures



**NICHOLAS COUNTY WATER DISTRICT**

**CONTRACT NO. 10  
150,000 GALLON ELEVATED WATER TANK**

**INDEX**

**SECTION 1 - ADVERTISEMENT FOR BIDS**

**SECTION 2 - INSTRUCTIONS TO BIDDERS**

**SECTION 3 - RURAL DEVELOPMENT GENERAL CONDITIONS & SUPPLEMENTAL  
CONDITIONS**

**SECTION 4 - WAGE RATES - STATE**

**SECTION 5 - SPECIAL CONDITIONS**

**SECTION 6 - TECHNICAL SPECIFICATIONS (*SEE TECHNICAL SPECIFICATIONS FOR TABLE  
OF CONTENTS*)**

**SECTION 7 - CONTRACT AND BOND FORMS**

AGREEMENT  
PAYMENT BOND  
PERFORMANCE BOND  
CERTIFICATE OF INSURANCE  
NOTICE OF AWARD  
NOTICE TO PROCEED  
CHANGE ORDER  
PARTIAL PAYMENT REQUEST  
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**SECTION 8 - BID FORMS AND BID BONDS**

BID FORMS INCLUDING SUBCONTRACTORS & MANUFACTURERS LIST  
BID BOND WITH POWER OF ATTORNEY  
COMPLIANCE STATEMENT (RD FORM 400-6)  
CERTIFICATE FOR CONTRACTS, GRANTS, & LOANS  
CERTIFICATE OF BIDDER REGARDING EQUAL EMPLOYMENT OPPORTUNITY  
CERTIFICATE REGARDING DEBARMENT, SUSPENSION, AND OTHER  
RESPONSIBILITIES  
BIDDER'S QUALIFICATIONS STATEMENT



**SECTION 1**

**ADVERTISEMENT FOR BIDS**





ADVERTISEMENT FOR BIDS

- 1. INVITATION: Separate sealed bids for the construction of the following water system improvements will be received by the Nicholas County Water District, 1639 Old Paris Road, Carlisle, Kentucky 40311, until 4:00 PM, local time June 24, 2008 for furnishing all labor and materials and performing all work as set forth by this advertisement, conditions (general, supplemental, and special), specifications, and/or the drawings prepared by Sisler-Maggard Engineering, PLLC., 220 East Reynolds Road, Suite A3, Lexington, Kentucky 40517. Bids will be publicly opened and read at above time.
- 2. PROJECT DESCRIPTION: The project includes but is not limited to the following:

CONTRACT NO. 9 – WATER SYSTEM IMPROVEMENTS

a.)	34,000	L.F.	6" CL 250/ CL200 PVC Waterline
b.)	27,000	L.F.	3", 2" CL 250/ CL 200 PVC Waterline
c.)	36	EA	4", 3", 2" Gate Valves
d.)	6	EA	Fire Hydrants
e.)	865	L.F.	12", 10", 9" Bore and Jack
f.)	16	EA	Blowoff Valve Assemblies

CONTRACT NO. 10 – 150,000 GALLON ELEVATED WATER TANK

a.)	150,000	Gallon elevated water tank with site grading, fencing, electrical service, yard piping and misc. appurtenances
-----	---------	--

3. OBTAINING PLANS, SPECIFICATIONS AND BID DOCUMENTS:

Contract documents may be reviewed and obtained at the following locations:

Lynn Imaging	(859) 255-1021
328 Old Vine Street	(800) 888-0693
Lexington, KY 40507	(859) 233-1558 fax

A **non-refundable** deposit will be required for **each** set of documents as follows:

Contract No. 9 – Water System Improvements:	<u>\$150.00</u>
Contract No. 10 – 150,000 Gallon Elevated Water Tank:	<u>\$75.00</u>

Deposit includes standard UPS shipping. Partial sets of plans or specifications will **not** be issued.

Contract Documents may also be reviewed at the following locations:

Sisler-Maggard Engineering, PLLC	AGC/McGraw-Hill Dodge
220 East Reynolds Road, Suite A3	950 Contract Street, Suite 100
Lexington, Kentucky 40517	Lexington, Kentucky 40505
(859) 271-2978	

Nicholas County Water District  
1639 Old Paris Road (SR 32)  
Carlisle, KY 40311  
(859) 289-3157

4. METHOD OF RECEIVING BIDS: Bids will be submitted in the manner and subject to the conditions as set forth and described in the Instructions to Bidders and Contract Documents.
5. METHOD OF AWARD: The Contracts will be awarded by the Owner to the low responsive, responsible, best and qualified Bidder.
6. BID WITHDRAWAL: No Bidder may withdraw his bid for a period of ninety (90) calendar days after receipt of bids. Errors and omissions will not be the cause for withdrawal of bid without forfeit of bid bond. Bids may be withdrawn in person prior to the closing time for receipt of bids.
7. WAGE RATES: State Prevailing wage rates **will** apply to both contracts of this project.
8. FUNDING: This project is being funded with RD and GOLD funds.
9. BID SECURITY: Bidders shall furnish (with bid) bid security equal to 5% of bid. A bid bond on Kentucky Resident insurance carrier or certified check is acceptable.
10. PERFORMANCE AND PAYMENT BOND: A Performance and Payment Bond each in the amount of 100 percent of the Contract Price issued by a responsible surety will be required of the successful Bidders.
11. RIGHT TO REJECT: Owner reserves the right to reject any and all bids and to waive all informalities and/or technicalities should it be in the best interest of the Owner.
12. Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract, and E.O. 11246 and Title VI Minority bidders are encouraged to bid.

"EQUAL EMPLOYMENT OPPORTUNITY"

OWNER: Nicholas County Water District

By: Mary Jo McCord, Chairperson

**SECTION 2**  
**INSTRUCTIONS TO BIDDERS**



## INSTRUCTIONS TO BIDDERS

1. Defined Terms: Terms used in these Instructions to Bidders which are defined in RD General and Supplemental General Conditions, or Special Conditions of the Construction Contract and have the meanings assigned to them in the said Conditions.
2. Receipt and Openings of Bids: The Nicholas County Water District, (herein called the "Owner"), invites bids on the forms attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at the Nicholas County Water District, 1639 Old Paris Road, Carlisle, Kentucky 40311 until 4:00 PM, local time, June 24, 2008 and then at said office publicly opened and read aloud. The envelopes containing the bids must be sealed, addressed to Nicholas County Water District designated as bid for Contract No. 9 – Water System Improvements or Contract No. 10 - 150,000 Gallon Elevated Water Tank.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informality 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 90 (ninety) days after the actual date of the opening thereof.

3. Preparation of Bid: Each bid must be submitted on the prescribed forms accompanied by the following items which will constitute the submittal documents necessary for a **complete bid package**:
  - a) Bid Form including subcontractor's list and manufacturers list.
  - b) Bid Bond with Power of Attorney.
  - c) Compliance Statement (Form FmHA 400-6)
  - d) Certificate of Bidder Regarding Equal Employment Opportunity
  - e) Certificate of Bidder concerning labor standards and prevailing wage requirements
  - f) Certificate regarding debarment, suspension, and other responsibilities
  - g) Bidder's Qualifications Statement

All blank spaces for bid prices must be filled in, in ink or typewritten, in both words and figures, and the foregoing Certifications must be fully completed and executed when submitted.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, their address, and the name of the project with contract name and number for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the bid forms.

Before submitting their Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize themselves with local conditions that may in any manner affect performance of the Work, and (c) carefully correlate their observations with the requirements of the CONTRACT DOCUMENTS.

Reference is made to the Special Conditions of the Specifications and Plans for the identification of those surveys and investigation reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the Work which have been relied upon by the ENGINEER in preparing the Drawings and Specifications. Before submitting their Bid each Bidder will, at their own expense, make such additional surveys and investigations, as

they may deem necessary to determine their Bid price for performance of the work within the terms of the Contract Documents.

The submission of a Bid will constitute an incontrovertible representation by the Bidder that they have complied with every requirement of these instructions.

4. Bid Form(s): The bid Form(s) is included in the Contract Documents; additional copies may be obtained from Owner. The items listed under Item No. 3 herein shall be submitted.

Bids by corporations must be executed in the corporate name by the President or Vice President (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the Secretary, or an assistant Secretary. The corporate address and state of incorporation shall be shown below the signature.

Bids by partnerships must be executed in the partnership name and signed by a partner, his title must appear under his signature and the official address of the partnership must be shown below the signature.

All names must be typed or printed below the signature with phone and fax numbers.

The bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

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

- a. Must be acceptable to the Owner and have current eligibility status for federal programs.

Approval of the proposed subcontract award cannot be given by the Owner unless and until the proposed subcontractor has submitted the Certifications and/or other evidence showing that it has fully complied with any reporting requirements to which it is or was subject. Although the bidder is not required to attach such Certifications by proposed subcontractors to their bid, the bidder is hereby advised of this requirement so that appropriate action can be taken to prevent subsequent delay in subcontract awards.

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

7. Method of Bidding: The Owner invites the following bid(s):

Contract No. 9 – Water System Improvements  
Contract No. 10 – 150,000 Gallon Elevated Water Tank

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

Each prime bidder shall complete, in detail; the form of "Bidder's Qualifications" found in and included as part of the form of Proposal. In lieu of the filling out of the detailed financial statement, the bidder may substitute a current and certified company financial statement.

Corporate Firms: Foreign Corporations are required to be registered with the Secretary of State of the Commonwealth and must be in good standing. Domestic Corporations are required to be in good standing with the requirements and provisions of the Office of the Secretary of State, Commonwealth of Kentucky.

Good Standing with the Public Works Act: Any contractor and/or subcontractors in violation of any wage or work act provisions (KRS 337.510 and 337.550) are prohibited by Statutory Act (KRS 337.990) from bidding or working on any and all public work contracts, either in their name or in the name of any other company, firm or other entity in which he might be interested. No bid from a prime contractor, in violation of the Act can be considered, nor with any subcontractor, in violation of the Act, be approved and/or accepted. The responsibility of the qualifications of the subcontractor is solely that of the prime contractor.

9. Bid Security: Each bid must be accompanied by cash, certified check of the bidder, or a bid bond prepared on the Bid Form attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner, in the amount of 5% of the bid. Such cash, checks or bid bonds will be returned promptly after the Owner and the accepted bidder have executed the contract, or if no award has been made within 15 days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as they have not been notified of the acceptance of their bid.
10. Liquidated Damages for Failure to Enter into Contract: The successful bidder, upon their failure or refusal to execute and deliver the contract and bonds required within 10 days after they have received the notice of the acceptance of their bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with their bid.
11. Time of Completion and Liquidated Damages: Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the projects as follows:

Contract No. 9 – Water System Improvements – 180 consecutive calendar days

Contract No. 10 – 150,000 Gallon Elevated Water Tank – 180 consecutive calendar days

Bidder must agree also to pay as liquidated damages, the sum of \$500.00 for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.

12. Conditions of Work: Each bidder must inform themselves fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of their obligation to furnish all material and labor necessary to carry out the provisions of their contract. Insofar as possible, the contractor, in carrying out the work, must

employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

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

Every request for such interpretation on Contract No. 9 – Water System Improvements and Contract No. 10 – 150,000 Gallon Elevated Water Tank should be in writing addressed to Sisler-Maggard Engineering PLLC., P.O. Box 23780, Lexington, Kentucky 40523-3780 and to be given consideration must be received at least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed by certified mail with return receipt requested to all prospective bidders (at the respective addresses furnished for such purposes), not later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under their bid as submitted. All addenda so issued shall become part of the contract documents.

14. Security for Faithful Performance: Simultaneously with their delivery of the executed contract, the contractor shall furnish a 100% surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner.
15. Power of Attorney: Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney with Kentucky Resident agent.
16. Notice of Special Conditions: Attention is particularly called to those parts of the contract documents and specifications which deal with the following:
- a. Inspection and testing of materials
  - b. Insurance requirements
  - c. Wage rates
17. Laws and Regulations: The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written in full.
18. Method of Award - Lowest Qualified Bidder: If at the time this contract is to be awarded, the lowest base bid submitted by a responsible bidder does not exceed the amount of funds then estimated by the Owner as available to finance the contract, the contract will be awarded on the base bid only. If all bids exceed funds available to finance the contract the Owner may negotiate price with the bidder who is lowest at that point. However, **the Owner reserves the right to reject any and all bids and to waive all informalities and/or technicalities should it be in the best interest of the Owner.**
19. Award of Contract: Owner reserves the right to reject any and all Bids, and waive any and all informalities, and the right to disregard all nonconforming or conditional bids or counter proposals.



In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the bids comply with the prescribed requirements, and alternates and unit prices, if requested in the Bid forms. He may consider the qualifications and experience of the Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for portions of the Work as to which the identity of Subcontractors and other persons or organizations must be submitted as specified in the Special Conditions or Specifications. He may conduct such investigations as he deems necessary to establish the responsibility, qualifications or financial ability of the Bidders, proposed Subcontractors and other persons or organizations to do the work in accordance with the Contract Documents, to Owner's satisfaction within the prescribed time. Owner reserves the right to reject the Bid of any Bidder who reserves the right to reject the bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

If the contract is to be awarded, Owner will give the apparent successful Bidder(s) a Notice of Award within sixty (60) calendar days after the day of the Bid opening.

Simultaneously with delivery of the executed counterparts of the Agreement to Owner, Contractor shall deliver to Owner the required Contract Security.

20. Safety Standards and Accident Prevention: With respect to all work performed under this contract, the contractor shall:
- a. Comply with the safety standards provisions of applicable laws, building and construction codes and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1518 as published in the "Federal Register", Volume 36, No. 75, Saturday, April 17, 1971.
  - b. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.
  - c. Maintain at their office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees); who may be injured on the job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.
21. Prevailing Wage Law: State Prevailing Wage Rates **do apply** to this project and are included herein as SECTION 4.
22. Executive Order No. 11246: 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 SUPPLEMENTAL GENERAL CONDITIONS.



## **SECTION 3**

# **RURAL DEVELOPMENT GENERAL & SUPPLEMENTAL CONDITIONS**



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# GENERAL CONDITIONS

## ARTICLE 1 -- DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda* – Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
  2. *Agency* – The Federal or state agency named as such in the Agreement.
  3. *Agreement* – The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
  4. *Application for Payment* – The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  5. *Asbestos* – Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
  6. *Bid* – The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  7. *Bidder* – The individual or entity who submits a Bid directly to Owner.
  8. *Bidding Documents* – The Bidding Requirements and the proposed Contract Documents (including all Addenda).
  9. *Bidding Requirements* – The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.
  10. *Change Order* – A document recommended by Engineer which is signed by Contractor and Owner and Agency and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
  11. *Claim* – A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
  12. *Contract* – The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
  13. *Contract Documents* – Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

14. *Contract Price* – The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
15. *Contract Times* – The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
16. *Contractor* – The individual or entity with whom Owner has entered into the Agreement.
17. *Cost of the Work* – See Paragraph 11.01.A for definition.
18. *Drawings* – That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
19. *Effective Date of the Agreement* – The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
20. *Engineer* – The individual or entity named as such in the Agreement.
21. *Field Order* – A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
22. *General Requirements* – Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.
23. *Hazardous Environmental Condition* – The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.
24. *Hazardous Waste* – The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
25. *Laws and Regulations; Laws or Regulations* – Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens* – Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
27. *Milestone* – A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
28. *Notice of Award* – The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
29. *Notice to Proceed* – A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
30. *Owner* – The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

31. *PCBs* – Polychlorinated biphenyls.
32. *Petroleum* – Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
33. *Progress Schedule* – A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
34. *Project* – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
35. *Project Manual* – The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
36. *Radioactive Material* – Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
37. *Related Entity* – An officer, director, partner, employee, agent, consultant, or subcontractor.
38. *Resident Project Representative* – The authorized representative of Engineer who may be assigned to the Site or any part thereof.
39. *Samples* – Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
40. *Schedule of Submittals* – A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
41. *Schedule of Values* – A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
42. *Shop Drawings* – All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
43. *Site* – Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
44. *Specifications* – That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
45. *Subcontractor* – An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
46. *Substantial Completion* – The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for

which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.

47. *Successful Bidder* – The Bidder submitting a responsive Bid to whom Owner makes an award.
48. *Supplementary Conditions* – That part of the Contract Documents which amends or supplements these General Conditions.
49. *Supplier* – A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.
50. *Underground Facilities* – All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
51. *Unit Price Work* – Work to be paid for on the basis of unit prices.
52. *Work* – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
53. *Work Change Directive* – A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and Agency upon recommendation of the Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

## 1.02 *Terminology*

- A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.
- B. *Intent of Certain Terms or Adjectives*
  1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.
- C. *Day*
  1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
  - a. does not conform to the Contract Documents, or
  - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
  - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

- F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## ARTICLE 2 – PRELIMINARY MATTERS

### 2.01 *Delivery of Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

### 2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement.

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
1. a preliminary Progress Schedule;
  2. a preliminary Schedule of Submittals; and
  3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, Agency, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
  2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
  3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

## ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

### 3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

### 3.02 *Reference Standards*

#### A. *Standards, Specifications, Codes, Laws, and Regulations*

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

### 3.03 *Reporting and Resolving Discrepancies*

#### A. *Reporting Discrepancies*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

#### B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
  - a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
  - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
  1. A Field Order;
  2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3) or
  3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier shall not:
  1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or
  2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.
- B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.



- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

**ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS**

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
  - 1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and
  - 2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:
  - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
  - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
  - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

- A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
  - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
  - b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
  - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
  - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
  - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

#### 4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
  - a. reviewing and checking all such information and data,
  - b. locating all Underground Facilities shown or indicated in the Contract Documents,
  - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and
  - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

#### B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

#### 4.05 *Reference Points*

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

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
  2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
  3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not

limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06. H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 5 – BONDS AND INSURANCE

### 5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

### 5.02 *Licensed Sureties and Insurers*

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

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

- A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
  - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
  - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
  - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
    - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
    - b. by any other person for any other reason;
  - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
  - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
  - 1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
  - 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
  - 3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.
  - a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

#### 5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

#### 5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (Contractor shall be responsible for any deductible or self-insured retention). This insurance shall:
  1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
  2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;
  3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
  4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
  5. allow for partial utilization of the Work by Owner;
  6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.
- B. Contractor shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.
  - C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
  - D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

#### 5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Contractor as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:
  1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
  2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.



- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Contractor and made payable to Contractor as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Contractor shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof.
- B. Contractor as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Contractor's exercise of this power. If such objection be made, Contractor as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Contractor as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Contractor as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

## ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

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

- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
  - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
  - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

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

equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

- 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
- 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
- 3) it has a proven record of performance and availability of responsive service; and

b. Contractor certifies that, if approved and incorporated into the Work:

- 1) there will be no increase in cost to the Owner or increase in Contract Times, and
- 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

## 2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The procedure requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

- a) will perform adequately the functions and achieve the results called for by the general design,
- b) be similar in substance to that specified, and
- c) be suited to the same use as that specified;

2) will state:

- a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;
  - b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
  - c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
- 3) will identify:
- a) all variations of the proposed substitute item from that specified , and
  - b) available engineering, sales, maintenance, repair, and replacement services;
- 4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

#### 6.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor
  2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

#### 6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or

Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

- B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

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

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

- 1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
  3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work, Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

#### 6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

#### 6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
1. all persons on the Site or who may be affected by the Work;
  2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
  3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

- C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples*

- a. Submit number of Samples specified in the Specifications.



- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.
- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures*

- 1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:
  - a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
  - b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;
  - c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and
  - d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.
- 2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
- 3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review*

- 1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
- 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
- 3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  1. observations by Engineer;
  2. recommendation by Engineer or payment by Owner of any progress or final payment;
  3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
  4. use or occupancy of the Work or any part thereof by Owner;
  5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
  6. any inspection, test, or approval by others; or
  7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

- B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:
  - 1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
  - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

#### 6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

### ARTICLE 7 – OTHER WORK AT THE SITE

#### 7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
  - 1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
  - C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

#### 7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
  1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
  2. the specific matters to be covered by such authority and responsibility will be itemized; and
  3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

#### 7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

### **ARTICLE 8 – OWNER'S RESPONSIBILITIES**

#### 8.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

- 8.02 *Replacement of Engineer*
- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.
- 8.03 *Furnish Data*
- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.
- 8.04 *Pay When Due*
- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.
- 8.05 *Lands and Easements; Reports and Tests*
- A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.
- 8.06 *Insurance*
- A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.
- 8.07 *Change Orders*
- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.
- 8.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.
- 8.09 *Limitations on Owner's Responsibilities*
- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- 8.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.
- 8.11 *Evidence of Financial Arrangements*
- A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

## ARTICLE 9 -- ENGINEER'S STATUS DURING CONSTRUCTION

### 9.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

### 9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

### 9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

### 9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

### 9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

## ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

### 10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, subject to written approval by Agency at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

### 10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

### 10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
  - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
  - 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
  - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

### 10.04 *Notification to Surety*

- A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be



given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

#### 10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part,
  2. approve the Claim, or
  3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

### ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

#### 11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
  - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
  - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
  - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
  - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.
  - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
  - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of

Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressages, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

## 11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. Cash Allowances

1. Contractor agrees that:

- a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
- b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
  1. the Bid price of a particular item of Unit Price Work amounts to more than 5 percent of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and
  2. there is no corresponding adjustment with respect to any other item of Work; and
  3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

**ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES**

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. Contractor's Fee: The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or
2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
  - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
  - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
  - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
  - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
  - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
  - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

## 12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

## 12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors

performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.B.
  - 1. delays caused by or within the control of Contractor; or
- D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

#### **ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

##### *13.01 Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

##### *13.02 Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

##### *13.03 Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
  - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and
  3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
  - D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
  - E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.
  - F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

#### 13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

#### 13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. repair such defective land or areas; or
  - 2. correct such defective Work; or
  - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
  - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims,



costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

**ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION**

14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments*

- 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such

supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
  - a. the Work has progressed to the point indicated;
  - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and
  - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
  - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
  - b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
  - a. to supervise, direct, or control the Work, or
  - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

- c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
  - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
  - b. the Contract Price has been reduced by Change Orders;
  - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
  - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

*C. Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

*D. Reduction in Payment*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
- a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
  - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
  - c. the Contractor's performance or furnishing of the Work is inconsistent with funding Agency requirements;
  - d. there are other items entitling Owner to a set-off against the amount recommended; or
  - e. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.
3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 *Contractor's Warranty of Title*

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

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Agency, Contractor, and Engineer shall make a prefinal inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.
  - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

#### 14.06 *Final Inspection*

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

#### 14.07 *Final Payment*

##### A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;
  - b. consent of the surety, if any, to final payment;
  - c. a list of all Claims against Owner that Contractor believes are unsettled; and
  - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

##### B. *Engineer's Review of Application and Acceptance*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims. The remaining balance of any sum included in the final Application for Payment but held by OWNER for Work not fully completed and accepted will become due when the Work is fully completed and accepted.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
  1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
  2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

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

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
  2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
  3. Contractor's disregard of the authority of Engineer; or
  4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),
  2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and
  3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
4. reasonable expenses directly attributable to termination.

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

#### 15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

### ARTICLE 16 – DISPUTE RESOLUTION

#### 16.01 *Methods and Procedures*

- A. Owner and Contractor may mutually request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
  1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or
  2. agrees with the other party to submit the Claim to another dispute resolution process, or



3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

## ARTICLE 17 – MISCELLANEOUS

### 17.01 *Giving Notice*

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

### 17.02 *Computation of Times*

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

### 17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

### 17.04 *Survival of Obligations*

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

### 17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

### 17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

## ARTICLE 18 – FEDERAL REQUIREMENTS

### 18.01 *Agency Not a Party*

- A. This Contract is expected to be funded in part with funds provided by Agency. Neither Agency, nor any of its departments, entities, or employees is a party to this Contract.

18.02 *Contract Approval*

- A. Owner and Contractor will furnish Owner's attorney such evidence as required so that Owner's attorney can complete and execute the following "Certificate of Owner's Attorney" (Exhibit GC-A) before Owner submits the executed Contract Documents to Agency for approval.
- B. Concurrence by Agency in the award of the Contract is required before the Contract is effective.

18.03 *Conflict of Interest*

- A. Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer.
- B. Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

18.04 *Gratuities*

- A. If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.
- B. In the event this Contract is terminated as provided in paragraph 18.04.A, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

18.05 *Audit and Access to Records*

- A. For all negotiated contracts and negotiated modifications (except those of \$10,000 or less), Owner, Agency, the Comptroller General, 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. Contractor shall maintain all required records for three years after final payment is made and all other pending matters are closed.

18.06 *Small, Minority and Women's Businesses*

- A. If Contractor intends to let any subcontracts for a portion of the work, 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 schedules, 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 of this section; and (7) Contractor is encouraged to procure goods and services from labor surplus area firms.

18.07 *Anti-Kickback*

- A. Contractor shall comply with the Copeland Anti-Kickback Act (18 USC 874 and 40 USC 276c) as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States"). The Act provides that Contractor or subcontractor 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 they are otherwise entitled. Owner shall report all suspected or reported violations to Agency.

18.08 *Clean Air and Pollution Control Acts*

- A. If this Contract exceeds \$100,000, Contractor shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 USC 7401 *et seq.*) and the Federal Water Pollution Control Act as amended (33 USC 1251 *et seq.*). Contractor will report violations to the Agency and the Regional Office of the EPA.

18.09 *State Energy Policy*

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

18.10 *Equal Opportunity Requirements*

- A. If this Contract exceeds \$10,000, Contractor shall comply with Executive Order 11246, "Equal Employment Opportunity," as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and as supplemented by regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."
- B. Contractor's compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative active 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 area 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 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 Contractor's goals shall be a violation of the Contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.
- C. 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.

18.11 *Restrictions on Lobbying*

- A. Contractor and each subcontractor shall comply with Restrictions on Lobbying (Public Law 101-121, Section 319) as supplemented by applicable Agency regulations. This Law applies to the recipients of contracts and subcontracts that exceed \$100,000 at any tier under a Federal loan that exceeds \$150,000 or a Federal grant that exceeds \$100,000. If applicable, Contractor must complete a certification form on lobbying activities related to a specific Federal loan or grant that is a funding source for this Contract. Each tier certifies to the tier above that it will not and

has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 USC 1352. Each tier shall disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Certifications and disclosures are forwarded from tier to tier up to the Owner. Necessary certification and disclosure forms shall be provided by Owner.

18.12 *Environmental Requirements*

- A. When constructing a project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental constraints:
1. Wetlands – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.
  2. Floodplains – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, i.e., alluvial soils on NRCS Soil Survey Maps.
  3. Historic Preservation – Any excavation by Contractor that uncovers an historical or archaeological artifact shall be immediately reported to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the State Historic Preservation Officer (SHPO).
  4. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.

EXHIBIT GC-A

Certificate of Owner's Attorney

I, the undersigned, \_\_\_\_\_, the duly authorized and acting legal representative of \_\_\_\_\_, do hereby certify as follows:

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

\_\_\_\_\_

Date: \_\_\_\_\_



## Supplementary Conditions

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract Funding Agency Edition (No. C-710, 2002 Edition) and other provisions of the Contract Documents as indicated below. All provisions not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions will have the meanings indicated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

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**SC-1.01.A.2. Add the following language to the end of Paragraph 1.01.A.2:**

The Project is financed in whole or in part by USDA Rural Development pursuant to the Consolidated Farm and Rural Development Act (7 USC Section 1921 et seq.). Project also includes KIA-IEDF grants and local funds.

**SC-1.01.A.4. Add the following language to the end of Paragraph 1.01.A.4:**

The Application for Payment form to be used on this Project is Form RD 1924-18. The Agency must approve all Applications for Payment before payment is made.

**SC-1.01.A.10. Add the following language to the end of Paragraph 1.01.A.10:**

The Change Order form to be used on this Project is Form RD 1927-7. Agency approval is required before Change Orders are effective.

**SC-1.02.A.15. Delete in its entirety and replace with the following:**

Contract Times: The number of days or date stated in the Agreement to achieve substantial completion, based on remaining work, weather and market conditions.

**SC-2.03.A. Delete Paragraph 2.03.A in its entirety and insert the following in its place:**

A. The Contract Times will commence on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 10 days after the Effective Date of the Agreement.

**{SC-4.02. Add the following new paragraphs immediately after Paragraph 4.02.B:**

C. In the preparation of Drawings and Specifications, Engineer relied upon the following reports of exploration and tests of subsurface conditions at the Site:

Contract No. 9 – Waterline Extensions – NONE

Contract No. 10 – Water Tank – Thelen and Associates, Inc. – Geotechnical report dated December 12, 2007

D. Copies of reports and drawings itemized in SC-4.02.C are included with Bidding Documents. These reports and drawings are part of the Contract Documents. Contractor is not entitled to rely upon other information and data utilized by Engineer in the preparation of the Drawings and Specifications.

**SC-5.03. Add the following new paragraph immediately after Paragraph 5.03.B:**

C. Failure of the Owner to demand such certificates or other evidence of full compliance with these insurance requirements or failure of the Owner to identify a deficiency from evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

**SC-5.04. Add the following new paragraph immediately after Paragraph 5.04.B:**

C. The limits of liability for insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 5.04.A.1 and A.2 of the General Conditions:

a. State: Statutory

b. Applicable Federal Statutory  
(e.g., Longshoremen's)

c. Employer's Liability \$500,000

2. Contractor's General Liability under Paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability



coverages and eliminate the exclusion with respect to property under the care, custody, and control of the Contractor:

a. General Aggregate	\$2,000,000
b. Products – Completed Operations Aggregate	\$1,000,000
c. Personal and Advertising Injury	\$1,000,000
d. Each Occurrence (Bodily Injury and property damage)	\$1,000,000
e. Property Damage liability insurance will provide Explosion, Collapse, and Underground coverages where applicable.	
f. Excess or Umbrella Liability	
1.) General Aggregate	\$5,000,000
2.) Each Occurrence	\$2,000,000

3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:

a. Bodily Injury:	
Each Person	\$1,000,000
Each Accident	\$1,000,000
b. Property Damage	
Each Accident	\$1,000,000
c. Combined Single Limit of	\$1,000,000

4. The Contractual Liability coverage required by paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:

a. Bodily Injury:	
Each Person	\$2,000,000
Each Accident	\$2,000,000
b. Property Damage:	
Each Accident	\$2,000,000
Annual Aggregate	\$2,000,000

**SC-6.06 Add a new paragraph immediately after Paragraph 6.06.G:**

H. The Contractor shall not award work valued at more than (50%) percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

**SC-7.02.A.1 Delete paragraphs 7.02.A.1-3 in their entirety and insert the following:**

1. All General Contractors shall have the authority and be responsible for coordination of the activities among the other prime contractors and subcontractors on the Site to ensure a safe, efficient working environment. This authority covers scheduling delivery of materials, storage of materials, sequencing of construction involving different crafts, resolving interface issues between crafts, scheduling testing, and all other aspects of the Work that do not impact the design or function of the work.}

**SC-9.03A. Add the following language at the end of paragraph 9.03.A:**

The Engineer will provide Resident Project Representative Services for this project. The Duties, Responsibilities, and Limitations of Authority of the Resident Project Representative will be as stated in Exhibit D of the Agreement Between Owner and Engineer, E-510, 2002 Edition, as amended and executed for this specific project.

**SC-14.02.A.3 Add the following language at the end of paragraph 14.02.A.3:**

No payments will be made that would deplete the retainage prior to substantial completion, nor place in escrow any funds that are required for retainage, or invest the retainage for benefit.

**SC-14.02.C.1. Delete Paragraph 14.02.C.1 in its entirety and insert the following in its place:**

1. The Application for Payment with Engineer's recommendations will be presented to the Owner and Agency for consideration. If both the Owner and Agency find the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 14.02.D will become due thirty days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

**SC-18.08 Delete paragraph 18.08.A in its entirety and insert the following in its place:**

A. If 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 USC §1857(h)), Section 508 of the Clean Water Act (33 USC §1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR Part 15).

**SECTION 4**

**STATE WAGE RATES**





Steve Beshear  
Governor

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET  
DEPARTMENT OF LABOR  
OFFICE OF WORKPLACE STANDARDS  
1047 US Hwy 127 S STE 4  
Frankfort, Kentucky 40601  
Phone: (502) 564-3070  
www.labor.ky.gov

J. R. Gray  
Commissioner

May 30, 2008

Joseph F. Sisler  
Sisler-Maggard Engineering  
220 East Reynolds Rd Ste A-3  
Lexington KY 40517

Re: Nicholas County Water District, Contract #9 & 10 Water System Improvements  
091-H-00013-07-3

Advertising Date as Shown on Notification: June 24, 2008

Dear Joseph F. Sisler:

This office is in receipt of your written notification on the above project as required by KRS 337.510 (1).

I am enclosing a copy of the current prevailing wage determination number CR-3-029, dated May 11, 2007 for NICHOLAS County. This schedule of wages shall be attached to and made a part of the specifications for the work, printed on the bidding blanks, and made a part of the contract for the construction of the public works between the public authority and the successful bidder or bidders.

The determination number assigned to this project is based upon the advertising date contained in your notification. There may be modifications to this wage determination prior to the advertising date indicated. In addition, if the contract is not awarded within 90 days of this advertising date or if the advertising date is modified, a different set of prevailing rates of wages may be applicable. It will be the responsibility of the public authority to contact this office and verify the correct schedule of the prevailing rates of wages for use on the project. Your project number is as follows: 091-H-00013-07-3, Heavy/Highway

Sincerely,

Robin M. Young  
Prevailing Wage Specialist

KENTUCKY DEPARTMENT OF LABOR  
PREVAILING WAGE DETERMINATION  
CURRENT REVISION  
LOCALITY NO. 029

Determination No. CR-3-029

**Project No. 091-H-00013-07-3**  
**Type: Heavy/Highway**

Date of Determination: May 11, 2007

This schedule of the prevailing rate of wages for Locality No. 029, which includes Bath, Bourbon, Clark, Harrison, Montgomery and Nicholas Counties, has been determined in accordance with the provisions of KRS 337.505 to 337.550. This determination shall be referred to as Prevailing Wage Determination No. CR-3-029.

Apprentices shall be permitted to work as such subject to Administrative Regulations adopted by the Executive Director of Workplace Standards. Copies of these regulations will be furnished upon request to any interested person.

Overtime is to be computed at not less than one and one-half (1 1/2) times the indicated BASE RATE for all hours worked in excess of eight (8) per day, and/or in excess of forty (40) per week. However, KRS 337.540 permits an employee and employer to agree, in writing, that the employee will be compensated at a straight time base rate for hours worked in excess of eight (8) hours in any one calendar day, but not more than ten (10) hours worked in any one calendar day, if such written agreement is prior to the over eight (8) hours in a calendar day actually being worked, or where provided for in a collective bargaining agreement. The fringe benefit rate is to be paid for each hour worked at a straight time rate for all hours worked. Fringe benefit amounts are applicable for all hours worked except when otherwise noted. Welders will receive rate for craft in which welding is incidental.

No laborer, workman or mechanic shall be paid at a rate less than that of the General Laborer except those classified as bona fide apprentices registered with the Kentucky State Apprenticeship Supervisor unless otherwise specified in this schedule of wage rates.

NOTE: The type of construction shall be determined by applying the following definitions.

**BUILDING CONSTRUCTION**

Building construction is the construction of sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment, or supplies. It includes all construction of such structures, the installation of utilities and the installation of equipment, both above and below grade level, as well as incidental grading, utilities and paving.

CR-3-029  
May 11, 2007

### HIGHWAY CONSTRUCTION

Highway construction includes the construction, alteration or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, and other similar projects not incidental to building or heavy construction. It includes all incidental construction in conjunction with the highway construction project.

### HEAVY CONSTRUCTION

Heavy projects are those projects that are not properly classified as either "building" or "highway". For example, dredging projects, water and sewer line projects, dams, flood control projects, sewage treatment plants and facilities, and water treatment plants and facilities are considered heavy.



Jim Zimmerman, Executive Director  
Office of Workplace Standards  
Kentucky Department of Labor

CR-3-029  
May 11, 2007

**CLASSIFICATIONS** **RATE AND FRINGE BENEFITS**

ASBESTOS/INSULATION WORKERS: BASE RATE \$16.50  
FRINGE BENEFITS .50

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BOILERMAKERS: BASE RATE \$29.29  
FRINGE BENEFITS 14.66

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BRICKLAYERS: BASE RATE \$20.00

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CARPENTERS: BASE RATE \$18.14  
Carpenters: BUILDING FRINGE BENEFITS 8.83

Piledriver: BUILDING BASE RATE \$18.64  
FRINGE BENEFITS 8.83

Carpenters: HEAVY & HIGHWAY BASE RATE \$19.95  
FRINGE BENEFITS 5.43

Piledriver: HEAVY & HIGHWAY BASE RATE \$20.70  
FRINGE BENEFITS 5.43

Divers: HEAVY & HIGHWAY BASE RATE \$31.05  
FRINGE BENEFITS 5.43

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CEMENT MASONS: BASE RATE \$ 16.00  
FRINGE BENEFITS 1.90

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ELECTRICIANS: BASE RATE \$25.91  
FRINGE BENEFITS 9.21

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When workmen are required to work from bosun chairs, trusses, stacks, tanks, scaffolds, catwalks, radio and T.V. towers, structural steel (open, unprotected, unfloored raw steel) and bridges or similar hazardous locations where workmen are subject to a direct fall: 50 feet to 75 feet – add 25% above the workman's hourly rate, over 75 feet add 50% above workman's hourly rate. No premium shall be paid on work performed using JLGs, bucket trucks or other similar elevated mechanized work platforms up to 75 feet above the surface upon which the platform sits.

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CLASSIFICATIONS

RATE AND FRINGE BENEFITS

**LABORERS/ BUILDING: (Continued)**

**BUILDING GROUP 4:**

Powderman and blaster, and environmental laborer - nuclear, radiation, toxic and hazardous waste - Level B:

BUILDING	*BASE RATE	\$16.98
	FRINGE BENEFITS	7.52

**BUILDING GROUP 5:**

Caisson holes (6 ft. and over) pressure and free air including tools, and environmental laborer-nuclear, radiation, toxic and hazardous waste - Level A:

BUILDING	*BASE RATE	\$17.48
	FRINGE BENEFITS	7.52

**BUILDING GROUP 6:**

Tunnel man and tunnel sand miner, cofferdam (pressure and free air), sand hog or mucker (pressure or free air):

BUILDING	*BASE RATE	\$17.78
	FRINGE BENEFITS	7.52

**\*Employees handling chemically treated materials which are harmful to the skin shall receive an additional \$.50 above base rate. Employees working on high work such as towers or smoke stacks, or any type of work fifty (50) feet above the ground or a solid floor shall receive \$1.00 above base rate. Employees working on boilers, kilns, melting tanks, furnaces, or when refractory is done using live fires, drying fires, heatups or any hot work shall receive \$2.00 above base rate.**

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**LABORERS/HEAVY & HIGHWAY:**

**Group 1:**

Aging and curing of concrete (any mode or method), asbestos abatement worker, asphalt plant laborers, asphalt laborers, batch truck dumpers, carpenter tenders, cement mason tenders, cleaning of machines, concrete laborers, demolition laborers, dredging laborers, drill helper, environmental laborer - nuclear, radiation, toxic and hazardous waste - Level D, flagmen, grade checkers, all hand digging and hand back filling, highway marker placers, landscaping laborers, mesh handlers and placers, puddler, railroad laborers, rip-rap and grouters, right of way laborers, sign, guard rail and fence installers (all types), signal men, sound barrier installer, storm and sanitary sewer laborers, swampers, truck spotters and dumpers, and wrecking of concrete forms:

HEAVY & HIGHWAY	BASE RATE	\$15.88
	FRINGE BENEFITS	5.63

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

**LABORERS/HEAVY & HIGHWAY:(Continued)**

Group 2:

Batter board men (sanitary and storm sewer), brickmason tenders, mortar mixer operator, burner and welder, bushammers, chain saw operator, con-crete saw operators, deckhand scow man, dry cement handlers, environ-mental laborers - nuclear, radiation, toxic and hazardous waste - Level C, forklift operators for masonry, form setters, green concrete cutting, hand operated grouter and grinder machine operator, jack hammers, lead paint abatement, pavement breakers, paving joint machine, pipe layers-laser operators (non-metallic), plastic pipe fusion, power driven georgia buggy or wheelbarrow, power post hole diggers, precast manhole setters, walk-behind tampers, walk-behind trenchers, sand blasters, concrete chippers, surface grinders, vibrator operators, wagon drillers:

HEAVY & HIGHWAY	BASE RATE	\$16.13
	FRINGE BENEFITS	5.63

Group 3:

Air track driller (all types), asphalt luteman and rakers, gunnite nozzleman, gunnite operators and mixers, grout pump operator, powderman and blaster, side rail setters, rail paved ditches, screw operators, tunnel laborers (free air), and water blasters:

HEAVY & HIGHWAY	BASE RATE	\$16.18
	FRINGE BENEFITS	5.63

Group 4:

Caisson workers (free air), cement finishers, environmental laborer - nuclear, radiation, toxic and hazardous waste - Levels A and B, miners and drillers (free air), tunnel blasters, and tunnel muckers (free air):

HEAVY & HIGHWAY	BASE RATE	\$16.78
	FRINGE BENEFITS	5.63

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**MARBLE, TILE & TERRAZZO:**

Workers:	BASE RATE	\$15.00
	FRINGE BENEFITS	2.69

Layoutmen:	BASE RATE	\$15.25
	FRINGE BENEFITS	2.69

Finishers:	BASE RATE	\$9.90
	FRINGE BENEFITS	2.69

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CLASSIFICATIONS

RATE AND FRINGE BENEFITS

MILLWRIGHTS:

BASE RATE \$21.00  
FRINGE BENEFITS 12.09

**OPERATING ENGINEERS:**

Auto patrol, batcher plant, bituminous paver, cableway, central compressor plant, clamshell, concrete mixer (21 cfm or over), concrete pump, crane, crusher plant, derrick, derrick boat, ditching and trenching machine, dragline, dredge operator, dredge engineer, elevating grader and all types of loaders, hoe type machine, hoist (1 drum when used for stack or chimney construction or repair), hoisting engine (2 or more drums), locomotive, motor scraper, carry-all scoop, bulldozer, heavy duty welder, mechanic, orangepeel bucket, piledriver, power blade, motor grader, roller (bituminous), scarifier, shovel, tractor shovel, truck crane, winch truck, push dozer, highlift, forklift (regardless of lift height and except when used for masonry construction), all types of boom cats, core drill, hopto, tow or push boat, A-Frame winch truck, concrete paver, gradeall, hoist, hyster, pumpcrete, Ross carrier, boom, tail boom, rotary drill, hydro hammer, mucking machine, rock spreader attached to equipment, scoopmobile, KeCal loader, tower cranes (French, German and other types), hydrocrane, backfiller, gurries, sub-grader, tunnel mining machines including moles, shields, or similar types of tunnel mining equipment:

BUILDING BASE RATE \$19.55  
FRINGE BENEFITS 7.90

**Operators on cranes with boom one-hundred fifty feet (150') and over (including job) shall receive seventy-five (\$.75) above base rate. All cranes with piling leads will receive (\$.50) above base rate regardless of boom length.**

All air compressors (over 900 cfm), bituminous mixer, joint sealing machine, concrete mixer (under 21 cu. ft.), form grader, roller (rock), tractor (50 hp and over), bull float, finish machine, outboard motor boat, flexplane, fireman, boom type tamping machine, truck crane oiler, greaser on grease facilities servicing heavy equipment, switchman or brakeman, mechanic helper, whirley oiler, self-propelled compactor, tractair and road widening trencher and farm tractor with attachments (except backhoe, highlift and endloader), elevator (regardless of ownership when used for hoisting any building materials), hoisting engine (1 drum or buck hoist), forklift (when used for masonry construction, Firebrick masonry excluded), well points, grout pump, throttle-valve man, tugger, electric vibrator compactor, and caisson drill helper:

BUILDING BASE RATE \$16.81  
FRINGE BENEFITS 7.90

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

**OPERATING ENGINEERS:** (Continued)

Bituminous distributor, cement gun, conveyor, mud jack, paving joint machine, roller (earth), tamping machine, tractors (under 50 hp), vibrator, oiler, concrete saw, burlap and curing machine, hydro-seeder, power form handling equipment, deckhand steersman, hydraulic post driver, and drill helper:

BUILDING	BASE RATE	\$16.04
	FRINGE BENEFITS	7.90

**HEAVY HIGHWAY CLASS A:**

A-frame winch truck, auto patrol, backfiller, batcher plant, bituminous paver, bituminous transfer machine, all types of boom cats, bulldozer, cableway, carry-all scoop, carry deck crane, central compressor plant operator, clamshell, concrete mixer (21 cu. ft. or over), concrete paver, truck-mounted concrete pump, core drills, crane, crusher plant, derrick, derrick boat, ditching and trenching machine, dragline, dredge operator, dredge engineer, earth movers, elevating grader and all types of loaders, grade-all, guries, heavy equipment robotics operator/mechanic, high lift, hoe-type machine, hoist (two or more drums), hoisting engine (two or more drums), horizontal directional drill operator, hydraulic boom truck, hydrocrane, hyster, KeCal loader, Letourneau, Locomotive, mechanic, mechanically operated laser screed, mechanic welder, mucking machine, motor scraper, orangepeel bucket, piledriver, power blade, pumpcrete push doxer, rock spreader attached to equipment, all rotary drills, roller (bituminous), scarifier, scoopmobile, shovel, side boom, subgrader, tallboom, telescoping type forklift, tow or push boat, tower cranes (French, German and other types) tractor shovel and truck crane, tunnel mining machines including moles, shields, or similar types of tunnel mining equipment:

HEAVY & HIGHWAY	BASE RATE	\$22.95
	FRINGE BENEFITS	12.10

**Operators on cranes with booms one hundred fifty feet (150') and over including jib shall receive \$.50 above base rate.**

**HEAVY HIGHWAY CLASS B:**

All air compressors (over 900 cu. ft. per min.), bituminous mixer, boom type tamping machine, bull float, concrete mixer (under 21 cu. ft.), dredge engineer, electric vibrator compactor/self-propelled compactor, elevator (one drum or buck hoist), elevator (regardless of ownership when used to hoist building material), finish machine, firemen, flexplane, forklift (regardless of lift height), form grader, hoist (one drum), joint sealing machine, mechanic helper, outboard motor boat, power sweeper (riding type), roller (rock), ross carrier, skid mounted or trailer mounted concrete pumps, skid steer machine with all attachments, switchman or brakeman, throttle valve man, Tract air and road widening trencher, tractor (50 HP and over), truck crane oiler, tugger, welding machine, well points, and whirley oiler:

HEAVY & HIGHWAY	BASE RATE	\$20.53
	FRINGE BENEFITS	12.10

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

**OPERATING ENGINEERS/HEAVY HIGHWAY: (Continued)**

**HEAVY HIGHWAY CLASS B2:**

Greaser on grease facilities servicing heavy equipment, all off road material handling equipment, including articulating dump trucks:

HEAVY & HIGHWAY	BASE RATE	\$20.91
	FRINGE BENEFITS	12.10

**HEAVY HIGHWAY CLASS C:**

Bituminous distributor, burlap and curing machine, caisson drill and core drill helper (track or skid mounted), cement gun, concrete saw, conveyor, deckhand oiler, grout pump, hydraulic post driver, hydro seeder, mud jack, oiler, paving joint machine, power form handling equipment, pump, roller (earth), steermen, tamping machine, tractors (under 50 H.P.) and vibrator:

HEAVY & HIGHWAY	BASE RATE	\$20.27
	FRINGE BENEFITS	12.10

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PAINTERS:	BUILDING	BASE RATE	\$14.70
		FRINGE BENEFITS	3.06

Journeyman:	HEAVY & HIGHWAY	BASE RATE	\$20.54
		FRINGE BENEFITS	5.78

Bridges:	HEAVY & HIGHWAY	BASE RATE	\$21.88
		FRINGE BENEFITS	5.78

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PLASTERERS:		BASE RATE	\$19.00
		FRINGE BENEFITS	2.60

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PLUMBERS/PIPEFITTERS:		BASE RATE	\$23.95
		FRINGE BENEFITS	11.10

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ROOFERS: (Excluding Metal Roofs)		BASE RATE	\$13.31
		FRINGE BENEFITS	2.13

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SHEETMETAL WORKERS: (Including Metal Roofs)		BASE RATE	\$22.13
		FRINGE BENEFITS	7.89

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CLASSIFICATIONS

RATE AND FRINGE BENEFITS

**BOURBON, HARRISON, & NICHOLAS COUNTIES:**

TRUCK DRIVERS:(Continued)

Driver-3 tons and under, greaser, tire changer and mechanic helper:

BUILDING	*BASE RATE	\$15.17
	**FRINGE BENEFITS	5.65

Driver-over 3 tons, semi-trailer or pole trailer, dump trucks, tandem axle, farm tractor when used to pull building material or equipment:

BUILDING	*BASE RATE	\$15.28
	**FRINGE BENEFITS	5.65

Driver - concrete mixer trucks (all types, hauling only on job sites), truck mechanics:

BUILDING	*BASE RATE	\$15.35
	**FRINGE BENEFITS	5.65

Driver - Euclid and other heavy earthmoving equipment and lowboy, winch truck and A-Frame and monorail truck when used to transport building materials, fork lift truck when used inside warehouse or storage area:

BUILDING	*BASE RATE	\$15.45
	**FRINGE BENEFITS	5.65

**\*Employees who perform work either on or hauling to or from any hazardous or toxic waste site will receive \$4.00 in addition to their base rate of pay.**

**\*\*FRINGE BENEFITS apply to employees who have been employed a minimum of twenty (20) workdays within any ninety (90) consecutive day period for that employer.**

Mobile batch truck tender:

HEAVY & HIGHWAY	BASE RATE	\$14.62
	FRINGE BENEFITS	5.92

Greaser, tire changer & mechanic tender:

HEAVY & HIGHWAY	BASE RATE	\$14.73
	FRINGE BENEFITS	5.92



CLASSIFICATIONS

RATE AND FRINGE BENEFITS

BOURBON, HARRISON, & NICHOLAS COUNTIES TRUCK DRIVERS: (Continued)

Single axle dump, flatbed, semi-trailer or pole trailer when used to pull building materials and equipment, tandem axle dump, distributor & truck mechanic:

HEAVY & HIGHWAY	BASE RATE	\$14.91
	FRINGE BENEFITS	5.92

Mixer:

HEAVY & HIGHWAY	BASE RATE	\$14.94
	FRINGE BENEFITS	5.92

Euclid & other heavy earth moving equipment & lowboy, articulator cat, 5-axle vehicle, winch & A-frame when used in transporting materials, ross carrier, forklift when used to transport building materials & pavement breaker:

HEAVY & HIGHWAY	BASE RATE	\$15.01
	FRINGE BENEFITS	5.92

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END OF DOCUMENT CR-3-029  
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**SECTION 5**  
**SPECIAL CONDITIONS**

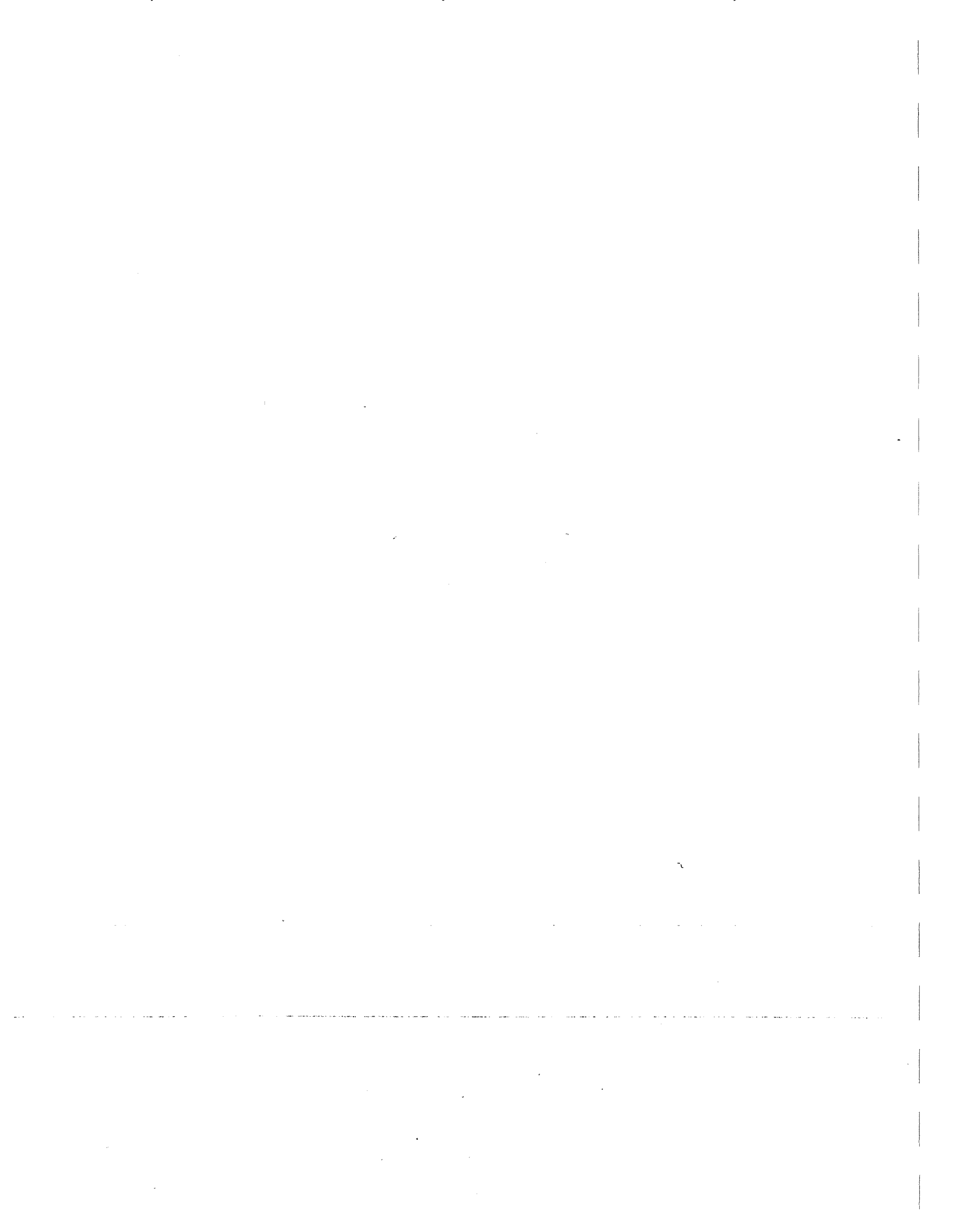




## SECTION 5

SPECIAL CONDITIONS

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SPECIAL CONDITIONS1. Contract Change Order

All changes which affect the cost of the construction of the project must be authorized by means of a CONTRACT CHANGE ORDER. 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 should be recorded on a CONTRACT CHANGE ORDER as they occur so that they may be included in the partial payment estimate. **All CONTRACT CHANGE ORDERS must be approved by the Engineer, Owner, and all funding agencies, in advance to any construction.**

2. Pre-Construction Conference

Following award of the CONTRACT, the CONTRACTOR will be required to attend a Pre-Construction Conference with OWNER and ENGINEER during which items pertinent to performance and management of the project will be thoroughly discussed and documented.

3. Equal Opportunity

If this contract exceeds \$10,000 the CONTRACTOR is subject to provisions of the equal opportunity requirements set forth in the Supplemental General Conditions, included herein with forms.

4. Labor Regulations

The CONTRACTOR and each of his subcontractors shall comply with the following statutes (and with regulations issued pursuant thereto, which are incorporated herein by reference):

Title 18 U.S.C., Section 876: Kickback from public works employees. Whoever, by force, intimidation, or threat of procuring dismissal from employment, or by any other manner whatsoever induces any person employed in the construction, prosecution, completion or repair of any public building, public work, or building or work financed in whole or in part by loans (made, insured, or guaranteed) or grants from the United States, to give up any part of the compensation to which he is entitled under his contract of employment, shall be fined not more than \$5,000 or imprisoned not more than five years, or both.

Title 40 U.S.C., Section 276c: Regulations Governing Contractors and Subcontractors. The Secretary of Labor shall make reasonable regulations for Contractors and Subcontractors engaged in the construction, prosecution, completion or repair of public buildings, public works, or buildings or work financed in whole or in part by loans (made, insured, or guaranteed) or grant from the United States, including a provision that each Contractor and Subcontractor shall furnish weekly a statement with respect to the wages paid each employee during the preceding week.

The OWNER shall report all suspected or reported violations to the funding agencies.

5. Protection of Lives and Property

In order to protect the lives and health of his employees under the CONTRACT, the CONTRACTOR shall comply with all pertinent provisions of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc., and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment or work under the CONTRACT.

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

6. Conflict of Interest

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

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

7. Partial Payments

Partial Payment estimate forms prepared by the ENGINEER shall be used when estimating periodic payments due the CONTRACTOR.

The ENGINEER will make computation of quantities that will be the basis for payment estimates, both monthly and final. All payment estimates may be checked and approved by the funding agencies before payment.

Where the computation of areas or volumes by exact geometric methods is unduly laborious or refined, the planimeter shall be held an instrument of precision and may be used in the determination of quantities upon which payments are based.

The measurements of the ENGINEER as to the amount of work done shall be final and conclusive.

Payments shall be made upon the work done within the lines prescribed by the drawings or specifications and in accordance with the unit prices for the items under which the work is done.



To insure the proper performance of the Contract, the OWNER shall retain an amount of each estimate as specified in the General Conditions.

**Additionally, clean up and seeding shall be calculated as ten percent (10%) of the unit price for pipe in place. Testing and sterilization as 5% of the unit price for pipe in place.**

8. Withholding Payments

The OWNER may 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:

- a) Defective work not remedied.
- b) Claims filed or reasonable evidence indicating probable filing of claims.
- c) Failure of CONTRACTOR to make payments properly to Subcontractors or for material or labor.
- d) A reasonable doubt that the work can be completed for the balance then unpaid.
- e) Damage to another CONTRACTOR or the OWNER'S facilities.
- f) Performance of work in violation of the terms of the CONTRACT DOCUMENTS.
- g) Where work on unit price items are substantially complete but lack cleanup and/or corrections ordered by the ENGINEER, amounts shall be deducted from unit prices in partial payment estimates to amply cover such clean up and/or corrections.
- h) When "Record Drawings" are not up to date and correct at time of each monthly pay request as determined by the Resident Observer and Engineer.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

9. Sanitary Facilities

All necessary temporary sanitary facilities shall be provided for by the Prime Contractor(s) and shall meet with current requirements of the State Environmental Protection Agency. After the completion of the work, all temporary sanitary facilities shall be properly disposed of by the Prime Contractor(s).

10. Final Inspection

Final inspection of the work shall be made for the OWNER by the ENGINEER in collaboration with the Representatives for the funding agencies. Such inspection shall be made as soon as practicable after the CONTRACTOR has notified the OWNER in writing that the work is ready for such inspection.

11. Project Signs

Contractors shall furnish signs as set out in Section 01580 of Technical Specifications. Location is to be determined by the Engineer at Pre-Construction Conference.

12. Conflicting Requirements

Should conflicting conditions exist within the Specifications, Contract Documents, or Construction Drawings, priorities shall be established as follows:

- a) Written Contract
- b) Written Proposal
- c) Advertisement for Bids
- d) Instruction to Bidders
- e) Special Conditions
- f) Rural Development General Conditions & Supplemental Conditions
- g) Written Technical Specifications
- h) Standard Details
- i) Large Scale Details on Drawings
- j) General Arrangement Details on Drawings

13. Owner's Right to Award

The OWNER shall retain the right to award or not award any or all of the Contracts covered by these Contract Documents and Specifications.

14. Owner's Right to Increase or Decrease Units

The OWNER shall retain the right to increase or decrease or eliminate up to 20% of any of the units listed in the BID submitted by the CONTRACTOR as may be required to complete the work at any time concurrent with or following the award of the Contract.

Unit prices previously approved in original bid are acceptable for pricing changes of original bid items. However, when changes in quantities exceed 20 percent of the original bid quantity and the total dollar change of that bid item is significant, the unit price may be reviewed by the OWNER to determine if a new unit price should be negotiated for added work performed after the original contract completion date.

15. Workmen's Compensation and Insurance

- a) Workmen's Compensation: As required by State Statutes.
- b) Public Liability and Property Damage Including Vehicular Liability: As listed in General Conditions.

16. Wage Rates

All Contractors for this project shall comply with State codes as they apply to wages and hours - public works projects.

The State Prevailing Wage Determinations are located in Section 4 of these Specifications.

17. Access to Records

Representatives of the funding agencies and the Kentucky D.O.W. shall have access to work whenever it is in preparation or progress. The Comptroller General of the United States, or any authorized representative, shall have access to any books, documents, papers, and records which are pertinent to the project for the purpose of making audit, examination, excerpts, and transcriptions thereof.

18. Time of Completion and Liquidated Damages

Contracts No. 10 shall be completed within 180 calendar days from date of Notice to Proceed.

Liquidated Damages shall be \$500.00 for each calendar day any Contract remains incomplete after the Time of Contract Completion.

19. Contractor's Obligations

The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time herein specified, in accordance with the provisions of this Contract and said Specifications and in accordance with the plans and drawings covered by this Contract and any and all supplemental plans and drawings, and in accordance with the directions of the ENGINEER as given from time to time during the progress of the work. He shall furnish, erect, maintain, and remove such construction plants and such temporary works as may be required. The CONTRACTOR shall observe, comply with, and be subject to all the terms, conditions, requirements, and limitations of the Contract and Specifications, and shall do, carry on, and complete the entire work to the satisfaction of the ENGINEER and the OWNER.

20. Quantities of Estimate

Whenever the estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of the documents including the BID, they are given for use in comparing bids and the right is especially reserved except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the OWNER to complete the work contemplated by this Contract, and such increase or diminution shall not give cause for claims or liability for damages.

21. Liens

Neither the final payment nor any part of the retained percentage shall become due until the Contractor, if required, shall deliver to the OWNER, a complete release of all liens arising out of this Contract or receipt in full in lien thereof, and if required in either case, an affidavit that insofar as he has knowledge or information, the releases and receipts include all the labor and materials for which a lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner to indemnify him against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the OWNER all monies that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

22. Work Reasonably Inferred But Not Particularly Delineated or Specified

The Contractor shall make a thorough examination of the site and study all drawings and specifications and all conditions relating to the erection of the work, and if any materials or labor are evidently necessary for the proper and complete execution of the work which are not specifically mentioned and included in the drawings and specifications, although reasonably inferred therefrom, unless

eliminated by special mention, or if any error or inconsistency appears therein, or in the event of any doubts arising as to the true intent and meaning of the drawings or specifications, he shall report it to the ENGINEER at least five (5) days in advance of receiving the proposals. The ENGINEER will then issue an addendum containing the proper information to all Contractors not later than three (3) days prior to the time for opening of bids, to assure fair competition.

In case the Contractor fails to make such report and the ENGINEER is not otherwise advised of such doubtful matters, the Contractor is hereby made responsible for the furnishing of the necessary labor and material reasonably inferred for any additional work involved in the correction of apparent errors or inconsistencies and in executing the true intent and meaning of the drawings and specifications as interpreted by the ENGINEER, and all such labor and material shall be provided at the Contractor's expense and under no condition will any such labor and material be allowed as an extra.

23. Limit of Liability of Owner to Contractor for Delays, Extra Cost and Damage

If, through no wrongful act or neglect of the OWNER, the Contractor is delayed, stopped, or caused extra cost or damage by injunction, court orders, judgment, or requirements of some other authority or acts beyond the control of the OWNER, he shall not be liable to the Contractor except for extension of time and payments only as reflected in application of quantities, prices, and extra work set forth in these specifications and contract. If sufficient work is otherwise available for application of Contractor's forces, the Owner will not be required to grant extension of time.

24. Requirements for Highway and Railroad Crossings and Rights-of-Way

The specifications herein concerning trenching, pipe laying, jacket pipe crossings, backfilling, maintenance during construction, protection of public, maintaining traffic, tunneling, and re-paving are subject to revision to conform to such requirements as set forth by highway and railroad specifications and such crossings and rights-of-way.

25. Delays and Cost Due to Errors and/or Changes in Lines and Grades

When the OWNER'S engineering forces make errors or changes in lines and grades that cause items of construction to be removed and replaced, the extra cost of such removal and replacement over that of correct construction shall be chargeable as an extra per terms of the General Conditions.

Where the Contractor's forces are delayed only due to ENGINEER'S errors or changes in not more than five in fifty cases of location of points on the whole project, errors and changes will not be above normal to be expected in the execution of the work, and no claims for extra cost due to such delay will be granted. Layout work is considered a normal portion of a construction operation in which it is considered impractical to prevent delays of some of the required labor and equipment while others are performing their portion of the operation. Excessive delay due to such causes shall be chargeable as extra work per terms of the General Conditions. However, to be allowable, time, labor, and equipment delayed must be reported to and approved by the ENGINEER within 24 hours. Labor and equipment must have been applied at the time of stoppage and could not have been applied to other incomplete work during the stoppage.

26. Licenses and Permits

The Owner will secure and pay for permits required for permanent structures and State Highway Encroachment Bonds. The Contractor shall obtain and pay for all other necessary licenses and permits and shall faithfully comply with all laws, ordinances and regulations, Federal, State, or local, which may be applicable to the operations to be conducted hereunder.

27. Conflict With or Damage to Existing Utilities

Insofar as location data is available to the ENGINEER, existing underground utilities (such as water lines, sewer lines, natural gas lines, and underground telephone and electrical conduits) are located on the drawings. However, due to the approximate nature of such data and information, the locations of any particular utility cannot be certified as being correct. In general, locations and elevations are approximate only. The Contractor shall obtain the services of representatives of each of the utilities involved during construction to assist in the location of existing utilities. Lines and grades of lines have been established to minimize interference with utilities as far as possible. However, it shall be the responsibility of the Contractor to determine any relocation necessary for his performance of the contract, and to pay any fees associated therewith, with no additional cost or liabilities to the OWNER.

28. Shop or Setting Drawings

See Section 01300 of Technical Specifications for further detail. Submittals **must** meet all submittal requirements set out therein or they will be returned to Contractor.

29. Work Hours Beyond Regular Hours

The Contractor shall notify the ENGINEER in writing of any scheduled work beyond regular and normal working hours at least 48 hours in advance of the work. Work performed after regular working hours and without notice to the ENGINEER, shall be considered not in conformance with the Plans and Specifications and may be removed or not paid for.

30. Excavation

All excavation shall be considered unclassified. **Rock excavation is not a separate pay item**, and shall not be cause for claim of additional compensation due to the Contractor.

31. Air and Water Acts

If the contract exceeds \$100,000 the Contractor agrees to comply with all the requirements of Section 114 of the Air Act (41 U.S.C., Section 1857 C-9) and Section 308 of the Water Act (33 U.S.C., Section 1318) relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in Section 114 of the Air Act and Section 308 of the Water Act and all regulations (40CFR 15.4) and guidelines issued thereunder after the award of the contract. In so doing, the Contractor further agrees to:

- a). As a condition for the Award of Contract, to notify the OWNER of the receipt of any communication from the Environmental Protection Agency (EPA)

indicating that a facility to be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities. Prompt notification is required prior to contract award.

- b). The Contractor will include, or cause to be included, the above criteria and requirements in every nonexempt subcontract and that he will take such action as the Government may direct as a means of enforcing such provisions.
- c.) To certify that any facility to be utilized in the performance of any nonexempt contractor is not listed on the EPA List of Violating Facilities pursuant to 40 CFR 15.20 as of the date of contract award.

### 32. Subcontracting

The following is in addition to and in conjunction with Article 6 of the General Conditions.

Prior to the execution and delivery of the Agreement, the successful Bidder will submit to the OWNER and the ENGINEER for acceptance a list of the names of Subcontractors and such other persons and organizations (including those who are to furnish materials or equipment fabricated to a special design) proposed for those portions of the Work as to which the identity of the Subcontractors and other persons and organizations must be submitted as specified in the Contract Documents. Prior to the execution and delivery of the Agreement, the ENGINEER will notify the successful Bidder in writing if either the OWNER or the ENGINEER, after due investigation, has reasonable objection to any Subcontractor, person or organization on such list. The failure of the OWNER or the ENGINEER to make objection to any Subcontractor, person or organization on the list prior to the execution and delivery of the Agreement shall constitute an acceptance of such Subcontractor, person or organization. Acceptance of any such Subcontractor, person or organization shall not constitute a waiver of any right of the OWNER or the ENGINEER to reject defective Work, material or equipment, not in conformance with the requirements of the Contract Documents.

If, prior to the execution and delivery of the Agreement, the OWNER or the ENGINEER has reasonable objection to and refuses to accept any Subcontractor, person or organization on such list, the successful Bidder may, prior to such execution and delivery, either (a) submit an acceptable substitute without an increase in his Bid Price or (b) withdraw his Bid and forfeit his Bid security. If, after the execution and delivery of the Agreement, the OWNER or the ENGINEER refuses to accept any Subcontractor, person or organization on such list, the CONTRACTOR will submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution and appropriate Change Order shall be issued; however, no such increase in the Contract Price shall be allowed in respect of any substitutions unless the CONTRACTOR has acted promptly and reasonably in submitting a name with respect thereto prior to the execution and delivery of the Agreement.

The CONTRACTOR will not employ any Subcontractor (whether initially or as a substitute) against whom the OWNER or the ENGINEER may have reasonable objection, nor will the CONTRACTOR be required to employ any Subcontractor

against whom he has reasonable objection. The CONTRACTOR will not make any substitution for any Subcontractor who has been accepted by the OWNER and the ENGINEER, unless the ENGINEER determines that there is good cause for doing so.

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

The CONTRACTOR agrees to specifically bind every Subcontractor to all of the applicable terms and conditions of the Contract Documents. Every Subcontractor, by undertaking to perform any of the Work, will thereby automatically be deemed to be bound by such terms and conditions.

All Work performed for the CONTRACTOR by a Subcontractor shall be pursuant to an appropriate agreement between the CONTRACTOR and the Subcontractor which shall contain provisions that waive all rights the contracting parties may have against one another for damages caused by fire or other perils covered by insurance provided in accordance with the General Conditions; except such rights as they may have to the proceeds of such insurance held by the OWNER as trustee under the General Conditions. The CONTRACTOR will pay each Subcontractor a just share of any insurance moneys received by the CONTRACTOR under the General Conditions.

33. Materials, Equipment and Labor; Substitute Material or Equipment

The following is in addition to and in conjunction with Article 6 of the General Conditions.

All materials and equipment will be new. If required by the ENGINEER, the CONTRACTOR will furnish satisfactory evidence as to the kind and quality of materials and equipment.

If it is indicated in the Specifications that the CONTRACTOR may furnish or use a substitute that is equal to any material or equipment specified, and if the CONTRACTOR wishes to furnish or use a proposed substitute, he will, promptly after the award of the contract, make written application to the ENGINEER for approval of such a substitute certifying in writing that the proposed substitute will perform adequately the duties imposed by the general design, be similar and of equal substance to that specified by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified. No substitute shall be ordered or installed without the written approval of the ENGINEER who shall be the judge of equality.

34. Availability of Lands, Physical and Subsurface Conditions; Reference Points

The following is in addition to and in conjunction with Article 4 of the General Conditions.

The OWNER will provide, as indicated in the Contract Documents and not later than the date when needed by the CONTRACTOR, the lands upon which the Work

is to be done, rights-of-way for access thereto, and such other lands which are designated for the use of the CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be secured and paid for by the OWNER, unless otherwise specified in the Contract Documents. If the CONTRACTOR believes that any delay in the OWNER'S furnishing these lands or providing such easements entitles him to an extension of the Contract Time, he may make a claim therefore as provided in the General Conditions. The CONTRACTOR will provide all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

The OWNER will, upon request, furnish to the CONTRACTOR copies of all-available boundary surveys and subsurface tests.

The CONTRACTOR will promptly notify the OWNER and ENGINEER in writing of any subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents. The ENGINEER will promptly investigate those conditions and advise the OWNER in writing if further surveys or subsurface tests are necessary. Promptly thereafter, the OWNER will obtain the necessary additional surveys and tests and furnish copies to the ENGINEER and the CONTRACTOR. If the ENGINEER finds that the results of such surveys or tests indicate subsurface or latent physical conditions differing significantly from those indicated in the Contract Documents, a Change Order shall be issued incorporating the necessary revisions.

The OWNER will establish such general reference points as in his judgment will enable the CONTRACTOR to proceed with the Work. The CONTRACTOR will be responsible for the layout of the Work and will protect and preserve the established reference points and will make no changes or relocations without the prior written approval of the OWNER. He will report to the ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations. The CONTRACTOR will replace and accurately relocate all reference points so lost destroyed or moved.

35. Substantial Completion

Prior to final payment, the CONTRACTOR shall, in writing to the OWNER and the ENGINEER, certify that the entire Project is substantially complete and request that the ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, the OWNER, CONTRACTOR AND ENGINEER will make an inspection of the Project to determine the status of completion. If the ENGINEER considers the Project substantially complete, he will prepare and deliver to the OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion and the responsibilities between the OWNER and the CONTRACTOR for maintenance, heat and utilities. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment, and the certificate shall fix the time within which such items shall be completed or corrected, said time to be within the Contract Time. The OWNER shall have seven days after receipt of the tentative certificate during which he shall make written objection to the ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, the ENGINEER concludes that the Project is not substantially complete, he shall notify the CONTRACTOR in



writing, stating his reasons therefore. If, after said seven days and after consideration of the OWNER'S objections, the ENGINEER considers the Project substantially complete, he will execute and deliver to the OWNER and the CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as he believes justified after consideration of any objections from the OWNER.

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

36. Cleaning Up

The CONTRACTOR will keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work, and at the completion of the Work he will remove all waste materials, rubbish and debris from and about the premises as well as tools, construction equipment and machinery, and surplus materials, and will leave the site clean and ready for occupancy by the OWNER. The CONTRACTOR will restore to their original condition those portions of the site not designated for alteration by the Contract Documents. Also see paragraph 7 of these Special Conditions pertaining to clean-up.

37. Miscellaneous

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

The duties and obligations imposed by the General Conditions and the rights and remedies available hereunder, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon the CONTRACTOR and the rights and remedies available to the OWNER and ENGINEER thereunder, shall be in addition to and not a limitation of any otherwise imposed or available by law, by special guarantee or other provisions of the Contract Documents.

Should the OWNER or the CONTRACTOR suffer injury or damage to its person or property because of any error, omission or act of the other or of any of his employees or agents or others for whose acts he is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.

The Contract Documents shall be governed by the law of the place of the Project.

38. Safety and Health Regulations

The Contractor shall comply with the Department of Labor Safety and Health Act of 1970 (P.L. 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (P.L. 91-54).

39. Siltation and Soil Erosion  
The Contractor shall make every effort possible to assure a minimum amount of siltation and erosion will occur on the job site during construction.
40. Permanent Reference Points, Bench Marks, and Property Markers  
The CONTRACTOR alone will be responsible for the protection and preservation of all permanent reference points, permanent bench marks, property corners, and property line points. The CONTRACTOR will make no changes or relocations without the written approval from the OWNER. The CONTRACTOR will report to the ENGINEER whenever any reference point, etc., is lost, damaged or destroyed or requires relocation and/or establishment of temporary points for relocation of said permanent point. The CONTRACTOR will have a registered land surveyor replace and accurately relocate all permanent points so lost, damaged, destroyed, or moved. The re-establishment of any said point shall be considered incidental to the cost of construction and therefore at no additional cost to the OWNER.
41. Existing Utilities  
Also see Technical Specifications, Section 02220.

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 public or private utility companies.

The available information concerning the location of existing underground utilities is shown on the Drawings. While it is believed that the locations shown are reasonably correct, neither the Engineer nor the Owner can guarantee the accuracy or adequacy of this information.

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) that are not shown on the Drawings. The Engineer and Owner have no objection to the Contractor arranging for the said utility companies, agencies, or departments to locate and uncover their own utilities; however, the Contractor shall bear the entire responsibility and cost for locating and avoiding, or repairing damage to said existing utilities.

Where existing utilities or appurtenant structures, either underground or above-ground, are encountered, they shall not be displaced or disturbed unless necessary, and in such case shall be replaced in as good or better condition than found as quickly as possible. Relocation and/or replacement of all utilities and appurtenant structures to accommodate the construction work shall be at the Contractor's expense, unless such relocation and/or replacement is by statute or agreement the responsibility of the owner of the utility.

Where a sewer line is to be installed within 18 inches vertically or 10 feet

horizontally of a water line, that section of the sewer line shall be encased in concrete, according to the requirements of Paragraph 3.10 B, Section 02700.

A list of the utility companies which service the project area are on the cover sheet of the drawings. The utilities are not limited to those on said list.

42. Coordination

All Contractors are advised that various Contracts will be awarded simultaneously with their Contracts. It is imperative that the various Contractors coordinate its activities and cooperate with the other Contractors to assure expedient completion of the Project. Any conflicts should be brought to the attention of the Engineer.

43. Care of Shrubbery

Reasonable care shall be taken during construction to avoid damage to vegetation. Ornamental shrubbery and tree branches shall be temporarily tied back, where appropriate, to minimize damage. Trees, which receive damage to branches, shall be trimmed of those branches to improve the appearance of the tree. Tree trunks receiving damage from equipment shall be treated with a tree dressing.

44. Water for Testing and Disinfecting Purposes

Where water is required for testing and disinfecting water lines and storage tanks or testing and flushing sewer lines, the Contractor shall be responsible for all costs of said water. In the case where test water is to be purchased, the Contractor shall arrange for the purchase and shall pay all costs associated with the purchase including tap fee if applicable.

Note: The Owner will furnish water to Contractors for testing and sterilization at a cost not to exceed \$2.00/1,000 gallons. Contractors are responsible for all charges for water losses caused by leaks which occur during the one year warranty period.

Water volume used for testing and sterilization shall be computed as the difference in the master readings and the average of the readings recorded during the six months prior to construction.

END OF SECTION



**SECTION 6**  
**TECHNICAL SPECIFICATIONS**



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TECHNICAL SPECIFICATIONS  
CONTRACT No. 10

150,000 GALLON ELEVATED WATER TANK

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SECTION 01010

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.0 WORK COVERED BY CONTRACT DOCUMENTS

1.1 SCOPE

Division 1 - General Requirements shall apply to all Divisions of the Specifications. Any conflict shall be called to the attention of the Engineer for clarification and ruling.

1.2 GENERAL DESCRIPTION

- A. These specifications and drawings accompanying them describe the work to be done and the materials to be furnished for installation of all specified work, on Contract No. 10 – 150,000 Gallon Elevated Water Tank.
- B. By submission of his bid, the Contractor acknowledges that he has acquainted himself with all conditions which may affect the work as would be evident from a thorough investigation of the job site, and these specifications covering the work for the purpose of coordinating his work and cost, and agrees that the Owner will not be held liable for any additional costs incurred by the Contractor for causes or conditions which could or should have been determined by such an investigation.

1.3 MANAGER'S NAME AND PHONE NUMBER

Mary Jo McCord, Chairman  
Nicholas County Water District  
1639 Old Paris Road (SR 32)  
Carlisle, KY 41749  
(859) 289 - 3157

1.4 The Drawings and Specifications are intended to be fully explanatory, however, should anything be shown, indicated or specified on one and not the other, it shall be done the same as if shown, indicated or specified in both.

1.5 It shall be the responsibility of all Contractors and subcontractors to carefully examine all Drawings, Specifications and Contract Documents pertaining to all phases of the construction in order that Contractor and Subcontractors may foresee all requirements for coordination of their work. Submission of a bid shall be construed as evidence that such an examination has been made. Claims based on unforeseen requirements will not be considered.

- 1.6 Should any error or inconsistency appear in Drawings or Specifications, the Contractor, before proceeding with the work, must make mention of the same to the Engineer for proper adjustment, and in no case proceed with the work in uncertainty or with insufficient drawings.
- 1.7 Contractors shall follow sizes in specifications or figures on drawings, in preference to scale measurements and follow detail drawings in preference to general drawings.
- 1.8 Where it is obvious that a drawing illustrates only a part of a given work or of a number of items, the remainder shall be deemed repetitious and so constructed.

## PART 2 - SCOPE OF WORK

### 2.1 WORK COVERED BY CONTRACT DOCUMENTS

### 2.2 GENERAL

- A. The work to be performed consists of furnishing all materials, labor, equipment and the execution of all operations necessary for the completion of Contract No. 10 – 150,000 Gallon Elevated Water Tank.

The major items of work include but are not limited to:

1. Construction of Water Distribution System Expansions, Contract No. 10 – 150,000 Gallon Elevated Water Tank and appurtenances. All miscellaneous items of work shown by the drawings and/or described in the specifications.

### 2.3 CONTRACTS

### 2.4 NOTICE AND SERVICE THEREOF

- A. Any notice to the Contractor from the Owner relative to any part of this Contract, shall be in writing and considered delivered and the service thereof completed, when such notice is posted, by mail, to the Contractor at his last given address, or delivered in person to the Contractor or his authorized representative on the work site.

### 2.5 DIVISION OF SPECIFICATIONS

Division of specifications into sections is done for convenience of reference and is not intended to control Contractors in dividing work among subcontractors or to limit scope of work performed by any trade under any given section.

## 2.6 CONFLICTS

- A. If and when doubt exists in the mind of the Bidder as to the true meaning of any part of the Bidding Documents, the Bidder shall request interpretation thereof in accordance with the Instructions to Bidders. Alleged "answers by telephone" will not be adjudged as legitimate interpretations of conflicting information. Official interpretations shall be by Addendum only, within the time frame indicated in the Instructions to Bidders and/or the individual sections of the Specifications.
- B. If a conflict occurs in or between bidding documents regarding methods of performing the work or the material required, and the Bidder does not obtain a written decision (official Addendum) with respect thereto prior to submitting his proposal, he shall be deemed to have bid upon the more expensive way of doing the work and the better quality of material. If the Owner and/or Engineer later elects to use the less expensive method, less expensive quality or less quantity of material the Owner shall receive a suitable credit.
- C. Refer to the General Conditions and Special Conditions for Contract requirements.
- D. The intent of the contract documents is to include all items necessary for the proper execution and completion of the work. Anything called for in the specifications and not shown on the drawings or shown on the drawings and not called for in the specifications, shall be included in the Contractor's work, the same as if included in both. In the event of a doubt arising as to the true intent and meaning of the drawings and specifications, the Contractor shall report it at once to the Engineer. The Engineer shall furnish, with reasonable promptness, additional instructions, by means of drawings or otherwise, necessary for the proper execution of the work. All such drawings and instructions shall be consistent with the contract documents, true developments thereof and reasonably inferable therefrom. The work shall be executed in conformity therewith and the Contractor shall do no work without proper drawings and instructions. In case of conflicts between the various contract documents, the order of precedence will be set out in Special Conditions at paragraph 12.
- E. The Contractor shall make a thorough examination of the site and study all drawings and specifications and all conditions relating to the erection of the work. Materials or labor evidently necessary for the proper and complete execution of the work, which are not specifically mentioned although reasonably inferred therefrom, shall be included in the work.

## 2.7 BENEFICIAL USAGE (SUBSTANTIAL COMPLETION)

- A. The date of beneficial usage of the project, or a designated portion thereof, is the date where construction is sufficiently completed on the project for the use for which it is intended.
- B. Corrective work and the replacement of defective equipment or materials and the adjustment of control apparatus shall not delay the determination of beneficial usage.
- C. When the majority of the work is complete and ready for operation, but cannot be certified as substantially complete because of incomplete items impossible to complete due to weather conditions, payments will be authorized for the amount of work completed, withholding reasonable amounts to cover the incomplete work. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims, and shall not terminate the contract.
- D. When the Owner begins to use the facilities or any portion thereof, prior to contract completion, the operation, maintenance, utilities and insurance become the responsibility of the Owner.

## 2.8 LIQUIDATED DAMAGES

Should the Contractor fail to complete the work under his Contract and make the Project available for Beneficial Usage on or before the date stipulated for Beneficial Usage (or such later date as may result from extensions in the Contract Time granted by the Owner), the Contractor agrees that the Owner is entitled to, and shall pay the Owner, as liquidated damages, the sum of Five Hundred Dollars (\$500.00) for each consecutive calendar day until Beneficial Usage (Substantial Completion) is reached as described herein.

## 2.9 SUBSTITUTION - MATERIALS AND EQUIPMENT

- A. Substitution of major equipment and materials previously submitted by the Contractor and reviewed by the Engineer will be considered only for the following reasons:
  - 1. Unavailability of the material or equipment due to conditions beyond the control of the supplier.
  - 2. Inability of the supplier to meet contract schedule.
  - 3. Technical noncompliance to specifications.
- B. Substitution of other equipment and materials named in the specifications will be considered, provided the proposed substitution will perform

adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function of that specified. The burden for proving equality is that of the Contractor.

- C. Inclusion of a certain make or type of materials or equipment in the Contractor's estimate shall not obligate the Owner to accept such material or equipment if it does not meet the requirements of the plans and specifications.
- D. Also, see Section 01600.

### PART 3 - CONTRACTOR USE OF PREMISES

#### 3.1 RELEASE OF SITE

- A. All access to the site shall be as defined by the Owner.
- B. Contractor shall insure that no hazardous situations exist at the site during working hours or are left during non-working hours.

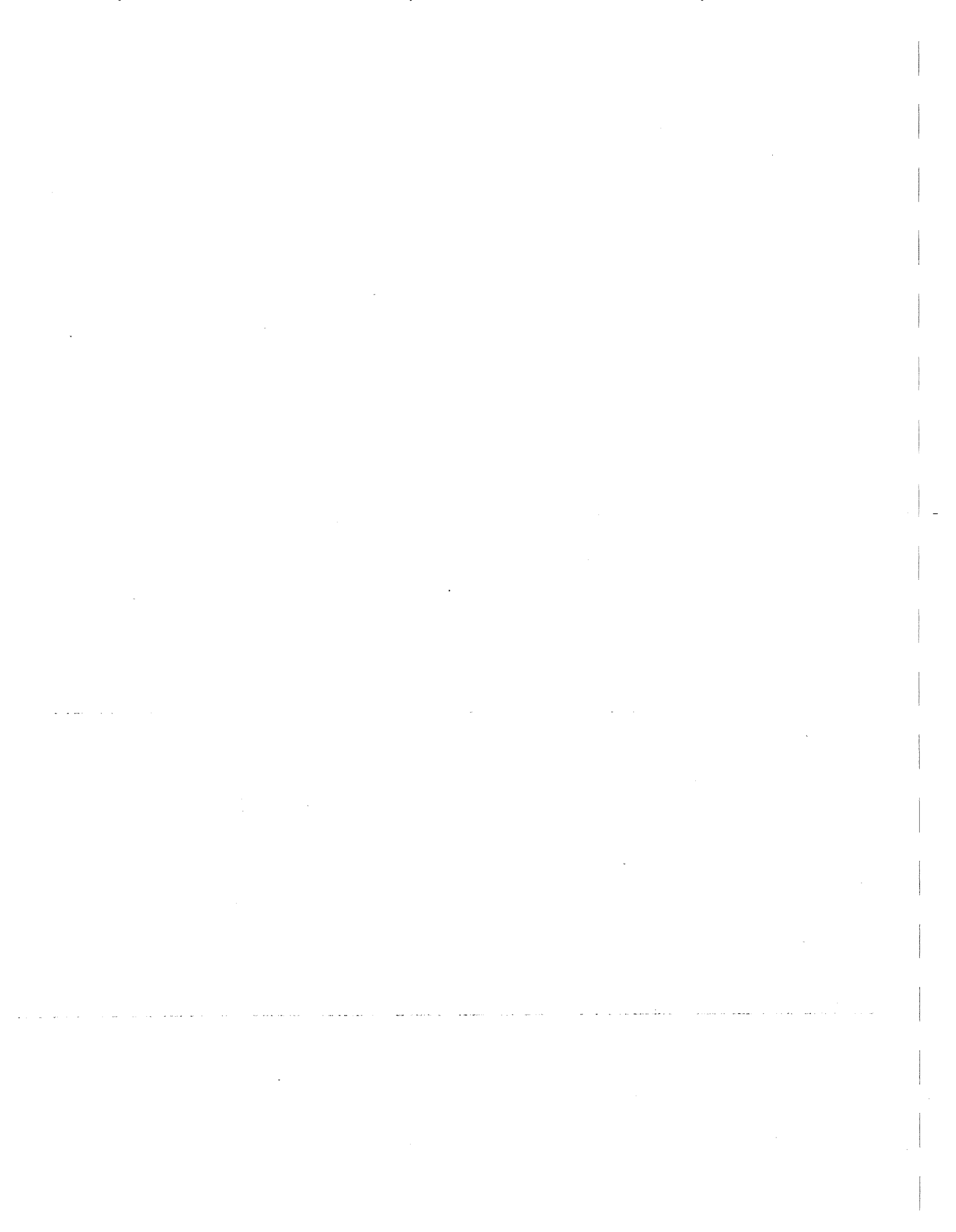
#### 3.2 SCHEDULING OF WORK

- A. The work shall be scheduled so the project can be put into service at the earliest possible date.
- B. All work shall be completed within time limits established in other portions of the Contract Documents.

#### 3.3 TRAFFIC MAINTENANCE

- A. All traffic must be maintained at all times on public streets and roadways. No road or street shall be closed without special written permission from the Owner.
- B. Traffic must be maintained on State maintained roads in accordance with the Standard Drawings, details and specification Section 01570. Contractor will be required to adhere to all provisions of the Kentucky Transportation Cabinet Permit for the project.

END OF SECTION



## SECTION 01030

## LABOR PROVISIONS

## PART 1 - GENERAL

## 1.1 FUNDING SOURCES

This project is being funded by Rural Development and Kentucky Infrastructure Authority funding.

## 1.2 WORK INCLUDED

The Contractor shall conform to all provisions of the Kentucky Department of Labor and Revised Statutes as they may apply to the work to be accomplished under these specifications. The Contractor shall also conform to all provisions of and Regulations that govern the work that supplement or supplant the Kentucky Department of Labor regulations.

## 1.3 WAGE RATES

The Applicable State Wage Decisions are provided herein at Section 4. These schedules of wages shall govern the work. The Contractor shall post at appropriate, conspicuous points at the project site, copies of these wage decisions. The Contractor will utilize, when feasible, local labor and will pay them wages commensurate with these prevailing wages. Two (2) copies of all payroll records shall be submitted to the OWNER within one week after each pay period.

## 1.4 HOURS OF WORK

Hours of work shall be as set by the latest State Wage Laws and Regulations. Overtime shall be determined and paid pursuant to the latest State Wage Laws.

Whenever overtime work is scheduled, the Contractor shall give prior notice to the Owner & Engineer.

## 1.5 NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246 AND 41 CFR PART 60-41)

The following Notice shall be included in, and shall be a part of all solicitations for offers and bids in all Federal and federally assisted construction contracts or subcontracts in excess of \$10,000.00.

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

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

#### TIMETABLES

Goals for minority participation for each trade	Goals for female participation for each trade
7.0%	6.9%

These goals are applicable to all Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer to minority or female employees or trainees from purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed. The Contractor shall provide written notification to the appropriate Regional Office of the Office of Federal Contract Compliance Programs within 10 working days of award of any work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor, employer identification number, estimated dollar amount of the subcontract, estimated starting and completion dates of the subcontract, estimated starting and completion dates of the subcontract and the geographical area in which the contract is to be performed.

As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is Spencer County.

- END OF SECTION -



## SECTION 01040

## COORDINATION

## PART 1 - GENERAL

## 1.1 COORDINATION OF THE WORK

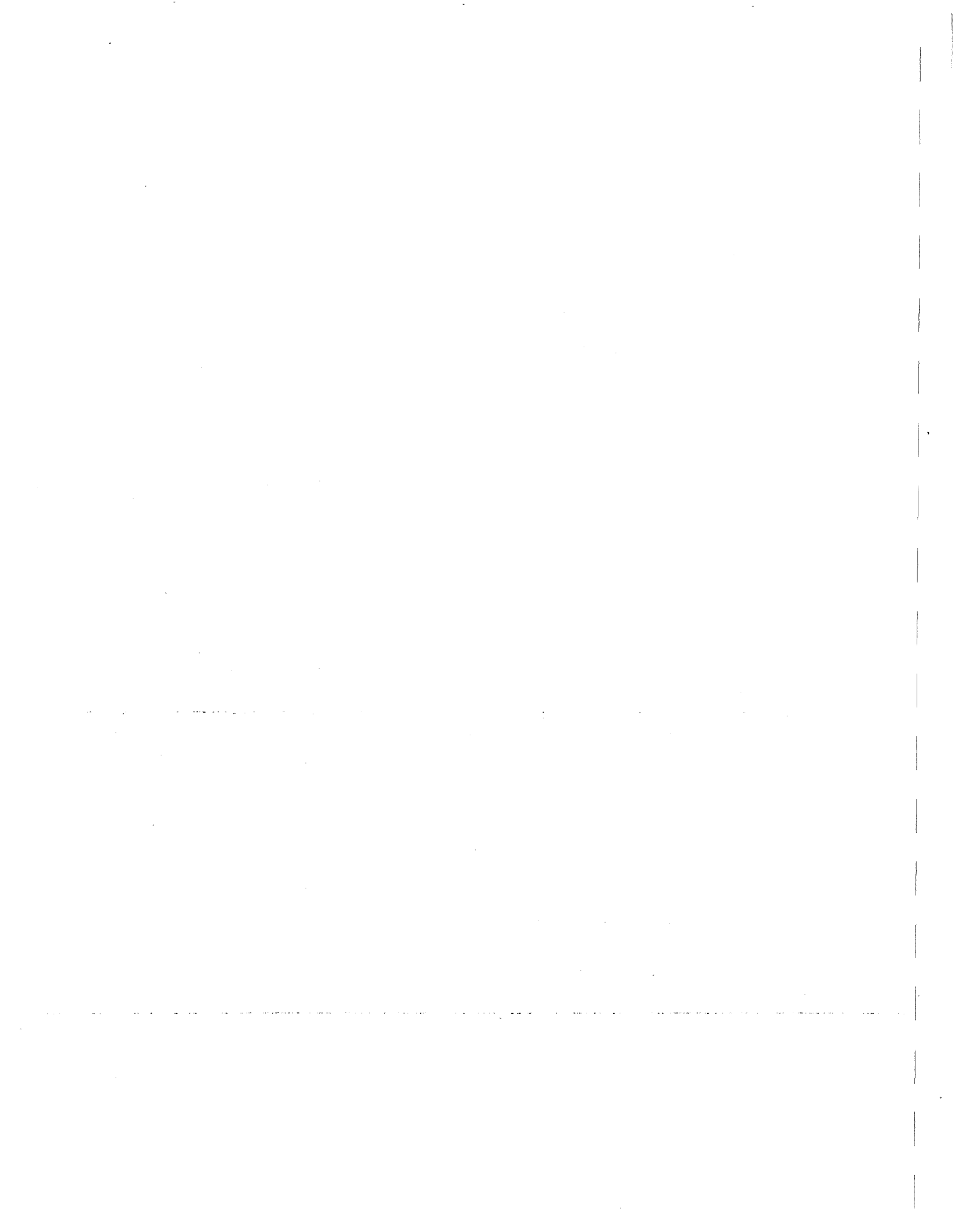
The Contractor shall coordinate the work of all the crafts, trades, and subcontractors engaged on the Work, and he shall have final responsibility as regards the schedule, workmanship, and completeness of each and all parts of the Work.

All crafts, trades, and subcontractors shall be made to cooperate with each other and with others as they may be involved in the installation of work which adjoins, incorporates, precedes, or follows the work of another. It shall be the Contractor's responsibility to point out areas of cooperation prior to the execution of subcontract agreements and the assignment of the parts of the Work. Each craft, trade, and subcontractor shall be made responsible to the Owner, for furnishing embedded items, giving directions for doing all cutting and fitting, making all provisions for accommodating the Work, and for protecting, patching, repairing, and cleaning as required to satisfactorily perform the Work.

The Contractor shall be responsible for all cutting, digging, and other action of his subcontractors and workmen. Where such action impairs the safety or function of any structure or component of the Project, the Contractor shall make such repairs, alterations, and additions as will, in the opinion of the Engineer, bring said structure or component back to its original design condition at no additional cost to the Owner.

Each subcontractor is expected to be familiar with the General requirements and all sections of the Detailed Specifications for all other trades and to study all Drawings applicable to his work and to the end that complete coordination between trades will be affected. Each Contractor shall consult with the Engineer if conflicts exist on the Drawings.

END OF SECTION



## SECTION 01050

## FIELD ENGINEERING

## PART 1 - GENERAL

## 1.1 WORK INCLUDED

## A. Contractor's Responsibility

1. It shall be the Contractors' responsibility to establish all lines, elevations, reference marks, batter boards needed by the Contractor during the progress of the Work. The Engineer shall have final approval of location of all facilities.
2. The Engineer shall be permitted at all times to check the lines, elevations, reference marks, and batter boards, set by the Contractor, who shall correct any errors in lines, elevations, reference marks, batter boards, etc., disclosed by such check. Such a check shall not be construed to be an approval of the Contractor's work and shall not relieve or diminish in any way the responsibility of the Contractor for the accurate and satisfactory construction and completion of the entire Work.
3. The Contractor shall make, check, and be responsible for all measurements and dimensions necessary for the proper construction of and the prevention of misfittings in the Work.

## B. Work to Conform

1. During the progress and on its completion, the work shall conform truly to the lines, levels, and grades indicated on the Drawings or given by the Engineer and shall be built in a thoroughly substantial and workmanlike manner, in strict accordance with the Drawings, Specifications, and other Contract Documents and the directions given by the Engineer.
2. All work done without instructions having been given by the Engineer, without proper lines or levels, or performed during the absence of the Engineer, will not be estimated or paid for except when such work is authorized by the Engineer in writing. Work so done may be ordered uncovered or taken down, removed, and replaced at the Contractor's expense.

## C. Pipe Location:

1. Exterior pipelines will be located substantially as indicated on the Drawings, but the right is reserved by the Owner, acting through the Engineer, to make such modifications in location as may be necessary. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required.

## D. Limits of Normal Excavation:

1. In determining the quantities of excavation to which unit prices shall apply, the limits of normal width and depth of excavation shall be as described below, unless other limits are indicated on the Drawings or specified.

2. 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 than 2'6" plus the nominal diameters of the pipe at the level of or below the top of the pipe. Trenches cut in roads and streets shall not exceed a maximum width of 2'6" plus the nominal diameters of the pipe at the level of the road or street surface. The normal depth shall be measured to a distance of 0.2 feet below the bottom of the pipe in earth and 0.5 feet in rock, unless there is a cradle underneath the pipe, in which case the normal depth shall be measured to the underside of the cradle. The width of trench for the cradle shall be assumed to be that specified above for pipes in trench.
3. For concrete placed directly against the undisturbed earth, the normal width and depth of the excavation for such concrete shall be measured to the neat lines of the concrete as indicated on the Drawings or as ordered.
4. For concrete placed against rock surfaces resulting from rock excavation, the normal width and depth of the excavation shall be measured to 4 inches outside the neat lines of the concrete as indicated on the Drawings or as ordered.
5. For other structures, except manholes as noted below, the normal width shall be measured between vertical planes one foot outside the neat lines of the several parts of the structure, except that the width at any elevation shall be measured as not less than the width at a lower elevation. The normal depth shall be measured to the underside of that part of the structure for which the excavation is made.
6. No additional width or depth of trenches excavated in earth or rock shall be allowed at standard circular manholes.
7. Wherever bell holes are required for jointing pipe, they shall be provided without additional compensation over and above that resulting from measurements as above described.
8. Anchor bolts and expansion bolts shall be set accurately. If anchor bolts are set before the concrete has been placed, they shall be carefully held in suitable templates of acceptable design. Where indicated on the Drawings, specifications or as required, anchor bolts shall be provided with square plates at least 4 inches by 4 inches by 3/8 inch or shall have square heads and washers and be set in the concrete forms with suitable pipe sleeves, or both. If anchor or expansion bolts are set after the concrete has been placed, all necessary drilling and grouting or caulking shall be done by the Contractor. Care shall be taken not to damage the structure or finish by cracking, chipping, spalling, or otherwise drilling and caulking.

## PART 2 - PRODUCTS

NOT USED

## PART 3 - EXECUTION

NOT USED

END OF SECTION

## SECTION 01060

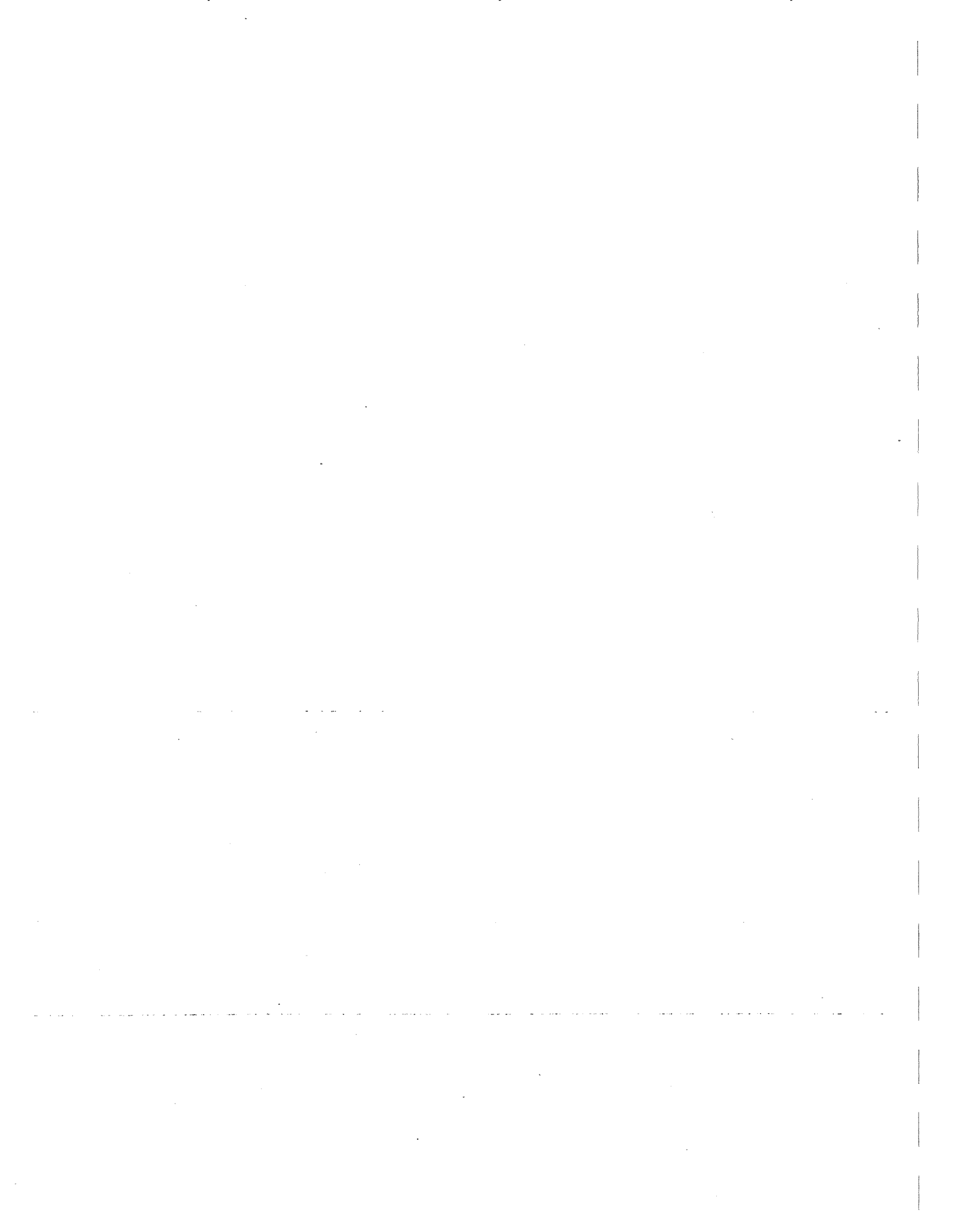
## REGULATORY REQUIREMENTS

1.0 CODES

All construction work shall be done in strict accordance with the latest edition of the Kentucky Building Code, National Electrical Code (NEC) and supplements, the requirements of the local electrical utility company, local codes, and as specified herein. All work shall be performed by skilled workmen in a neat manner and all equipment shall be cleaned before final acceptance. A partial list of codes is as follows:

- Kentucky Building Code
- City and/or County Building Inspector
- National and Local Electrical Codes
- National Fire Protection Association (NFPA)
- State Fire Marshal
- Local Fire Marshal
- Standards of Safety
- O.S.H.A.
- KY Division of Water

END OF SECTION



## SECTION 01070

## ABBREVIATIONS AND SYMBOLS

## PART 1 - GENERAL

## 1.1. REQUIREMENTS INCLUDED

Where any of the following abbreviations are used in the Contract Documents, they shall have the meaning set forth as follows.

## 1.2. QUALITY ASSURANCE

- A. For the products or workmanship specified by association, trade, or Federal Standards comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. The date of the standard is that in effect as of the Bid date, or date of Owner-Contractor Agreement when there are no bids, except when a specific date is specified.
- C. When required by individual Specifications section, obtain a copy of standard. Maintain a copy at job site during submittals, planning and progress of the specific work, until Substantial Completion.

## 1.3. SCHEDULE OF REFERENCES

AASHTO American Association of State Highway and Transportation Officials

ACI American Concrete Institute

AFBMA Anti-Friction Bearing Manufacturers Association.

AGA American Gas Association

AGMA American Gear Manufacturers Association

IEEE Institute of Electrical and Electronic Engineers, Inc.

AISC American Institute of Steel Construction

AMCA Air Moving and Conditioning Association

ANS American National Standards Institute

API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASHRAE Engineers	American Society of Heating, Refrigerating and Air Conditioning
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
CS	Commercial Standard
IBR	Institute of Boiler and Radiator Manufacturers
IPS	Iron Pipe Size
JIC	Joint Industry Conference Standards
KDOH	Kentucky Department of Highways
NBS	National Bureau of Standards
NEC	National Electrical Code; latest edition
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.
Fed.	Federal Specifications issued by the Federal Supply Spec. Service of the General Services Administration, Washington, D.C.
125-lb ANS	American National Standard for Cast-Iron Pipe
150-lb ANS	Flanges and Flanged Fittings, Designation B16.1-1975, for the appropriate class
AWG	American or Brown and Sharpe Wire Gage



NPT	National Pipe Thread
OS&Y	Outside screw and yoke
Stl.Wg	U. S. Steel Wire, Washburn and Moen, American Steel and Wire or Roebling Gage
UL	Underwriters' Laboratories
USS	United States Standard Gage
WOG	Water, Oil, Gas
WSP	Working Steam Pressure

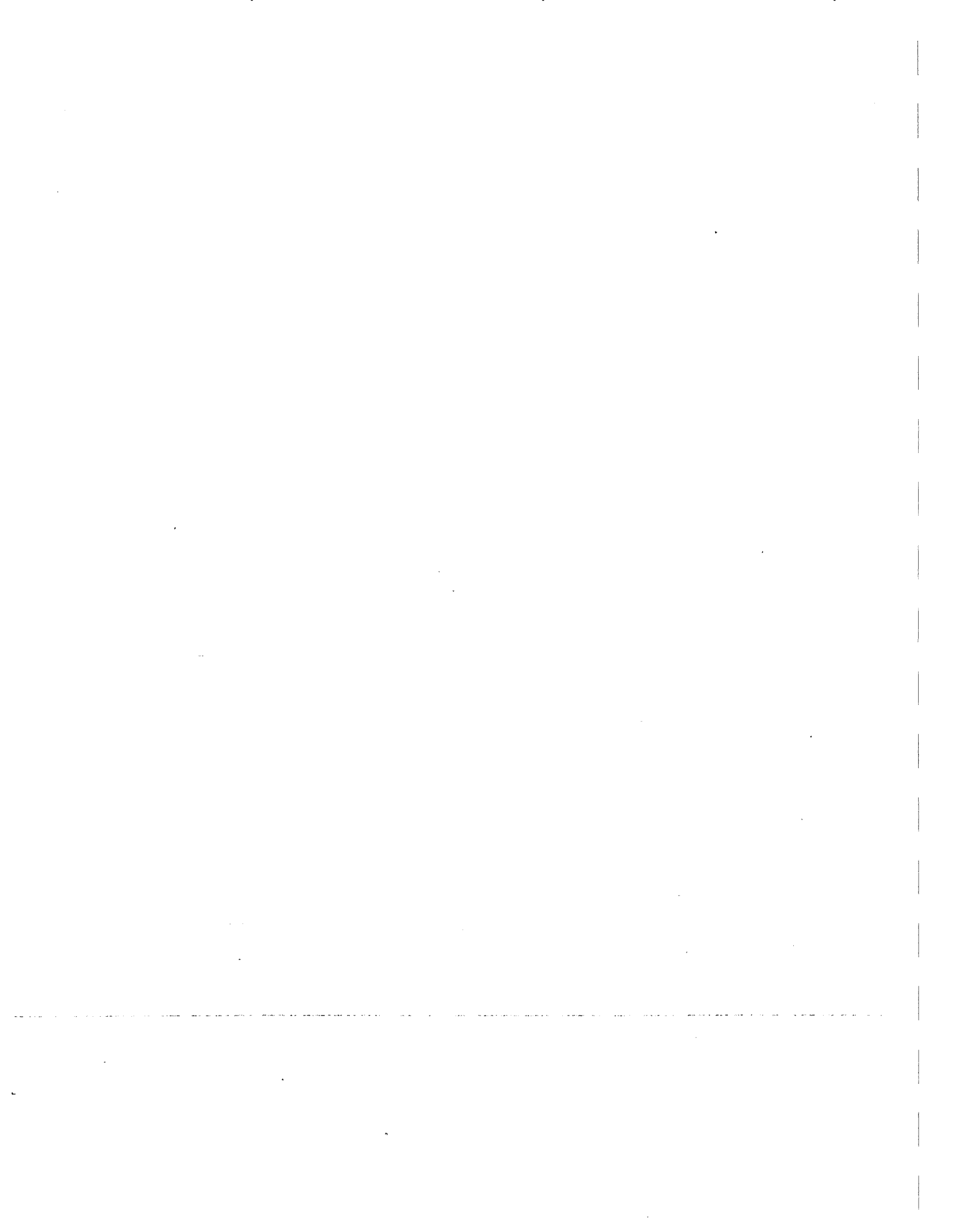
PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION



SECTION 01090

REFERENCE STANDARDS

PART 1 - GENERAL

1.1. QUALITY ASSURANCE

- A. For Products or workmanship specified by association, trade, or Federal Standards comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Material shall bear Underwriters' Laboratories label where such a standard has been established and listed by Underwriters' Laboratories, Inc. All materials, equipment and appliances shall conform to requirements of standards referenced here.
- C. Conform to reference standard by date of issue current on date of Contract Documents.
- D. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.2. SCHEDULE OF REFERENCES

ACI American Concrete Institute  
Box 19150  
Reford Station  
Detroit, MI 48219

AGC Associated General Contractors of America  
1957 E Street, N.W.  
Washington, DC 20006

AITC American Institute of Timber Construction  
333 W. Hampden Avenue  
Englewood, CO 80110

ANSI American National Standards Institute  
1430 Broadway  
New York, NY 10018

- ASTM American Society for Testing and Materials  
1916 Race Street  
Philadelphia, PA 19103
- CDA Copper Development Association  
57th Floor, Chrysler Building  
405 Lexington Avenue  
New York, NY 10174
- CRSI Concrete Reinforcing Steel Institute  
933 Plum Grove Road  
Schaumburg, IL 60195
- FCC Federal Communications Commission  
DOT, M443.2  
Utilization and Storage Section  
Washington, DC 20590
- FM Factory Mutual System  
1151 Boston-Providence Turnpike  
Norwood, MA 02062
- IEEE Institute of Electrical and Electronics Engineers  
345 East 47th Street  
New York, NY 10017
- NEMA National Electrical Manufacturers' Association  
2101 L Street, N.W.  
Washington, DC 20037
- NFPA National Fire Protection Association  
1619 Massachusetts Avenue, N.W.  
Washington, DC 20036
- PCA Portland Cement Association  
5420 Old Orchard Road  
Skokie, IL 60077
- REA Rural Electrification Administration  
USDA-REA-ASD  
Room 0180  
ATTN: Publications  
14th and Independence Avenue, S.W.  
Washington, DC 20250

UL Underwriters' Laboratories, Inc.  
333 Pfingston Road  
Northbrook, IL 60062

## PART 2 - REFERENCED STANDARDS

All work performed in connection with this contract shall be in accordance with the latest version of the following standards:

Occupational Safety and Health Administration (OSHA)

Applicable Telecommunications Standards

National Fire Protection Association

National Electrical Code (NEC)

National Electrical Safety Code (NESC)

Federal Communications Commission

National Telecommunications and Information Administration

Electronics Industries Association (EIA)

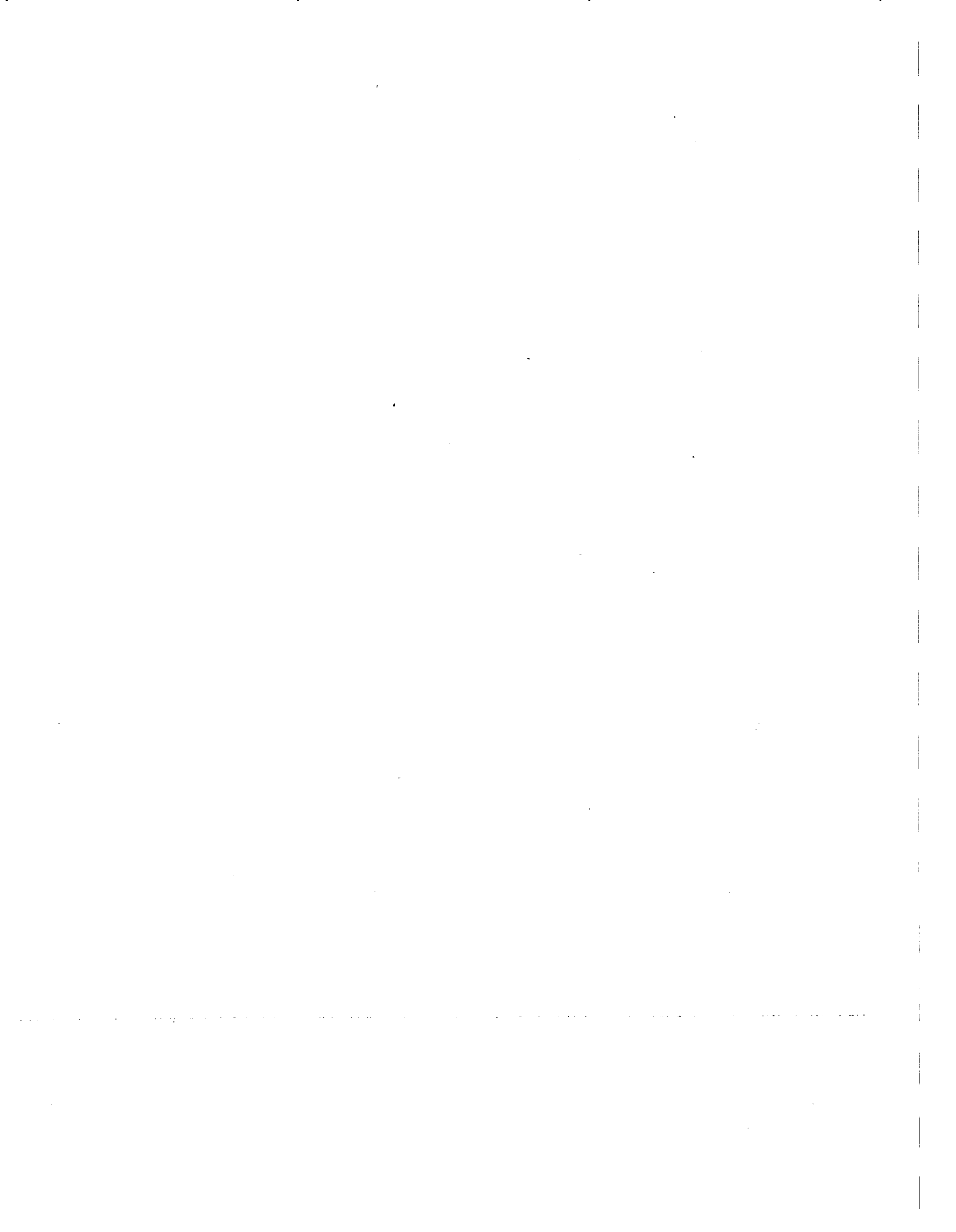
American National Standards Institute

Rural Electrification Administration

## PART 3 - EXECUTION

NOT USED.

END OF SECTION



## SECTION 01300

## SUBMITTALS

## PART 1 - GENERAL

## 1.1. WORK INCLUDED

Shop drawings, descriptive literature, project data and samples (when samples are specifically requested) for all manufactured or fabricated items shall be submitted by the Contractor to the Engineer for examination and review in the form and in the manner required by the Engineer. All submittals shall be furnished as set out in paragraph 1.5 hereinafter and shall be checked and reviewed and stamped and signed as approved by the Contractor before submission to the Engineer. The review of the Drawings by the Engineer shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is satisfactory. Review of such drawings will not relieve the Contractor of the responsibility for any errors which may exist, as the Contractor shall be responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work.

## 1.2. RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. General Conditions.

B. Section 01720 - Project Record Documents (As Built).

## 1.3. DEFINITIONS

The term "submittals" shall mean shop drawings, manufacturer's drawings, catalog sheets, brochures, descriptive literature, diagrams, schedules, calculations, material lists, performance charts, test reports, office and field samples, and items of similar nature which are normally submitted for the Engineer's review for conformance with the design concept and compliance with the Contract Documents.

## 1.4. GENERAL CONDITIONS

Review by the Engineer of shop drawings or submittals of material and equipment shall not relieve the Contractor from the responsibilities of furnishing same of proper dimension, size, quality, quantity, materials, and all performance characteristics to efficiently perform the requirements and intent of the Contract Documents. Review shall not relieve the Contractor from the responsibility for errors of any kind on the shop drawings. Review is intended only to assure conformance with the design concept of the Project and compliance with the information given in the Contract Documents.

Review of shop drawings shall not be construed as releasing the Contractor from the responsibility of complying with the Specifications.

## 1.5. GENERAL REQUIREMENTS FOR SUBMITTALS

### A. Shop Drawings

1. Shop drawings shall be prepared by a qualified detailer. Details shall be identified by reference to sheet and detail numbers shown on Contract Drawings. Where applicable, show fabrication, layout, setting, and erection details.
  2. Shop drawings are defined as original drawings prepared by the Contractor, subcontractors, suppliers, or distributors performing work under this Contract. Shop drawings illustrate some portion of the work and show fabrication, layout, setting, or erection details of equipment, materials, and components. The Contractor shall, except as otherwise noted, have prepared the number of reviewed copies required for contractor distribution plus three (3), which will be retained by the Engineer. Shop drawings shall be folded to an approximate size of 8-1/2" x 11" and in such manner that the title block will be located in the lower right-hand corner of the exposed surface.
- B. Project data shall include manufacturer's standard schematic drawings modified to delete information which is not applicable to the Project, and shall be supplemented to provide additional information applicable to the Project. Each copy of descriptive literature shall be clearly marked to identify pertinent information as it applies to the Project.
- C. Where samples are required, they shall be adequate to illustrate materials, equipment, or workmanship, and to establish standards by which completed work is judged. Provide sufficient size and quantity to clearly illustrate functional characteristics of product and material, with integrally related parts and attachment devices, along with a full range of color samples.
- D. All submittals shall be referenced to the applicable item, section, and division of the Specifications, and to the applicable Drawing(s) or Drawing schedule(s). All submittals shall bear the Engineer's project code as noted in the upper right corner of this sheet.



- E. The Contractor shall review and check submittals. Including those of any sub-contractor(s) and shall indicate his review and approval by placing and executing the following on all shop drawings:

This shop drawing has been reviewed by [Name of Contractor] and approved with respect to the mean, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incidental thereto. [Name of Contractor] also warrants that this shop drawing complies with contract documents and comprises no variation thereto.

By \_\_\_\_\_  
Date \_\_\_\_\_

- F. If the submittals deviate from the Contract Drawings and/or Specifications, the Contractor shall advise the Engineer, in letter of transmittal of the deviation and the reasons therefore. All changes shall be clearly marked on the submittal with a bold red mark. Any additional costs for modifications shall be borne by the Contractor.
- G. In the event the Engineer does not specifically reject the use of material or equipment at variance to that which is shown on the Drawings or specified, the Contractor shall, at no additional expense to the Owner, and using methods reviewed by the Engineer, make any changes to structures, piping, controls, electrical work, mechanical work etc., that may be necessary to accommodate this equipment or material. Should equipment other than that on which design drawings are based be accepted by the Engineers, shop drawings shall be submitted detailing all modification work and equipment changes made necessary by the substituted items.
- H. Additional information on particular items, such as special drawings, schedules, calculations, performance curves, and material details, shall be provided when specifically requested in the technical Specifications.
- I. Submittals for all electrically operated items (including instrumentation and controls) shall include complete wiring diagrams showing leads, runs, number of wires, wire size, color coding, all terminations and connections, and coordination with related equipment.
- J. Equipment shop drawings shall indicate all factory or shop paint coatings applied by suppliers, manufacturers, and fabricators; the Contractor shall be responsible for ensuring the compatibility of such coatings with the field-applied paint products and systems.

- K. Fastener specifications of manufacturer shall be indicated on equipment shop drawings.
- L. Where manufacturers' brand names are given in the Specifications for building and construction materials and products, such as grout, bonding compounds, curing compounds, masonry cleaners, waterproofing solutions, and similar products, the Contractor shall submit names and descriptive literature of such materials and products he proposes to use in this Contract.
- M. No material shall be fabricated or shipped unless the applicable drawings or submittals have been reviewed by the Engineer and returned to the Contractor.
- N. All bulletins, brochures, instructions, parts lists, and warranties packaged with and accompanying materials and products delivered to and installed in the Project shall be saved and transmitted to the Owner through the Engineer.

#### 1.6. CONTRACTOR RESPONSIBILITIES

- A. Verify field measurements, field construction criteria, catalog numbers, and similar data.
- B. Coordinate each submittal with requirements of Work and of Contract Documents.
- C. Notify Engineer, in writing at time of submission, of deviation in submittals from requirement of Contract Documents.
- D. Begin no work, and have no material or products fabricated or shipped which require submittals until return of submittals with Engineer's stamp and initials or signature indicating review.

#### PART 2 - PRODUCTS

NOT USED.

#### PART 3 - EXECUTION

NOT USED.

END OF SECTION

## SECTION 01410

## TESTING LABORATORY SERVICES

## PART 1 - GENERAL

## 1.1. REQUIREMENTS

- A. The Contractor shall employ and pay for the services of a certified independent testing laboratory to perform specified services and testing.
- B. It is the Contractors responsibility to verify that the laboratory meets the required standards and qualifications.

## 1.2. RELATED REQUIREMENTS

- A. CONDITIONS OF THE CONTRACT
- B. Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities.
- C. Testing laboratory inspection, sampling and testing is required for the following sections and as specified:

Section 03300: Concrete For Building Construction

## 1.3. QUALIFICATION OF LABORATORY

- A. Meet "Recommended Requirements for Independent Laboratory Qualification": published by American Council of Independent Laboratories.
- B. Meet basic requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction."
- C. Authorized to operate in the state in which the project is located.
- D. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection with memorandum of remedies of any deficiencies reported by the inspection.
- E. Test Equipment
  - 1. Calibrated at reasonable intervals by devices of accuracy traceable to either:
    - a. National Bureau of Standards.
    - b. Accepted values of natural physical constants.

#### 1.4. LABORATORY DUTIES

- A. Cooperate with Owner, Engineer and Contractor; provide qualified personnel after due notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
  - 1. Comply with specified standards.
  - 2. Ascertain compliance of materials with requirements of Contract Documents.
- C. Promptly notify Engineer and Contractor of observed irregularities or deficiencies of work or products.
- D. Promptly submit written report of each test and inspection; one copy each to Engineer, Owner, Contractor, and one copy to Record Documents File. Submittal schedule for each time of test shall be approved by Engineer prior to construction of any item that requires testing. Each report shall include:
  - 1. Date issued.
  - 2. Project title and number.
  - 3. Testing laboratory name, address and telephone number.
  - 4. Name and signature of laboratory inspector.
  - 5. Date and time of sampling or inspection.
  - 6. Record of temperature and weather conditions.
  - 7. Date of test.
  - 8. Identification of product and specification section.
  - 9. Location of sample or test in the project.
  - 10. Type of inspection or test.
  - 11. Results of tests and compliance with Contract Documents.
  - 12. Interpretation of test results, when requested by Engineer or owner.
- E. Perform additional tests required by Engineer or the Owner.

#### 1.5. LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to:
  - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
  - 2. Approve or accept any portion of the work.
  - 3. Perform any duties of the Contractor.

#### 1.6. CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel and provide access to work as required.
- B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.
- D. Furnish copies of products test reports as required.
- E. Furnish incidental labor and facilities:
  - 1. To provide access to work to be tested.
  - 2. To obtain and handle samples at the project site or at the source of the product to be tested.
  - 3. To facilities inspections and tests.
  - 4. For storage and curing of test samples.
- F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
  - 1. When tests of inspections cannot be performed after such notice, reimburse laboratory personnel for expenses incurred due to negligence.
- G. Employ and pay for the services of a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required.
  - 1. For convenience.
  - 2. When initial tests indicate work does not comply with Contract Documents.

#### PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED.

END OF SECTION

## SECTION 01420

## INSPECTION SERVICES

## PART 1 - TEST AND INSPECTION

## 1.1. GENERAL

- A. The Engineer shall be notified forty-eight (48) hours in advance when equipment is to be subjected to tests before any work is concealed and before trenches are backfilled. Failing to comply with the above-mentioned notice, this Contractor shall uncover the work for the Engineer's observation, and repair any damages to other Contractor's work. This Contractor shall provide these services without charge.
- B. Periodic inspection shall be scheduled by the Contractor for rough as well as finished work. The rough-in inspections shall be divided into as many inspections as may become necessary to cover all roughing-in.
- C. Before requesting a final inspection, this Contractor shall inspect the installation to assure that the job is complete in every detail and that all requirements of the Contract Documents have been fulfilled.
- D. A punch list inspection shall be scheduled by this Contractor with the Engineer or his representative present. The punch list inspection shall be made with junction box covers removed.
- E. The Contractor shall be responsible and shall pay all costs for the preparation, job curing (if required) and transportation of materials and equipment to the laboratory or inspection agency retained by the Owner except where these documents say specifically the Owner will pay these costs.
- F. The Contractor will be responsible for the procurement, administration and payment of all specified inspection and testing procedures. Only qualified licensed/ certified firms for the designated services will be approved. The Contractor shall submit the names of the firms for approval by the Owner prior to administering of the inspection or testing services.

## 1.2. ELECTRICAL INSPECTION

- A. Electrical inspections will be performed throughout the course of construction by a certified electrical inspector from the State Fire Marshal's Office.
- B. All cost of the electrical inspections shall be borne by the Contractor.

- C. Acceptance by the electrical inspector, however, does not relieve the Contractor from the responsibility of the requirements set forth in these Plans and Specifications. All work under this Contract is subject to the observation of the Engineer. When it is the opinion of the Engineer that the Contractor has failed to properly coordinate his work or provide materials and installation, or to meet the intent of these specifications, the codes and standards, then the Contractor shall remove the work and replace the work to meet the intent of the Specifications, Codes, and Standards without reimbursement.

### 1.3 CERTIFICATES

The Contractor shall furnish the Owner with Certificates of Inspections and Approval where required.

### PART 2 - PRODUCTS

NOT USED.

### PART 3 - EXECUTION

NOT USED.

END OF SECTION



SECTION 01440

CONTRACTOR QUALITY CONTROL

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. The General Contractor shall set forth for immediate execution a detailed and well organized quality control plan and implementation program.

1.2. CODES, STANDARDS AND INDUSTRY SPECIFICATIONS

- A. Material or operations specified by reference to published specifications of a manufacturer, testing agency, society, association or other published standards shall comply with requirements in latest revisions thereof and amendments or supplements thereto in effect on date of (Advertisement for Bids).
- B. Discrepancies between referenced codes, standards, specifications and Contract Documents shall be governed by the latter unless written interpretation is obtained from Engineer.
- C. Material or work specified by reference to conform to a standard, code, law or regulation shall be governed by Contract Documents when they exceed requirements of such references; referenced standards shall govern when they exceed Contract Documents.
- D. Proof of Compliance

Whenever Contract Documents require that a project be in accordance with Federal Specification, ASTM designation, ANSI specification, or other association standard, at Engineer request, Contractor shall present an affidavit from manufacturer certifying that product complies therewith. Where requested or specified, submit supporting test data to substantiate.

E. PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices and/or lump-sum prices contained in the Bidding Schedule.

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices and/or lump-sum prices

contained in the Bidding Schedule.

## PART 2 – PRODUCTS

NOT USED

## PART 3 – EXECUTION

### 3.1. GENERAL

The General Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract. The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both on-site and off-site, and shall be keyed to the proposed construction sequence.

### 3.2. QUALITY CONTROL PLAN

#### A. General

The General Contractor shall furnish for review by the Engineer and Owner not later than 30 days after receipt of notice to proceed, a Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract. The plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used. The Engineer will consider an interim plan for the first 30 days of operation.

#### B. Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Engineer/Owner reserves the right to require the Contractor to make changes in his CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.

### 3.3. SUBMITTALS

Submittals shall be as specified in Section 01300 SUBMITTAL. The CQC organization shall be responsible for certifying that all submittals are in compliance with the contract requirements.

### 3.4. CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. The controls shall be adequate to cover all construction operations, including both on-site and off-site fabrication, and will be keyed to the proposed construction sequence.

### 3.5. TESTS

#### A. Testing Procedure

The Contractor shall perform tests specified or required to verify that control measures are adequate to provide a product which conforms to contract requirements. Testing includes operation and/or acceptance tests when specified. A list of tests to be performed shall be furnished as a part of the CQC plan. The list shall give the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required. The Contractor shall perform the following activities and record and provide the following data:

1. Verify that testing procedures comply with contract requirements.
2. Verify that facilities and testing equipment are available and comply with testing standards.
3. Check test instrument calibration data against certified standards.
4. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
5. Results of all tests taken, both passing and failing tests, will be recorded on the Quality Control report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test will be given. Actual test reports may be submitted later, if approved by the Engineer, with a reference to the test number and date taken. An information copy of tests performed by an off-site or commercial test facility will be provided directly to the Engineer. Failure to submit timely test reports, as stated, may result in nonpayment for related work performed and disapproval of the test facility for this contract.

#### B. Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials will be borne by the Contractor.

### 3.6. COMPLETION INSPECTION

At the completion of all work or any increment thereof established by a completion time, the Contractor shall conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved plans and specifications. Such a list of deficiencies shall be included in the CQC documentation, and shall include the estimated date by which the deficiencies will be corrected. The Contractor shall make a second inspection to ascertain that all deficiencies have been corrected and so notify the Engineer. These inspections and any deficiency corrections required by this paragraph will be accomplished within the time stated for completion of the entire work or any particular increment thereof if the project is divided into increments by separate completion dates.

### 3.7. DOCUMENTATION

The Contractor shall maintain current records of quality control operations, activities, and tests performed, including the work of subcontractors and suppliers. These records shall be on an acceptable form and shall include factual evidence that required quality control activities and/or tests have been performed, including but not limited to the following:

- A. Contractor/subcontractor and their area of responsibility.
- B. Operating plant/equipment with hours worked, idle, or down for repair.
- C. Work performed today, giving location, description, and by whom.
- D. Test and/or control activities performed with results and references to specifications/plan requirements.
- E. Material received with statement as to its acceptability and storage.
- F. Identify submittals reviewed, with contract reference, by whom, and action taken.
- G. Off-site surveillance activities, including actions taken.
- H. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- I. List instructions given/received and conflicts in plans and/or specifications.
- J. Contractor's verification statement.
- K. These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and

any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Engineer weekly within 20 hours after the date(s) covered by the report, except that reports need not be submitted for days on which no work is performed. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the Contractor. The report from the Contractor shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

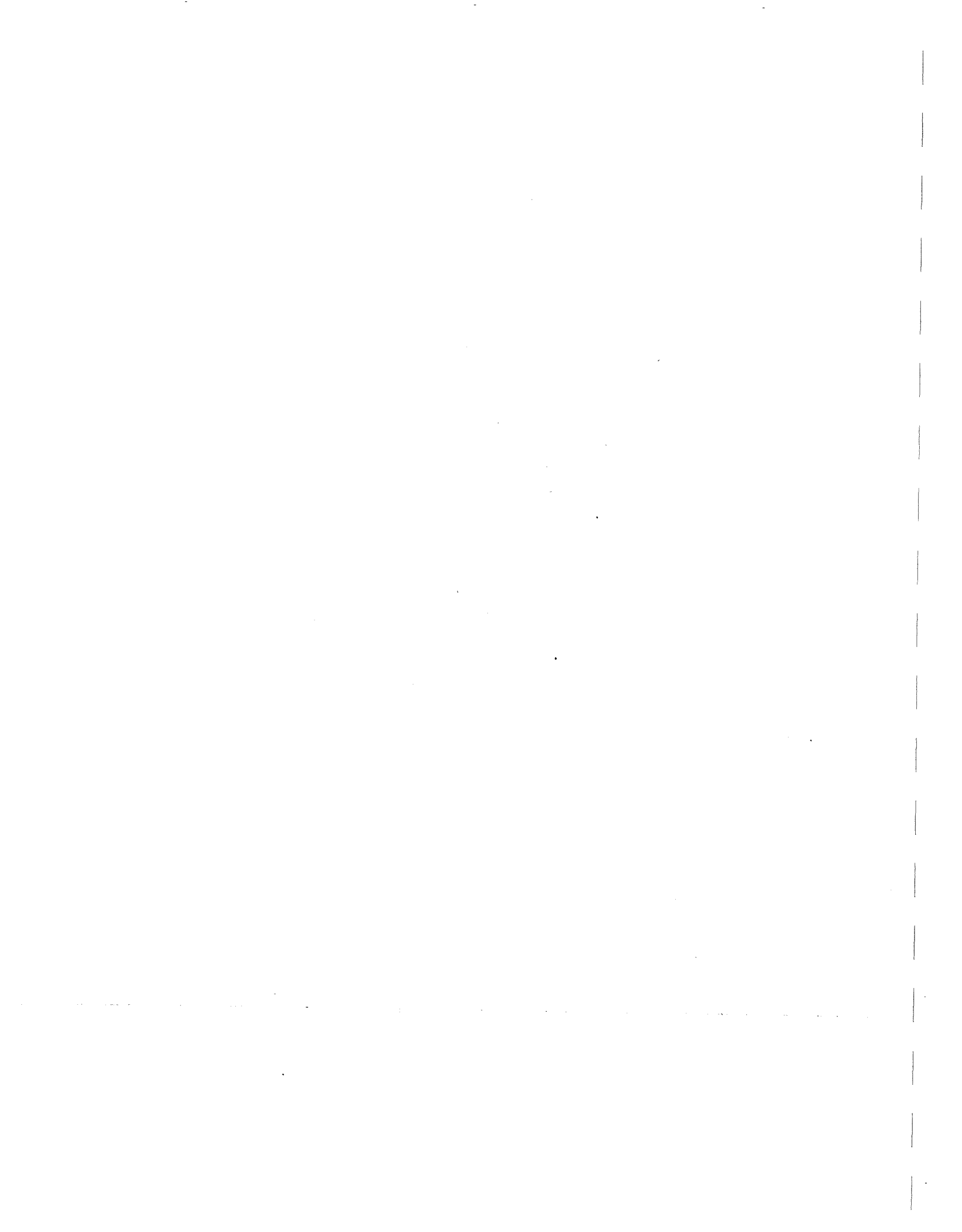
### 3.8. SAMPLE FORMS

Sample forms for Daily Construction Quality Control Report and Deficiency shall be provided by the General Contractor and submitted to Engineer for acceptance.

### 3.9. LINES AND GRADES

- A. Be responsible for properly laying out work, and for lines and measurements for the work executed under Contract Documents. Verify figures indicated on Drawings before laying out work, and report errors or inaccuracies in writing to the Engineer before commencing work.
- B. All trades shall be responsible for layout of their work, based on reference lines and measurements established by the General Contractor.
- C. Establish and maintain permanent hubs and other control points throughout construction.

END OF SECTION



SECTION 01530

BARRIERS

PART 1 - GENERAL

1.1. DESCRIPTION

- A. Temporary Railing: Temporary railing shall be provided around open pits and other locations where needed, to prevent accidents or injury to workers and/or public.
- B. Temporary Barriers: Temporary barriers shall be provided for safety for traffic control purposes.

1.2. COST

- A. The Contractor shall pay all costs for barriers and railings used on this project

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION





SECTION 01540

SECURITY

PART I - GENERAL

1.1. WORK INCLUDED

- A. Provide barricades, lanterns, and other signs and signals as may be necessary to warn of the dangers in connection with open excavation and obstructions.
- B. Temporary Railing: Temporary railing shall be provided around open pits and other locations where needed, to prevent accidents or injury to workers and/or public.
- C. Perimeter of the site shall be secured with a 6' chain link fence at all times when Owner or Contractor personnel are not present.

1.2. COSTS

- A. Contractor shall pay all costs for protection and security systems.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION



SECTION 01550

ACCESS ROADS AND PARKING AREAS

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. Access Roads
- A. Parking Areas
- B. Graveled Areas

1.2. REFERENCES

- A. Kentucky Department of Highways Standard Specifications for Road and Bridge Construction, Latest Edition.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Aggregate shall be size No. 57, Size No. 610, or Size No. 710 and shall meet the requirements of Section 805 of the KDOH Specifications.

PART 3 - EXECUTION

3.1. GENERAL

- A. Access Roads and areas shall be constructed of one or more courses of coarse aggregate uniformly spread on a prepared subgrade to the width and depth specified and/or shown on drawings.
- B. Compaction will be accomplished by traffic maintenance.

3.2. PLACING AGGREGATES

- A. Distribution of aggregate, in general, shall proceed from the point on the project nearest the source of supply so that as much compaction as possible may be gained from the passage of hauling equipment over the previously laid aggregate. Hauling equipment shall be routed uniformly over all portions of the previously laid courses of the base. The procedure for

distribution of the aggregate may be revised with permission or as directed.

- B. The aggregate shall be spread in the number of courses and at the rate of application indicated in the contract, unless otherwise directed. The Contractor shall hold in reserve a quantity of the aggregate for the purpose of strengthening weakened areas that may develop during construction operation.
- C. The material applied each day shall be shaped by means of a grader, as directed. In addition, the Contractor shall be required to make one complete round trip with the grader at least twice each week, and more often when deemed necessary, by the Engineer until the work is accepted as completed.

### 3.3. DRAINAGE

- A. Ditches and drainage elements shall be constructed and/or maintained as shown on the Contract Drawings and Details.

END OF SECTION

SECTION 01580

PROJECT IDENTIFICATION AND SIGN

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. The Contractor shall provide sign required by these specifications near the site of the work. The sign shall set forth the description of the work and the names of the Owner, Engineer and Contractor as shown hereinafter in these Specifications.
- B. The Contractor for Contract No. 10 - 150,000 Gallon Elevated Water Tank shall furnish and install one (1) Rural Development project sign as described in previous paragraph and as detailed hereafter.

PART 2 - PRODUCTS

2.1. SIGN

- A. The sign shall be constructed of 3/4" thick APA A-B Exterior grade or marine plywood. Posts shall be 4" x 4" of fencing type material. Prime all wood with white primer.

PART 3 - EXECUTION

3.1. MAINTENANCE

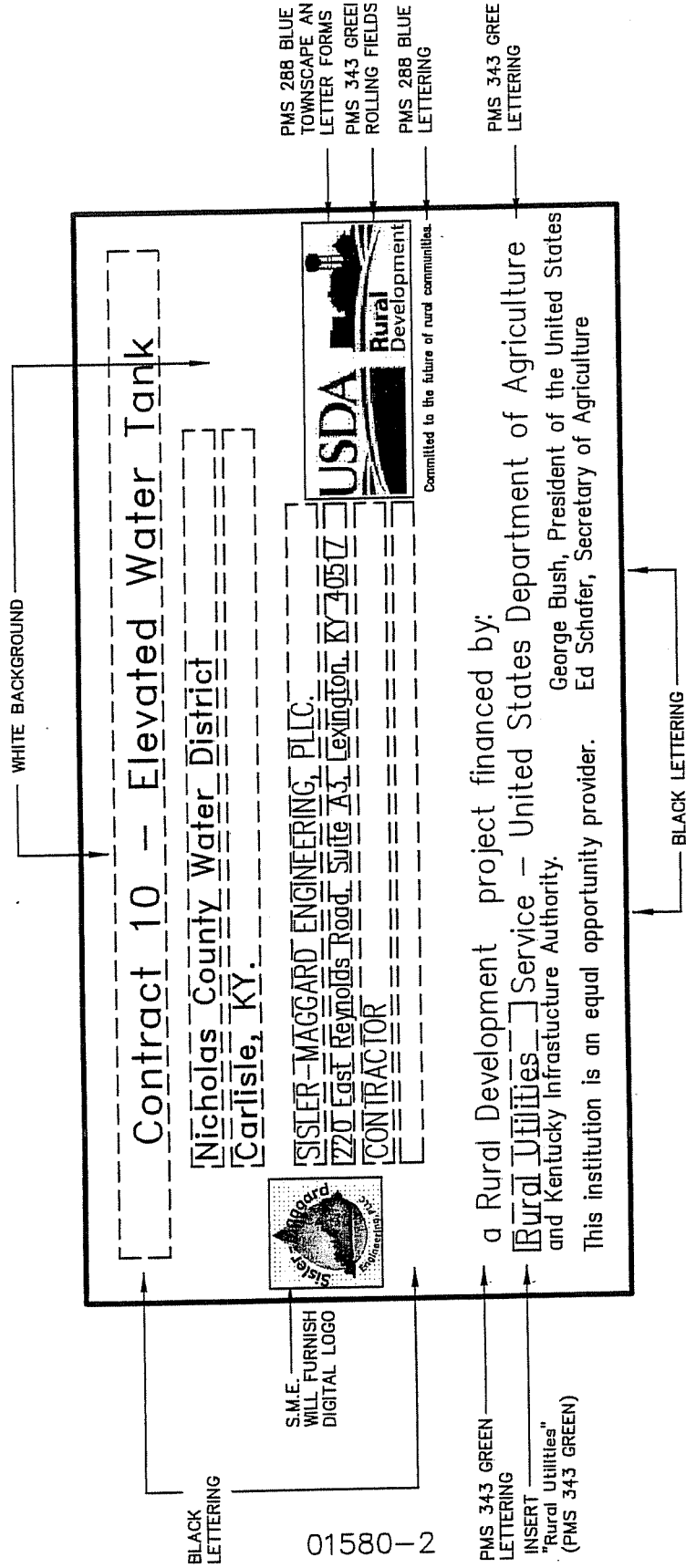
- A. The sign shall be maintained in good condition until completion of the Project. The signs shall be removed at completion of project.

3.2. LOCATION OF SIGN.

The sign called for in these Specifications shall be placed at the location selected by the Engineer.



construction sign for RURAL DEVELOPMENT projects:



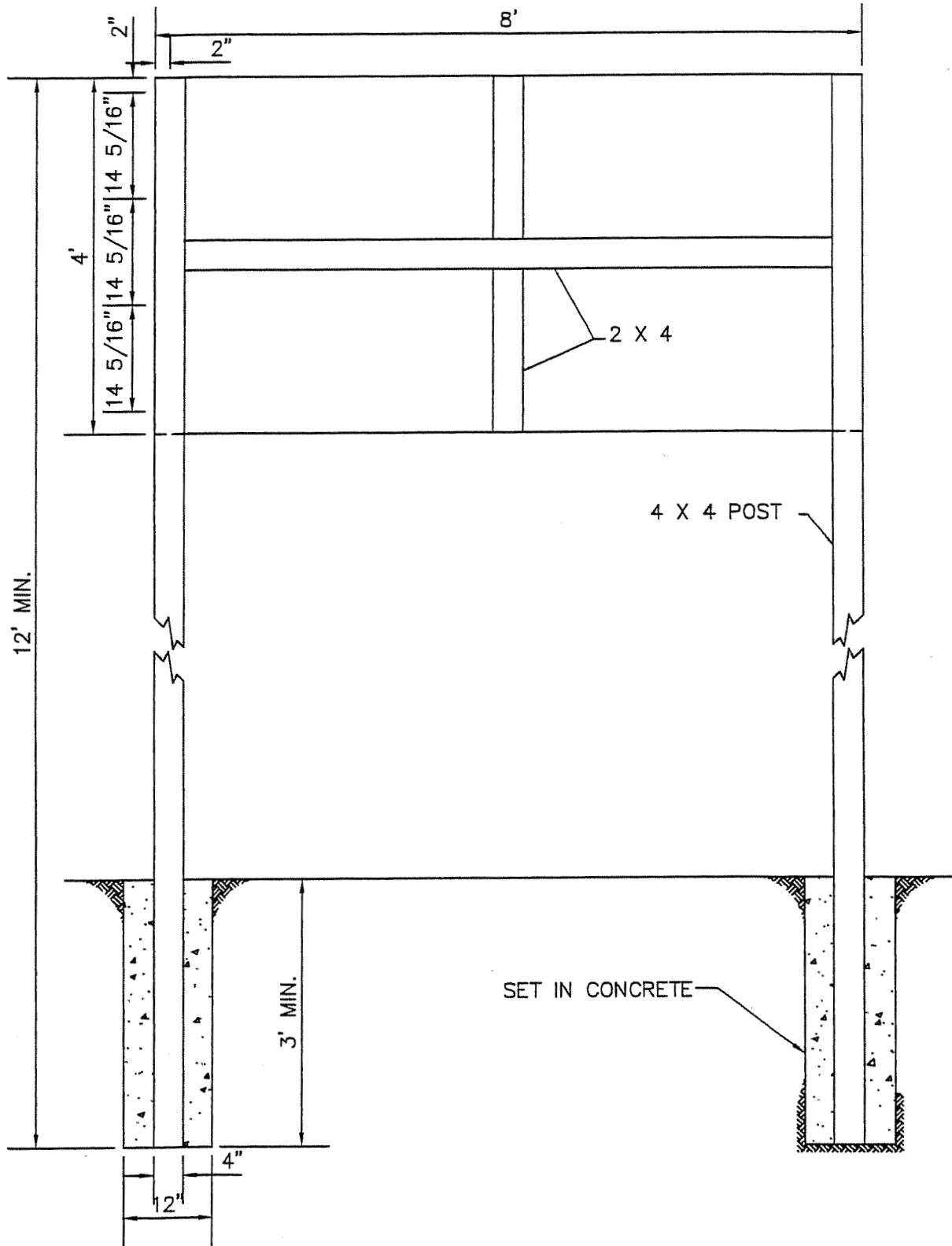
01580-N

SIGN DIMENSIONS: 1200mm X 2400mm X 19mm (approx. 4' X 8' X 3/4")  
 PLYWOOD PANEL (APA RATED A-B GRADE - EXTERIOR)

#05001







# ASSEMBLY OF PLYWOOD SIGN

NOT TO SCALE

END OF SECTION



SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1. ORDERING MATERIALS

- A. Immediately following award of Contract for this work, Contractor shall determine source of supply for all materials and length of time required for their delivery, including materials of subcontractors, and order shall be placed for such materials promptly.
- B. If, for any reason, any item specified will not be available when needed and the Contractor can show that he has made a reasonable persistent effort to obtain item in question, the Engineer is to be notified in writing within five (5) days after Contract is signed, and he will either determine source of supply or arrange with the Owner for appropriate substitute within terms of Contract. Otherwise, Contractor will not be excused for delays in securing material specified and will be held accountable if completion of building is thereby delayed.

1.2. STORAGE AND PROTECTION

- A. Each Contractor providing materials and equipment shall be responsible for the proper and adequate storage and protection of his materials and equipment, and for the removal or same upon completion of his work. Storage of materials at the site shall be confined to areas designated by the Owner.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION



SECTION 01610

TRANSPORTATION AND HANDLING

PART 1 - GENERAL

1.1. WORK INCLUDED

A. Handling and Distribution:

1. The Contractor shall handle, haul, and distribute all materials and all surplus materials on the different portions of the work, as necessary or required; shall provide suitable and adequate storage room for materials and equipment during the progress of the work, and be responsible for the protection, loss of, or damage to materials and equipment furnished by him, until the final completion and acceptance of the work.
2. Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.

B. Storage of Materials and Equipment

1. All excavated materials and equipment to be incorporated in the work shall be placed so as not to injure any part of the work or existing facilities and so that free access can be had at all times to all parts of the work and to all public utility installations in the vicinity of the work.
2. Materials and equipment shall be kept neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to public travel and adjoining owners, tenants, and occupants.

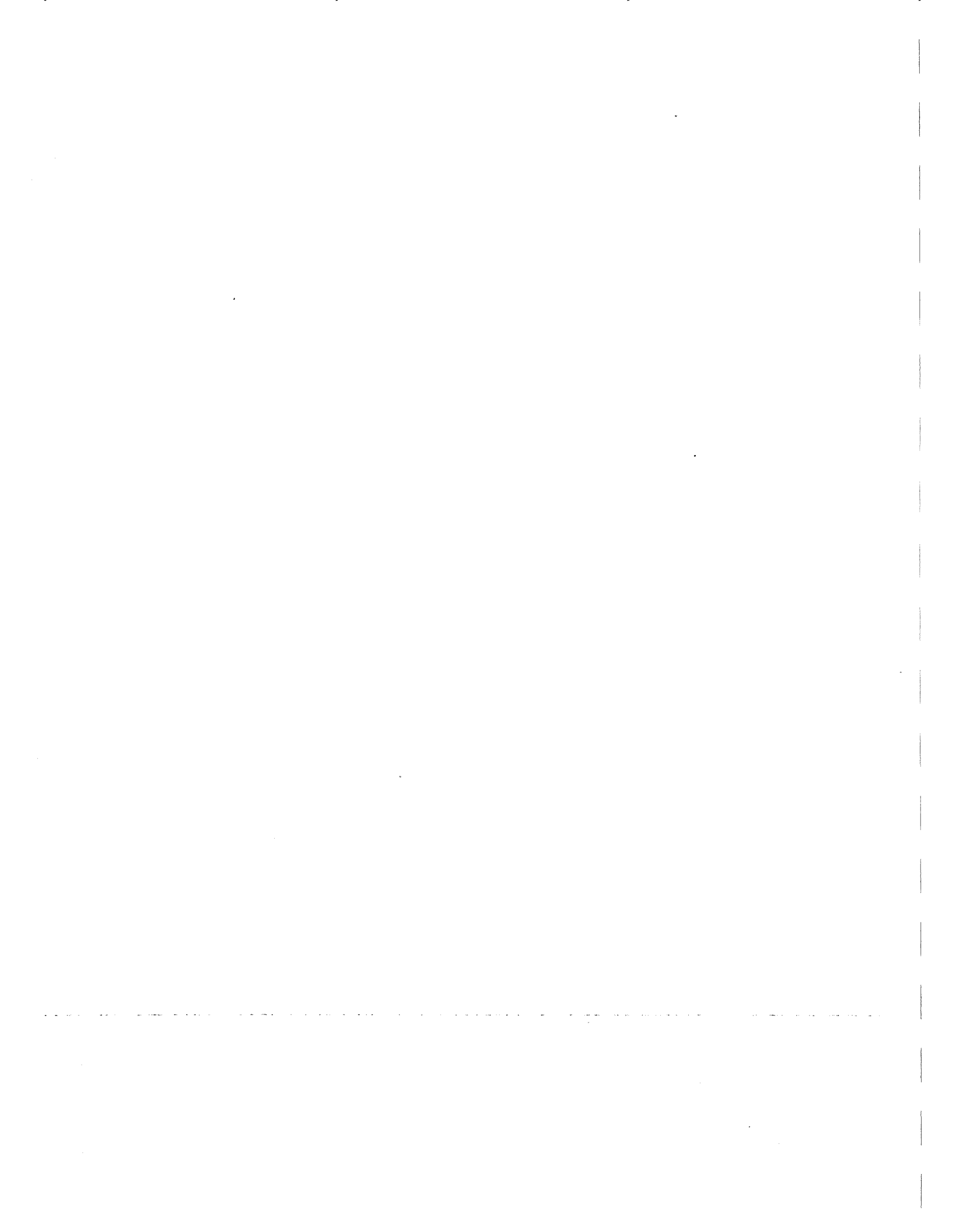
PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

NOT USED.

END OF SECTION



## SECTION 01650

### STARTING OF SYSTEMS

#### PART 1 - GENERAL

##### 1.1. WORK INCLUDED:

- A. Starting systems
- B. Demonstration and instructions
- C. Testing, adjusting, and balancing

##### 1.2. RELATED SECTIONS

- A. Section 01420 - Inspection Services: Certificates.
- B. Section 01500: Field Office Temporary Facilities and Controls.
- C. Section 01700 - Project Closeout: System operation and maintenance data and extra materials.

##### 1.3. STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Engineer and Owner ten days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or for other conditions which may cause damage.
- D. Verify that tests, meter readings, signal strengths, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of responsible manufacturer's representative and/or Contractors' personnel in accordance with manufacturers' instructions.

- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Section 01400 that equipment or system has been properly installed and is functioning correctly.

#### 1.4. DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.
- E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- F. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

#### PART 2 - PRODUCTS

NOT USED.

#### PART 3 - EXECUTION

NOT USED.

END OF SECTION



## SECTION 01710

## CLEANING

## PART 1 - GENERAL

## 1.1. WORK INCLUDED

- A. During its progress, the work and the adjacent areas affected thereby shall be kept cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.
- B. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes, structures, work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the project. The ditches, channels, drains, pipes, structures, and any other work shall, upon completion of the work, be left in a clean and neat condition.
- C. On or before the completion of the project, the Contractor shall, unless otherwise specifically directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic in, under, and around privies, hoses and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- D. The Contractor shall thoroughly clean all materials and equipment installed by him and his subcontractors, and on completion of the project shall deliver it undamaged and in fresh and new appearing conditions.
- E. The Contractor shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.

## 1.2. DESCRIPTION

### A. Related Requirements Specified Elsewhere:

Project Closeout: Section 01700.

- B. On a continuous basis, maintain premises free from accumulations of waste, debris, and rubbish caused by operations.
- C. At completion of project, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all sight-exposed surfaces; leave Project clean and ready for occupancy.

## 1.3. SAFETY REQUIREMENTS.

### A. Hazards Control:

- 1. Store volatile wastes in covered metal containers, and remove from premises daily.
- 2. Prevent accumulation of wastes which create hazardous conditions.
- 3. Provide adequate ventilation during use of volatile or noxious substances.

### B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

- 1. Do not burn or bury rubbish and waste materials on Project site without written permission from the Owner.
- 2. Do not dispose of volatile wastes such as mineral spirits, oil, or fuel in open drainage ditches or storm or sanitary drains.
- 3. Do not dispose of wastes in streams or waterways.

## PART 2 - PRODUCTS

### 2.1. MATERIALS

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

## PART 3 - EXECUTION

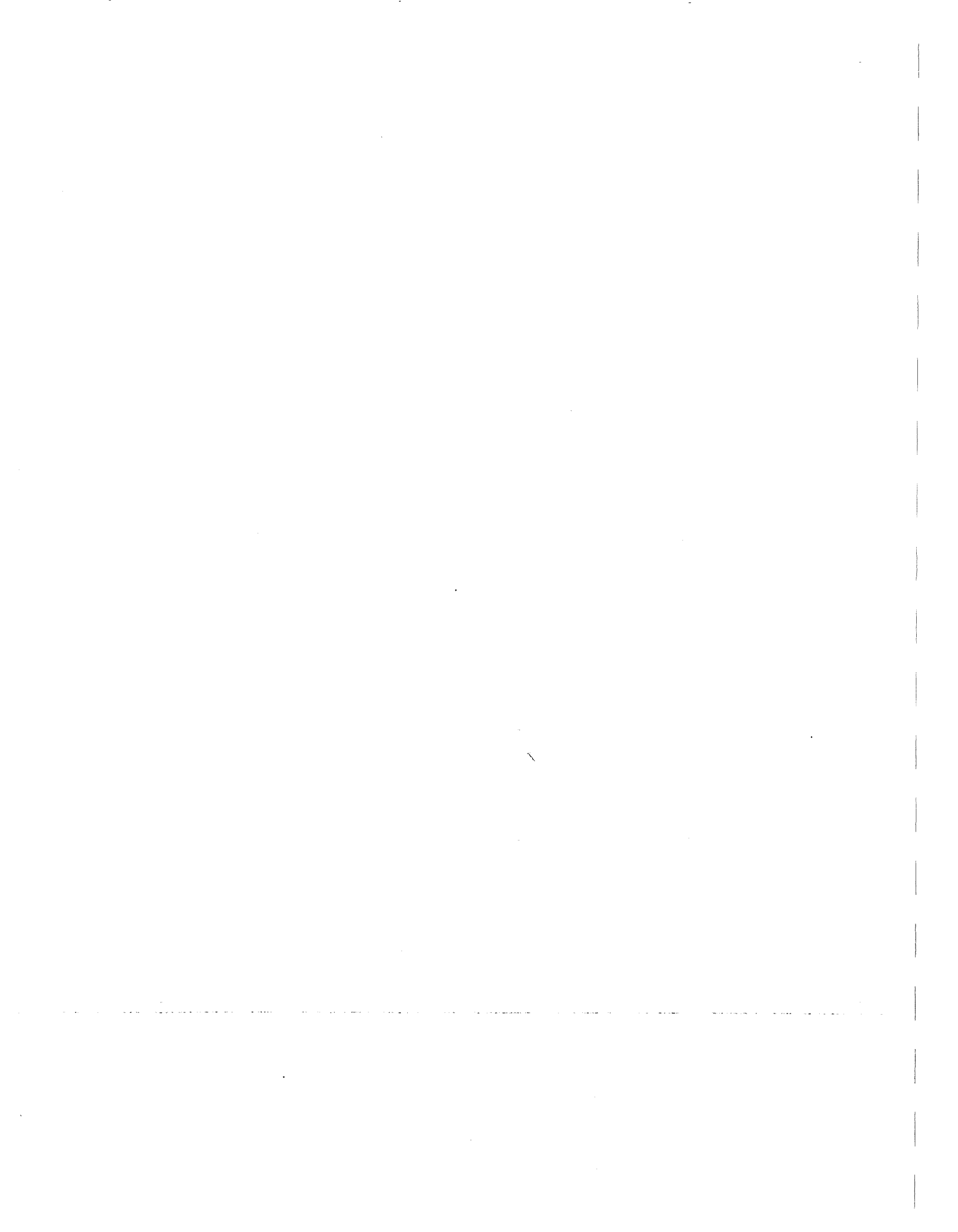
### 3.1. DURING CONSTRUCTION

- A. Execute cleaning to ensure that grounds and public properties are maintained free from accumulations of waste materials and rubbish.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. At reasonable intervals during progress of Work, clean site and public properties, and properly dispose of waste materials, debris, and rubbish.
- D. Provide on-site containers for collection of waste materials, debris, and rubbish.
- E. Remove waste materials, debris, and rubbish from site and legally dispose of at public or private dumping areas off Owner's property.
- F. The Contractor shall thoroughly clean all materials and equipment installed.

### 3.2. FINAL CLEANING

- A. Employ experienced workmen, or professional cleaners, for final cleaning.
- B. The Contractor shall restore or replace existing property or structures as promptly and practicable as work progresses.

END OF SECTION



## SECTION 01720

## PROJECT RECORD DOCUMENTS

## PART 1 - GENERAL

## 1.1. WORK INCLUDED

The contractor shall obtain from the Engineer one (1) set of blueline prints of the Contract Drawings. These prints shall be kept and maintained in good condition at the project site and qualified representative of the Contractor shall enter upon these prints, from day-to-day, the actual "as built" record of the construction progress. Entries and notations shall be made in a neat and legible manner and these prints shall be delivered to the Engineer upon completion of the construction. APPROVAL FOR FINAL PAYMENT WILL BE CONTINGENT UPON COMPLIANCE WITH THIS PROVISION.

## 1.2. RELATED REQUIREMENTS SPECIFIED ELSEWHERE:

- A. Maintain at job site, one copy of:
  - 1. Contract Drawings
  - 2. Specifications
  - 3. Addenda
  - 4. Reviewed Shop Drawings
  - 5. Change Orders
  - 6. Other Modifications to Contract.
- B. Store documents in approved location, apart from documents used for construction.
- C. Provide files and racks for storage of documents.
- D. Maintain documents in clean, dry, legible condition.
- E. Do not use record documents for construction purposes.
- F. Make documents available at all times for inspection by Engineer and Owner.

## 1.3. MARKING DEVICES

Provide colored pencil or felt-tip pen for all marking.

1.4. RECORDING

- A. Label each document "PROJECT RECORD" in 2-inch high printed letters.
- B. Keep record documents current.
- C. Do not permanently conceal any work until required information has been recorded.
  
- D. Contract Drawings: Legibly mark to record actual construction:
  - 1. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
  - 2. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
  - 3. Field changes of dimension and detail.
  - 4. Changes made by Change Order or Field Order.
  - 5. Details not on original Contract Drawings.
  
- E. Specifications and Addenda: Legibly mark up each Section to record:
  - 1. Manufacturer, trade name, catalog number, and supplier or each product and item of equipment actually installed.
  - 2. Changes made by Change Order or Field Order.
  - 3. Other matters not originally specified.
  
- F. Shop Drawings: Maintain as record documents; legibly annotate Shop Drawings to record changes made after review.

1.5. SUBMITTAL

- A. At completion of project, deliver record documents to Engineer.
  
- B. Accompany submittal with transmittal letter, in duplicate, containing:
  - 1. Date Project Title and Number Contractor's Name and Address
  - 2. Title and Number of each Record Document
  - 3. Certification that each Document as Submitted is Complete and Accurate
  - 4. Signature of Contractor or his authorized Representative.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED.

END OF SECTION

SECTION 01731

GEOTECHNICAL INFORMATION

PART 1 GENERAL

1.1. WORK INCLUDED

- A. Contract No. 10 – 150,000 Gallon Elevated Water Tank
  - 1. Borings have been taken at the tank site by Rhodes and Associates.
  - 2. The Contractor may use the information as given but no warranty is extended by the Engineer. The Contractor may make any further investigations they deem necessary to protect their interest at their own cost and liability.
  - 3. As stated in Section 02202 of these specifications, excavation is unclassified and rock removal is not a pay item.
- B. The drawings of boring logs is included herein.
- C. The Geotech Report by Thelan & Associates is included in this Section.

PART 2 PRODUCTS

NOT USED.

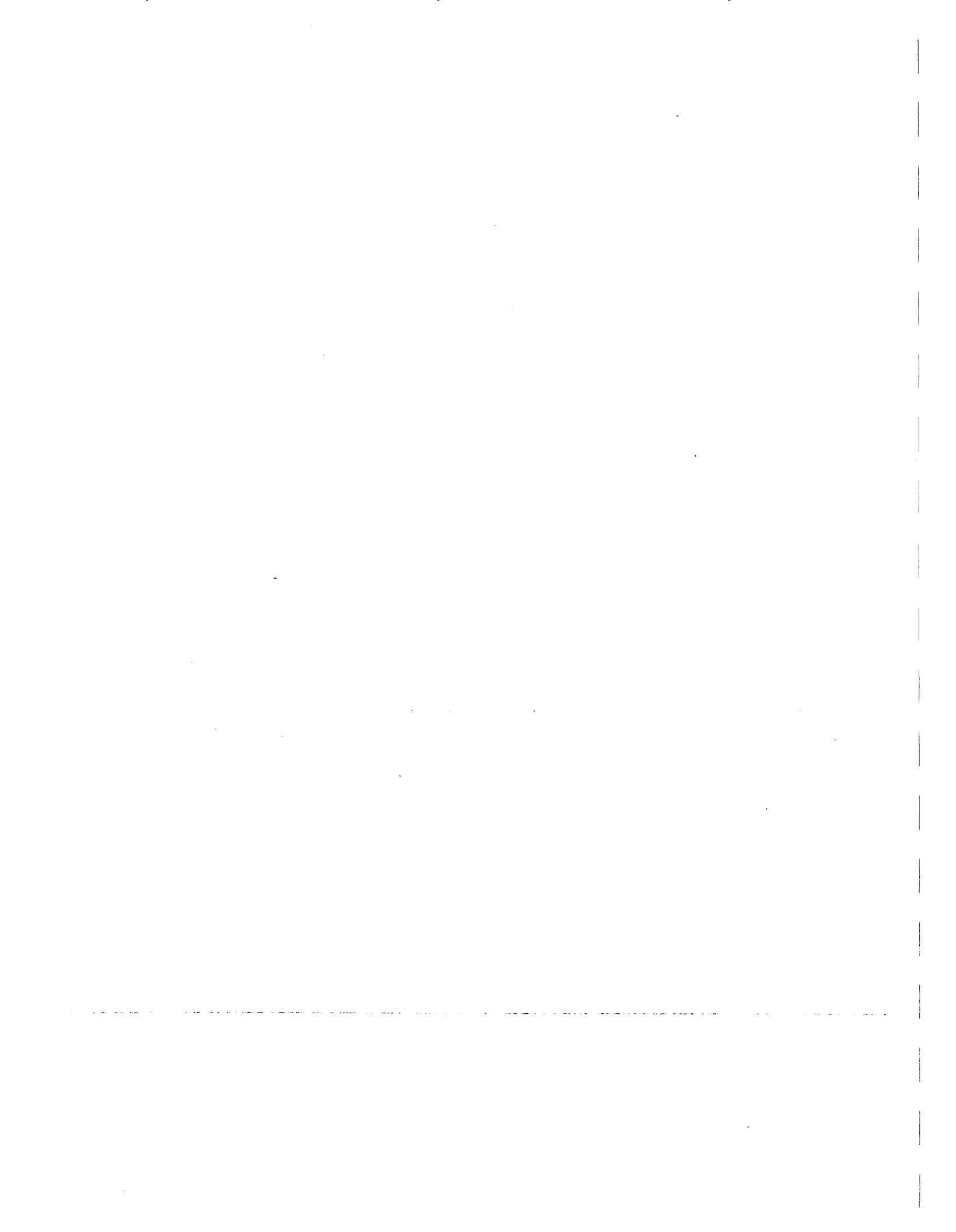
PART 3 EXCAVATION

NOT USED.

PART 4 TESTING

1.1 Work Included

- A. The Contractor shall be responsible for ALL testing and inspection services required by the Geotechnical report.





GEOTECHNICAL EXPLORATION  
SISLER-MAGGARD PROJECT NO. 05001  
PROPOSED 150,000 GALLON ELEVATED  
WATER TANK, HICKORY RIDGE ROAD  
NICHOLAS COUNTY, KENTUCKY

Prepared for: **Sisler-Maggard Engineering, PLLC**

Thelen Project No.: **070990E**



**THELEN ASSOCIATES, INC.**

Geotechnical • Testing Engineers

✓ 1398 Cox Avenue / Erlanger, Kentucky 41018-1002 / 859-746-9400 / Fax 859-746-9408  
○ 2140 Waycross Road / Cincinnati, Ohio 45240-2719 / 513-825-4350 / Fax 513-825-4756  
[www.thelenassoc.com](http://www.thelenassoc.com)





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December 12, 2007

Sisler-Maggard Engineering, PLLC  
220 East Reynolds Road  
Suite A3  
Lexington, Kentucky 40517

Attn: Mr. Joe Sisler, P.E.

Re: Geotechnical Exploration  
Sisler-Maggard Project No. 05001  
Proposed 150,000 Gallon Elevated  
Water Tank, Hickory Ridge Road  
Nicholas County, Kentucky

Ladies and Gentlemen:

Presented in this report are the results of the geotechnical exploration made for the proposed 150,000 gallon elevated water tank to be constructed on a hilltop on the west side of Hickory Ridge Road in Nicholas County, Kentucky. Our services were requested by Mr. Joe Sisler, P.E. of Sisler-Maggard Engineering, PLLC in a telephone conversation with our Mr. Paul S. Larsen on October 4, 2007.

## 1.0 SCOPE

The purpose of this exploration was to determine the general subsurface profile at the site and to relate the engineering properties of the soils and bedrock, that is, their classification, strength and compressibility characteristics, to the proposed tank foundation design and to site development. The geotechnical work included a site reconnaissance, test borings, laboratory testing, engineering analyses and the preparation of this report.

## **2.0 PROJECT CHARACTERISTICS**

The tank site is located southwest of the intersection of Hickory Ridge Road and Fox Glove Drive in Nicholas County, Kentucky. We have visited the property and have reviewed the site drawing prepared by Sisler-Maggard Engineering, PLLC (SME), File No. 05001, dated November 27, 2007. There were no specific plans available regarding the actual elevated tank to be constructed, however, we understand that the tank will be a 32-foot diameter elevated bowl containing 150,000-gallons and supported on four legs. The actual loads to be supported by the four leg foundations are not known at the time that this report was prepared, but are estimated to be 300 kips per leg. Site grading in the vicinity of the tank foundation is expected to be minimal due to the elevated tank design.

## **3.0 SUBSURFACE EXPLORATION**

The fieldwork phase of this exploration was carried out on October 19, 2007. Four (4) test borings were drilled at the originally selected tank location as shown on the Boring Plan, Drawing No. 070990E-1, included in the Appendix to this report. The test boring locations were staked during our site reconnaissance and then located and level surveyed in the field by an SME survey crew. The base map for the Boring Plan is the site drawing provided by SME and dated November 27, 2007.

The test borings were made with a track-mounted drill rig and with continuous flight augers. Split spoon sampling was accomplished ahead of the augers according to the procedure outlined in ASTM D1586. Bedrock sampling was accomplished by coring in Test Boring 4 using an NXM Core Barrel per ASTM D2113. Observations for groundwater were made in the borings during drilling, at the completion of drilling and after the completion of drilling.

As each test boring was advanced, the Drilling Technician kept a log of the subsurface profile noting soil and bedrock stratifications, groundwater, penetration test results, and other pertinent data. Representative portions of the split spoon samples were placed in

glass jars. Rock core samples were placed and labeled in plastic corrugated core boxes.

#### **4.0 LABORATORY REVIEW AND TESTING**

Samples from the test borings were examined and visually classified in the laboratory by the Project Engineering Geologist. Representative samples were selected for moisture content determinations, Atterberg limits tests, and an unconfined compression test of the bedrock. The results of these tests are included in the Tabulation of Laboratory tests in the Appendix along with the unconfined compression test form.

The final test boring logs were prepared by the Project Engineering Geologist on the basis of the visual classification in the laboratory, the laboratory test results and the field logs kept by the Drilling Technician. Copies of the final test boring logs are included in the Appendix with the Soil Classification Sheet which describes the terms and symbols used on the boring logs.

The dashed lines on the test boring logs indicate an approximate change in soil or bedrock strata as estimated between samples. A solid line indicates a change in the strata occurred in a sample where a more precise measurement can be made. The transition between soil and bedrock types may be abrupt or gradual.

#### **5.0 SITE CONDITIONS**

The tank site is located near the top of an elongated, northwest to southeast trending ridge along which Hickory Ridge Road is located. The site is grass-covered with a few mature trees within a southeast trending swale just southwest of the revised tank site. The ground surface slopes downwardly to the southwest and south at gradients ranging from approximately 7 to 9 horizontal to 1 vertical (7-9:1) on the south side of the tank site. On the north side of the tank site, the ground surface is nearly level. The ground surface appeared somewhat disturbed and slightly hummocky, indicating that it has been disturbed from past farming activities and/or minor creep has occurred within the

local shallow soil profile. Our review of available information on the Internet through the Kentucky Geologic Survey (KGS), Geo Portal Website indicates no reported karst potential or features. Available old mining closures in this vicinity were also reviewed within the KGS website. No records were found that indicated that surface or subsurface mining had occurred in the immediate vicinity of the tank site. The on-site reconnaissance also supports this conclusion.

### **6.0 SUBSURFACE CONDITIONS**

The test borings indicate that the ground surface is underlain by a thin layer of topsoil over very thin native silty clay residual soils in one of the borings, and directly over highly weathered to unweathered shale bedrock with some intermittent limestone layers in the other borings. The shale and limestone bedrock extended to the depths explored.

Test Borings 1 through 4 encountered only very thin topsoil, 0.1 to 0.3 feet in thickness. The topsoil layer primarily consisted of the vegetative mat and heavy root system in a matrix of brown clayey soils or shales.

Test Boring 1 encountered a shallow soil profile consisting of mottled brown, light gray slightly moist stiff residual clay with occasional trace bedding planes. This is residual soil which developed from the underlying bedrock and is approximately 2 feet thick. An Atterberg limits test from Test Boring 1 revealed these soils to have a liquid limit of 60 percent and a plasticity index of 31 which classifies as CH according to the Unified Soil Classification System (USCS). A moisture content test on the same sample revealed 11 percent moisture. This low moisture content combined with a plastic limit about three times the in situ moisture content of a CH soil means there is a significant shrink / swell potential with these soils.

The remaining test borings showed only thin topsoil over bedrock. This could be indicative of past grading activities where someone may have borrowed the thin soil

profile and possibly the upper zone of shale for adjacent road and/or residential construction.

The underlying bedrock encountered in the test borings consists of what is locally mapped as the Kope and Clays Ferry Formation (according to the Kentucky Geologic Survey [KGS] Geo Portal website), which is middle to upper Ordovician in geologic age. Typically, this formation consists of interbedded shale, limestone (about 50%), and siltstone. A geologic description of the lithology of the Kope and Clays Ferry Formation from the KGS website also describes this formation as locally having a Tongue of the Kope Formation with exposures of as much as 15 feet of mostly shale in thick sets. The shale was observed to be fissile (very thinly layered with easy parting along bedding). The test borings revealed three zones within the bedrock ranging from highly weathered, to weathered, to unweathered bedrock. The highly weathered shale layer was observed to be approximately 7 to 12 feet thick and consists of brown very soft shale layers which have weathered to a significant degree, yet distinct bedding planes are still apparent. The intermediate layer, which at this site was found to be approximately 5 to 7 feet thick, is the olive brown weathered shale that is tougher than the highly weathered bedrock. The underlying parent material found at approximately 20 feet below the existing ground surface at this site is the unweathered gray shale bedrock. It is reiterated that the shale at this site is generally thinly bedded and is fissile. Fissility is the tendency of shale to break easily along bedding planes. In addition, two Atterberg limits tests were run on the shale portions of the bedrock in Test Borings 1 and 3 in the vicinity of the anticipated bearing elevation for the column footings. The test results from Test Boring 1 revealed a liquid limit of 34 percent with a plasticity index of 14 percent which classifies as CL (USCS). The test from Test Boring 3 revealed a liquid limit of 58 percent and a plasticity index of 30 percent which classifies as CH (USCS).

## **7.0 GROUNDWATER CONDITIONS**

No groundwater was encountered in any of the test borings. Potable water was used during the coring process as noted on the log of Test Boring 4. The test borings were backfilled prior to leaving the site, therefore, long-term water level readings could not be made. Based upon our experience, periodic groundwater seepage can occur at the native soil/bedrock interface, and along the shale and limestone fracture and joint faces.

## **8.0 CONCLUSIONS AND RECOMMENDATIONS**

### **8.1 General**

Based upon our engineering reconnaissance of the site, the test borings, a visual examination of the samples, the laboratory tests, our understanding of the proposed construction, and our experience as Geotechnical Consultants in Kentucky, we have reached the following conclusions and make the following recommendations.

The conclusions and recommendations of this report have been derived by relating the general principles of the discipline of Geotechnical Engineering to the proposed construction outlined by the Project Characteristics section of this report. Because changes in surface, subsurface, climatic, and economic conditions can occur with time and location, we recommend for our mutual interest that the use of this report be restricted to this specific project.

Our understanding of the proposed design and construction is based on the documents provided to us at the time this report was prepared and which are referenced in the Project Characteristics section of this report. We recommend that our office be retained to review the final design documents, plans, and specifications to assess any impact changes, additions or revisions in these documents may have on the conclusions and recommendations of this Geotechnical Report. Any changes or modifications which are made in the field during the construction phase which alter site grading, structure locations, infrastructure or other related site work should also be reviewed by our office prior to their implementation.



If conditions are encountered in the field during construction which vary from the facts of this report, we recommend that our office be contacted immediately to review the changed conditions in the field and make appropriate recommendations.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or toxic materials in the soil, bedrock, surface water, groundwater or air, on or below or around this site.

We have performed the test borings and laboratory tests for our evaluation of the site conditions and for the formulation of the conclusions and recommendations of this report. We assume no responsibility for the interpretation or extrapolation of the data by others.

The earthwork recommendations of this report presume that the earthwork will be monitored continuously by an Engineering Technician under the direction of a Registered Professional Geotechnical Engineer. We recommend that the Owner contract these services directly with Thelen Associates, Inc.

We recommend that a preconstruction meeting be held at the site with the Owner's representative, the Design Civil Engineer, the General Contractor, the Excavating Contractor, the Geotechnical Engineer and any other interested parties to review the scope and schedule of the proposed earthwork and foundation installation.

## **8.2 Site Preparation and Earthwork**

1. It is assumed that an access road to the tank site will be constructed as part of this work. In addition, we anticipate that a small parking area will also be constructed at the tank site. We recommend that these areas and any associated cut or fill areas be stripped of the vegetation, topsoil and heavy root system. The vegetation should be wasted off site and the

7. For foundation and utility excavations, it is anticipated that conventional rubber-tired and track-mounted equipment will be able to readily excavate the overburden soils at the site. However, additional effort will be needed to excavate the underlying shale and intermittent limestone bedrock. It is possible that a large excavator with ripping teeth may be needed to excavate the foundations. This fissility of the shale should help improve excavatability of the bedrock.
8. The Contractor should be responsible for the stability and safety of all excavations and should exercise all necessary cautions to shore, slope or otherwise maintain stable excavations to protect workers. All excavations should be made and maintained in accordance with all Federal, State and Local Regulations.

### **8.3 Tank Foundations**

9. It is our opinion that the proposed tank may be supported on spread foundations most likely consisting of four individual column footings supporting the four legs of the tank. Once the actual tank size, location and bearing elevation are known, we recommend that Thelen be retained to review the plan and have the opportunity to make specific recommendations should they be necessary. It is our current understanding that the column footings will bear at approximately 4 to 5 feet below the existing grades. Based upon the relatively shallow depths and quality of the bedrock encountered in the test borings and our laboratory testing program, it is our opinion that the column footings can bear in the highly weathered bedrock (shale) proportioned for an allowable bearing pressure of 10,000 pounds per square foot (psf), full dead and full live load.

10. Our background review of related geologic maps of the areas did not show any sinkholes of note in the area. This background in combination with the shale type of bedrock encountered in the borings suggest that sinkholes, caves or other solution conduits are not expected to be encountered during the excavation on this particular site. In addition, our review also showed no surface mining in the immediate area and no record of underground mining.
11. All exterior footing bottoms should be placed at least 48 inches below the existing ground surface and 48 inches below the proposed finish grade for each column should any cuts be planned. This recommendation includes the accepted depth for frost protection (24 inches) in this area of Kentucky, plus an additional 2.0 feet of penetration to lower the footings below the surficial active zone (upper four feet). The active zone is the upper layer of material that is most effected by changes in moisture content and thus the effects of shrinking and swelling soils or bedrock. The test borings and laboratory tests indicate the moisture content of the shale is well below the plastic limit and indicative that shrink/swell characteristics might be an issue for the footings if they have a low contact pressure with the bedrock. We therefore recommend that a bearing pressure for shallow footings be no less than 5000 pounds per square foot. It is also recommended that the bottoms of all footings not be supported higher than the relationship of 2 horizontal to 1 vertical upward from the invert of any paralleling or nearly paralleling proposed utility trench.
12. We recommend that footing excavations be made to neat lines and grades so that concrete can be placed directly against the banks of the excavations without forming. It is also important that good surface drainage be maintained during and after construction to prevent water

from ponding in or around footing excavations. In addition, the low moisture and fissil conditions imply the shale will break down and easily soften when exposed and free water is available, such as during construction. Loosened rock and debris, should be removed from the bearing surface prior to concrete placement.

13. It is recommended that all footing excavations be reviewed by our Project Geotechnical Engineer or Engineering Geologist prior to placing concrete to determine that the bearing materials and surfaces are consistent with the recommendations contained herein. It is also recommended that 3-foot-deep probe holes be made in the base of each column pad to check for the presence of clay seams in the bedrock. These probes should be done in the presence of the Project Geotechnical Engineer or Engineering Geologist. If clay seams is found, the affected column pad should be lowered to just below the base of the clay seam and reprobod.

#### **8.4 Drainage and Erosion**

14. We recommend that site grades be set to promote surface drainage away from the proposed tank and away from any proposed parking or drive areas.
15. During construction, straw bales or silt fences should be maintained across the areas of concentrated runoff to minimize the amount of soil carried from the construction site. Scarified areas should be seeded and strawed, paved, sodded, or otherwise protected from erosion as soon as possible after final grading is completed.
16. If any portions of the construction are undertaken during the winter or spring months of the year, we recommend that no fill, concrete or

pavement be placed over frozen or saturated soils. In addition, frozen or saturated soils should not be used as compacted fill or backfill.

### **8.5 Seismicity**

The Kentucky Building Code (KBC) has been revised. Since July, 2007, all commercial projects have been required to meet KBC 2007.

A significant part of KBC 2007 is that it has required that the earthquake having a 2 percent probability of exceedance (POE) in any 50-year period be used as the basis for seismic design. Earlier codes had used the earthquake having a 10 percent POE in any 50-year period as the basis for seismic design. Another significant change in KBC 2007 is the requirement that local site geology, including overburden soils above the bedrock, be a factor in determining seismic parameters to be used in the structural design. The effects on regional seismicity (as mandated by KBC 2007) are presented herein for use by the Structural Engineer. We have assumed that the proposed tank has been designated as a Seismic Occupancy Category of IV. The proposed tank will be supported on shallow foundations bearing in the highly weathered bedrock. Based on our assessment of the seismic conditions, in our opinion, the following seismic parameters will be applicable to this tank.

Occupancy Category	IV (assumed)
S <sub>S</sub>	0.244 g (Latitude/Longitude)
S <sub>1</sub>	0.082 g (Latitude/Longitude)
Site Class	B
F <sub>a</sub>	1.0
F <sub>v</sub>	1.0
S <sub>MG</sub>	0.244 g
S <sub>M1</sub>	0.082 g
S <sub>DS</sub>	0.163 g
S <sub>D1</sub>	0.055 g
Seismic Design Category	A


**9.0 CLOSURE**

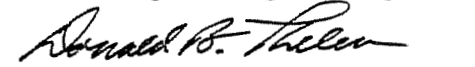
We have included in the Appendix to this report a reprint of "Important Information About Your Geotechnical Engineering Report" published by ASFE, Professional Firms Practicing in the Geosciences, which our firm would like to introduce to you at this time.

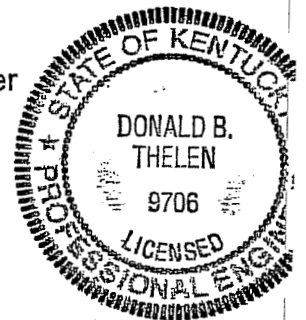
We appreciate this opportunity to provide our consulting services to you on this project. Should you have any questions regarding the contents to this report, please do not hesitate to contact us.

We look forward to following through with you on this project by providing the necessary construction review and testing services.

Respectfully submitted,  
**THELEN ASSOCIATES, INC.**

  
Mark A. Hushebeck, P.G.  
Senior Engineering Geologist

  
Donald B. Thelen, P. E.  
Principal Geotechnical Engineer



MAH/DBT/df  
070990E  
Copies submitted: 3-Client

**APPENDIX**

ASFE Report Information

Tabulation of Laboratory Tests

Unconfined Compressive Strength Test Form

Boring Plan, Drawing 070990E-1

Test Boring Logs

Soil Classification Sheet

# Important Information about Your Geotechnical Engineering Report

*Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.*

*While you cannot eliminate all such risks, you can manage them. The following information is provided to help.*

## **Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects**

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.*

## **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## **A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors**

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

## **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## **Most Geotechnical Findings Are Professional Opinions**

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## **A Report's Recommendations Are *Not* Final**

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual



THELEN ASSOCIATES, INC.  
 1398 COX AVENUE  
 ERLANGER, KENTUCKY 41018-1002

GEOTECHNICAL EXPLORATION  
 PROPOSED ELEVATED 100,000 GALLON WATER TANK  
 NICHOLAS COUNTY, KENTUCKY  
 070990E

TABULATION OF LABORATORY TESTS

Boring Number	Sample Number	Depth, ft.		Moisture Content, %	Atterberg Limits, %			Natural Dry Density, pcf	Unconfined Compressive Strength, ksf	USCS Classification	
		From	To		LL	PL	PI				
1	1B	0.2	1.5	11.0	60	29	31			CH	
	2	2.5	4.0	8.1							
	3	5.0	6.5	7.5	34	20	14			CL	
	6	12.5	14.0	9.4							
	7	15.0	16.5	12.2							
	9	20.0	20.8	6.0							
	2	1B	0.1	1.5	20.8						
		2	2.5	4.0	7.8						
		3	5.0	6.5	11.0						
3	2	2.5	4.0	10.2							
	3	5.0	6.5	14.5	58	28	30			CH	
	5	10.0	11.5	10.6							
4	2	2.5	4.0	13.9							
	4	7.5	9.0	17.9							
	7	15.0	16.5	38.4							
	RC-10	20.5	21.0	8.4							
	RC-10	21.0	21.5	10.0				135.9	10.2		



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## UNCONFINED COMPRESSIVE STRENGTH OF INTACT ROCK CORE, ASTM - D2938 UNIT WEIGHT AND NATURAL MOISTURE

CLIENT : **Sisler - Maggard Engineering, PLLC**  
 PROJECT : **Geotechnical Exploration, Proposed Elevated Water Tank**  
 LOCATION : **Nicholas County, Kentucky**

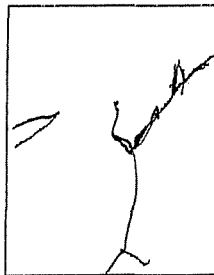
PROJECT NUMBER : **070990E**  
 BORING NUMBER : **4** SAMPLE NUMBER : **RC-10** DEPTH (FT.): **21.0 to 21.5**  
 SAMPLE DESCRIPTION : **Interbedded brown and gray very soft highly weathered SHALE ( bedrock )**

SAMPLE OBTAINED BY : **Rock Core**      CONDITION **Undisturbed**      DATE : **11/20/07**

### NATURAL UNIT WEIGHT

AVERAGE DIAMETER (in.)    1.80  
 HEIGHT (in.)                 3.75  
 HEIGHT TO DIAMETER RATIO   2.08  
 AVERAGE AREA (sq. ft.)    0.0177  
 VOLUME (cu. ft.)            0.0055  
 WET WEIGHT (lbs.)         0.83  
 DRY WEIGHT (lbs.)         0.75  
 DRY DENSITY (pcf)         135.9

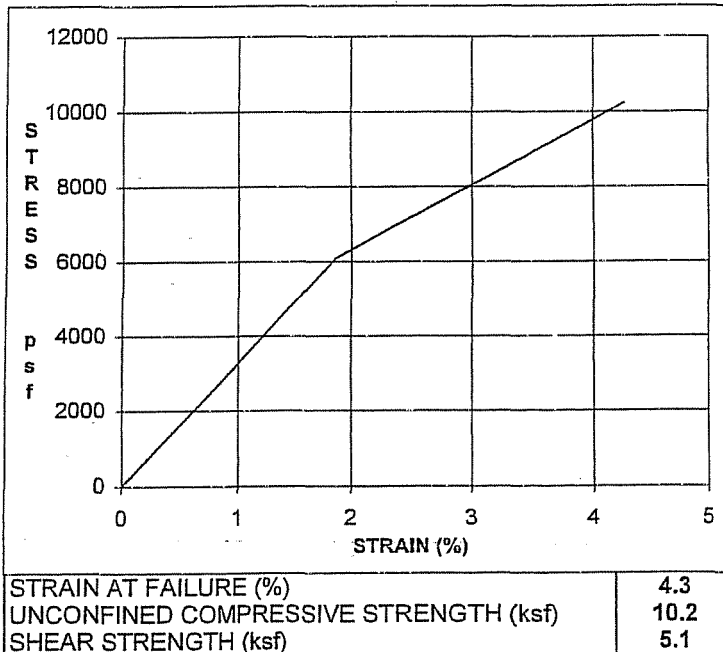
### FAILURE SHAPE



### WATER CONTENT AFTER SHEAR

CAN NUMBER                                T8  
 WET WEIGHT + CAN (lbs.)            1.73  
 DRY WEIGHT + CAN (lbs.)            1.65  
 WEIGHT WATER (lbs.)                0.07  
 WEIGHT CAN (lbs.)                    0.90  
 WEIGHT SOLID (lbs.)                 0.75  
 MOISTURE (%)                            10.0  
 PROVING RING NUMBER                19901

DEFORM	LOAD	LOAD	STRAIN	CORR.	STRESS
DIAL	DIAL			AREA	
.001 IN.	.0001 IN.	LBS.	%	SQ. FT.	PSF
0	0	0	0	0.0177	0
70	10	109.8	1.9	0.0181	6072
160	21	189.5	4.3	0.0185	10222



REMARKS :







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## LOG OF TEST BORING

CLIENT: Sisler-Maggard Engineering, PLLC BORING #: 1

PROJECT: Geotechnical Exploration, Proposed 150,000 Gallon Water Tank, Nicholas County, KY JOB #: 070990E

LOCATION OF BORING: As shown on Boring Plan, Drawing 070990E-1

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE				
				Cond	Blows/6"	No.	Type	Rec (Inches)
971.1	SURFACE	0.0						
970.8	TOPSOIL	0.3		I	10/50/6"	1A 1B	DS	12
969.1	Mottled brown slightly moist stiff CLAY with roots. (CH)	2.0		I	15/75/15	2	DS	12
956.6	Interbedded brown to olive brown moist very soft highly weathered SHALE, some gray hard LIMESTONE. The shale is thinly bedded and fissile (bedrock). (CL)	14.5	5	I	37/50/3"	3	DS	8
				I	37/35/30	4	DS	18
			10	I	18/50/4"	5	DS	6
				I	100/3"	6	DS	3
			15	I	21/30/37	7	DS	18
951.6	Interbedded olive brown moist soft weathered SHALE, some gray hard LIMESTONE. The shale is thinly bedded and fissile (bedrock).	19.5		I	25/50/6"	8	DS	12
950.3	Interbedded gray moist soft SHALE, some gray hard LIMESTONE. The shale is thinly bedded and fissile (bedrock).	20.8		I	30/50/3"	9	DS	8
	Split spoon refusal and bottom of test boring at 20.8 feet.		25					

Datum MSL Hammer Wt. 140 lbs. Hole Diameter 8 in. Foreman LW  
 Surf. Elev. 971.1 ft. Hammer Drop 30 in. Rock Core Dia. - in. Engineer MAH  
 Date Started 10/19/07 Pipe Size O.D. 2 in. Boring Method HSA Date Completed 10/19/07

### SAMPLE CONDITIONS

D - DISINTEGRATED  
 I - INTACT  
 U - UNDISTURBED  
 L - LOST

### SAMPLE TYPE

DS - DRIVEN SPLIT SPOON  
 PT - PRESSED SHELBY TUBE  
 CA - CONTINUOUS FLIGHT AUGER  
 RC - ROCK CORE

### GROUNDWATER DEPTH

FIRST NOTED Dry ft.  
 AT COMPLETION Dry ft.  
 AFTER 2 hrs. Dry ft.  
 BACKFILLED 2 hrs.

### BORING METHOD

HSA - HOLLOW STEM AUGERS  
 CFA - CONTINUOUS FLIGHT AUGERS  
 DC - DRIVING CASING  
 MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS



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## LOG OF TEST BORING

CLIENT: Sisler-Maggard Engineering, PLLC BORING #: 2  
 PROJECT: Geotechnical Exploration, Proposed 150,000 Gallon Water Tank, Nicholas County, KY JOB #: 070990E  
 LOCATION OF BORING: As shown on Boring Plan, Drawing 070990E-1

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE					
				Cond	Blows/6"	No.	Type	Rec. (Inches)	
966.4	SURFACE	0.0							
966.3	TOPSOIL	0.1		I	5/7/9	1A 1B	DS	18	
	Interbedded brown moist very soft highly weathered SHALE, some gray hard LIMESTONE with intermittent clay seams. The shale is thinly bedded and fissile (bedrock).			I	9/12/14	2	DS	18	
			5	I	20/30/29	3	DS	18	
959.4		7.0							
	Interbedded olive brown moist soft weathered SHALE, some gray hard LIMESTONE, trace near verticle fractures. The shale is thinly bedded and fissile (bedrock).			I	18/41/50/3"	4	DS	18	
			10	I	21/48/90	5	DS	18	
952.4		14.0		I	21/58/100	6	DS	18	
	Split spoon refusal and bottom of test boring at 14.0 feet.		15						
			20						
			25						

Datum MSL Hammer Wt. 140 lbs. Hole Diameter 8 in. Foreman LW  
 Surf. Elev. 966.4 ft. Hammer Drop 30 in. Rock Core Dia. - in. Engineer MAH  
 Date Started 10/19/07 Pipe Size O.D. 2 in. Boring Method HSA Date Completed 10/19/07

<b>SAMPLE CONDITIONS</b>	<b>SAMPLE TYPE</b>	<b>GROUNDWATER DEPTH</b>	<b>BORING METHOD</b>
D - DISINTEGRATED	DS - DRIVEN SPLIT SPOON	FIRST NOTED <u>Dry</u> ft.	HSA - HOLLOW STEM AUGERS
I - INTACT	PT - PRESSED SHELBY TUBE	AT COMPLETION <u>Dry</u> ft.	CFA - CONTINUOUS FLIGHT AUGERS
U - UNDISTURBED	CA - CONTINUOUS FLIGHT AUGER	AFTER <u>4</u> hrs. <u>Dry</u> ft.	DC - DRIVING CASING
L - LOST	RC - ROCK CORE	BACKFILLED <u>4</u> hrs.	MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS



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## LOG OF TEST BORING

CLIENT: Sisler-Maggard Engineering, PLLC BORING #: 3  
 PROJECT: Geotechnical Exploration, Proposed 150,000 Gallon Water Tank, Nicholas County, KY JOB #: 070990E  
 LOCATION OF BORING: As shown on Boring Plan, Drawing 070990E-1

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE					
				Cond	Blows/6"	No	Type	Rec. (Inches)	
962.7	SURFACE	0.0							
962.6	TOPSOIL	0.1		I	3/5/7	1A	DS	18	
	Interbedded brown moist very soft highly weathered SHALE and trace gray hard LIMESTONE. The shale is thinly bedded and fissile, some clay seams, some fractures (bedrock). (CH)			I	12/19/17	2	DS	18	
			5	I	8/5/10	3	DS	18	
				I	10/19/20	4	DS	18	
953.2			9.5		I	12/19/21	5	DS	18
	Interbedded olive brown moist soft weathered SHALE, trace gray hard LIMESTONE. The shale is thinly bedded and fissile, some fractures (bedrock).			I	19/28/40	6	DS	18	
947.2			15.5		I	100/6"	7	DS	3
	Split spoon refusal and bottom of test boring at 15.5 feet.								

Datum MSL Hammer Wt. 140 lbs. Hole Diameter 8 in. Foreman LW  
 Surf. Elev. 962.7 ft. Hammer Drop 30 in. Rock Core Dia. - in. Engineer MAH  
 Date Started 10/19/07 Pipe Size O.D. 2 in. Boring Method HSA Date Completed 10/19/07

**SAMPLE CONDITIONS**  
 D - DISINTEGRATED  
 I - INTACT  
 U - UNDISTURBED  
 L - LOST

**SAMPLE TYPE**  
 DS - DRIVEN SPLIT SPOON  
 PT - PRESSED SHELBY TUBE  
 CA - CONTINUOUS FLIGHT AUGER  
 RC - ROCK CORE

**GROUNDWATER DEPTH**  
 FIRST NOTED Dry ft.  
 AT COMPLETION Dry ft.  
 AFTER 1 hrs. Dry ft.  
 BACKFILLED 1 hrs.

**BORING METHOD**  
 HSA- HOLLOW STEM AUGERS  
 CFA- CONTINUOUS FLIGHT AUGERS  
 DC - DRIVING CASING  
 MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS



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## LOG OF TEST BORING

CLIENT: Sisler-Maggard Engineering, PLLC BORING #: 4

PROJECT: Geotechnical Exploration, Proposed 150,000 Gallon Water Tank, Nicholas County, KY JOB #: 070990E

LOCATION OF BORING: As shown on Boring Plan, Drawing 070990E-1

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE				
				Cond	Blows/6"	No.	Type	Rec. (Inches)
969.1	SURFACE	0.0						
969.0	TOPSOIL	0.1		I	2/5/7	1A 1B	DS	18
	Interbedded brown moist very soft highly weathered SHALE and trace gray hard LIMESTONE. The shale is thinly bedded and fissile (bedrock).			I	7/9/14	2	DS	18
			5	I	9/11/15	3	DS	18
962.1		7.0		I	12/15/25	4	DS	18
	Interbedded olive brown moist soft weathered SHALE and trace gray hard LIMESTONE. The shale is thinly bedded and fissile, trace fractures (bedrock).		10	I	18/27/21	5	DS	18
				I	21/50/1"	6	DS	3
			15	I	45/20/17	7	DS	18
949.6		19.5		I	28/100/3"	8	DS	6
			20	I	50/3"	9	DS	1
944.1	Interbedded brown and gray moist very soft highly weathered SHALE and gray hard LIMESTONE, clay seams associated with limestone layers. Limestone comprises 29 % of this run with beds up to 5.5 inches thick. RQD=58 percent (bedrock).				-	10	RC	60 /60
	Interbedded brown and gray moist very soft highly weathered SHALE, trace hard LIMESTONE. Limestone comprises 14% of this run. RQD=31 percent (bedrock).	25.0	25					
940.6		28.5					11	RC
	Bottom of test boring at 28.0 feet.							

Datum MSL Hammer Wt. 140 lbs. Hole Diameter 8 in. Foreman LW  
 Surf. Elev. 969.1 ft. Hammer Drop 30 in. Rock Core Dia. NXM-2 in. Engineer MAH  
 Date Started 10/19/07 Pipe Size O.D. 2 in. Boring Method HSA Date Completed 10/19/07

<b>SAMPLE CONDITIONS</b>	<b>SAMPLE TYPE</b>	<b>GROUNDWATER DEPTH</b>	<b>BORING METHOD</b>
D - DISINTEGRATED	DS - DRIVEN SPLIT SPOON	FIRST NOTED <u>20.0</u> ft.	HSA - HOLLOW STEM AUGERS
I - INTACT	PT - PRESSED SHELBY TUBE	AT COMPLETION <u>8.0</u> ft.	CFA - CONTINUOUS FLIGHT AUGERS
U - UNDISTURBED	CA - CONTINUOUS FLIGHT AUGER	AFTER <u>    </u> hrs. <u>    </u> ft.	DC - DRIVING CASING
L - LOST	RC - ROCK CORE	BACKFILLED <u>Immed.</u> hrs.	MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS





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## SOIL CLASSIFICATION SHEET

### NON COHESIVE SOILS

(Silt, Sand, Gravel and Combinations)

#### Density

Very Loose	- 5 blows/ft. or less
Loose	- 6 to 10 blows/ft.
Medium Dense	- 11 to 30 blows/ft.
Dense	- 31 to 50 blows/ft.
Very Dense	- 51 blows/ft. or more

#### Particle Size Identification

Boulders	- 8 inch diameter or more
Cobbles	- 3 to 8 inch diameter
Gravel	- Coarse - 3/4 to 3 inches
	- Fine - 3/16 to 3/4 inches
Sand	- Coarse - 2mm to 5mm (dia. of pencil lead)
	- Medium - 0.45mm to 2mm (dia. of broom straw)
	- Fine - 0.075mm to 0.45mm (dia. of human hair)
Silt	- 0.005mm to 0.075mm (Cannot see particles)

#### Relative Properties

Descriptive Term	Percent
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

### COHESIVE SOILS

(Clay, Silt and Combinations)

#### Consistency

	<u>Field Identification</u>
Very Soft	Easily penetrated several inches by fist
Soft	Easily penetrated several inches by thumb
Medium Stiff	Can be penetrated several inches by thumb with moderate effort
Stiff	Readily indented by thumb but penetrated only with great effort
Very Stiff	Readily indented by thumbnail
Hard	Indented with difficulty by thumbnail

#### Unconfined Compressive Strength (tons/sq. ft.)

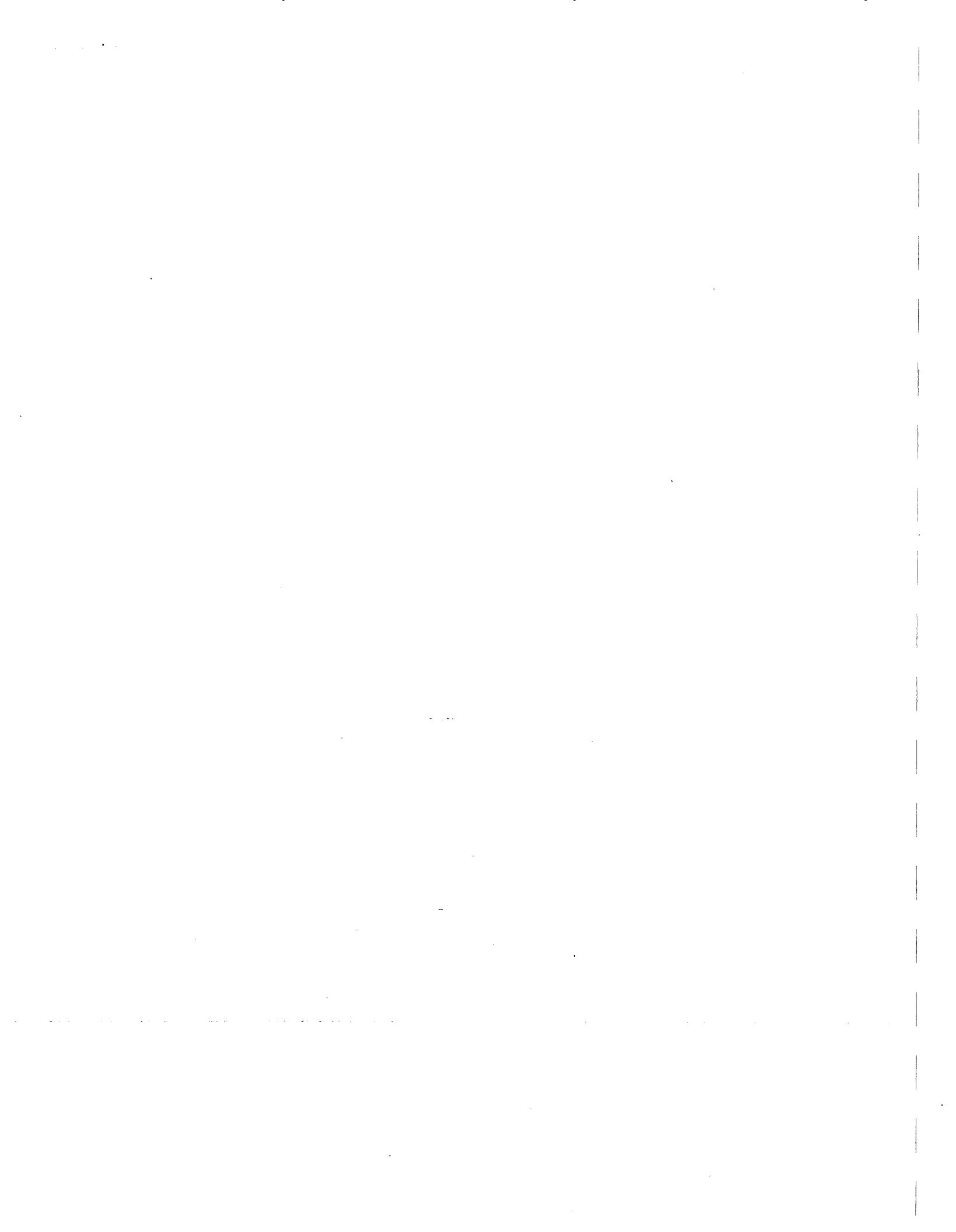
Less than 0.25
0.25 - 0.5
0.5 - 1.0
1.0 - 2.0
2.0 - 4.0
Over 4.0

Classification on logs are made by visual inspection.

Standard Penetration Test - Driving a 2.0" O.D., 1 3/8" I.D., sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. It is customary to drive the spoon 6 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and making the tests are recorded for each 6 inches of penetration on the drill log (Example - 6/8/9). The standard penetration test results can be obtained by adding the last two figures (i.e. 8+9=17 blows/ft.). Refusal is defined as greater than 50 blows for 6 inches or less penetration.

Strata Changes - In the column "Soil Descriptions" on the drill log, the horizontal lines represent strata changes. A solid line (————) represents an actually observed change; a dashed line (— — — —) represents an estimated change.

Groundwater observations were made at the times indicated. Porosity of soil strata, weather conditions, site topography, etc., may cause changes in the water levels indicated on the logs.



SECTION 01740

BASIS FOR PAYMENT

CONTRACT NO. 10

150,000 GALLON ELEVATED WATER TANK

PART 1 - GENERAL

All payment for work done under the provisions of this contract shall be in accordance with the basis for payment for the specific items listed herein and in the proposal. The item numbers in this section correspond with the item numbers in the Bid Schedule.

Item 1 – 150,000 Gallon Elevated Water Tank

Payment for this item shall be made at the lump sum price bid and shall include all work and materials necessary for the complete installation as shown on the drawings or included in Technical Specifications, including but not limited to the construction of grading, access road, rip rap ditches, overflow pit, excavation and backfill at the tank site, elevated steel tank, tank foundation with certified foundation design by professional engineer, site piping & valves, tie-ins, fire hydrant, telemetry vault and check valve vault and appurtenances, electrical pole and site electrical, fencing, including new chain link fence as necessary, clean up, seeding, fertilizing & mulching, painting (as required), testing (concrete), disinfection, and other work as required for the complete installation.

The cost of all associated items not specifically listed for separate payment shall be included as an incidental expense.

Rock excavation is not a separate pay item.

END OF SECTION



SECTION 02110

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1. WORK INCLUDED

A. DEFINITIONS

1. Clearing

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including down timber, snags, brush, and rubbish occurring in the areas to be cleared.

2. Grubbing

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas.

B. PAYMENT

1. Cost associated with Clearing and Grubbing shall be incidental to facilities being placed.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1. CLEARING

- A. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Trees designated to be left standing within the cleared areas shall be trimmed of dead branches 1-1/2 inches or more in diameter and shall be trimmed of all branches the heights indicated or directed. Limbs and branches to be trimmed shall be neatly cut close to the bole of the tree or main branches. Cuts more than 1-1/2 inches in diameter shall be painted with an approved tree-wound paint. Trees and vegetation to be left

standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require.

- B. Clearing shall also include the removal and disposal of structures that obtrude, encroach upon, or otherwise obstruct the work.

### 3.2. GRUBBING

- A. Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract, such as areas for buildings, and areas to be paved.
- B. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

### 3.3. TREE REMOVAL

- A. Where indicated or directed, trees and stumps that are designated as trees shall be removed from areas outside those areas designated for clearing and grubbing. This work shall include the felling of such trees and the removal of their stumps and roots as specified in paragraph GRUBBING.
- B. Where Trees shall be disposed of in an approved manner.

### 3.4. DISPOSAL OF MATERIALS

- A. Logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations shall be disposed of by the Contractor in an approved manner. The Contractor shall be responsible for compliance with all Federal and State laws and regulations and with reasonable practice relative to the disposal of the material.
- B. Disposal of refuse and debris and any accidental loss or damage attendant thereto shall be the Contractor's responsibility.

END OF SECTION

SECTION 02202  
ROCK REMOVAL

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. Removal of discovered rock during excavation.
- B. Use of explosives for rock removal.

1.2. RELATED WORK

- A. Section 02220 - Excavation.

1.3. QUALITY ASSURANCE

- A. Explosives Firm: Company specializing in explosives for disintegration of subsurface rock with a certified blaster in the State of Kentucky.
- B. Contractor shall conform to all State, Federal, and Local laws, ordinances and regulations in regard to transportation, use, and handling of explosives.

1.4. OUTSIDE SERVICES

- A. Contractor shall employ the above mentioned experts if necessary during blasting, to protect workers, property and public.

1.5. SHOP DRAWINGS

- A. Submit means and methods under provisions of Section 01300.
- B. Indicated proposed method of blasting, delay pattern, explosives types, type of blasting mat or cover, and intended rock recovery method.

PART 2 - PRODUCTS

2.1. MATERIALS

- A. Rock Definition: Solid mineral material or man made material that cannot be removed with a power shovel or as defined by KDOH specifications.
- B. Explosives: Type recommended by explosives firm and required by authorities having jurisdiction.

- C. Delay Devices: Type recommended by explosives firm and conforming to State regulations.
- D. Blasting Materials: Type recommended by explosives firm and conforming to State regulations.

## PART 3 - EXECUTION

### 3.1. INSPECTION

- A. Verify site conditions and note irregularities affecting work of this Section.
- B. Beginning work of this Section means acceptance of existing condition.

### 3.2. ROCK REMOVAL

- A. Excavate for and remove rock by a mechanical method.
- B. Cut away rock at excavation bottom to form even surface.
- C. In utility trenches, excavate to 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter.
- D. Correct unauthorized rock removal in accordance with backfilling and compaction requirements of Section 02220, paragraph 3.04.

### 3.3. ROCK REMOVAL – EXPLOSIVES METHODS

- A. If rock is uncovered requiring the explosives method for rock disintegration, notify the Engineer.
- B. Advise Owners of adjacent building or structures in writing prior to setting up seismographs. Describe blasting and seismic operations.
- C. Peak particle velocity will be limited to 4.0 in./sec.
- D. Provide seismographic monitoring during progress of all blasting operations, or as required by State regulations.
- E. Distinguish rock and remove from excavation.

### 3.4. FIELD QUALITY CONTROL.

- A. Engineer or his representative shall approve the depth of the final rock cut.



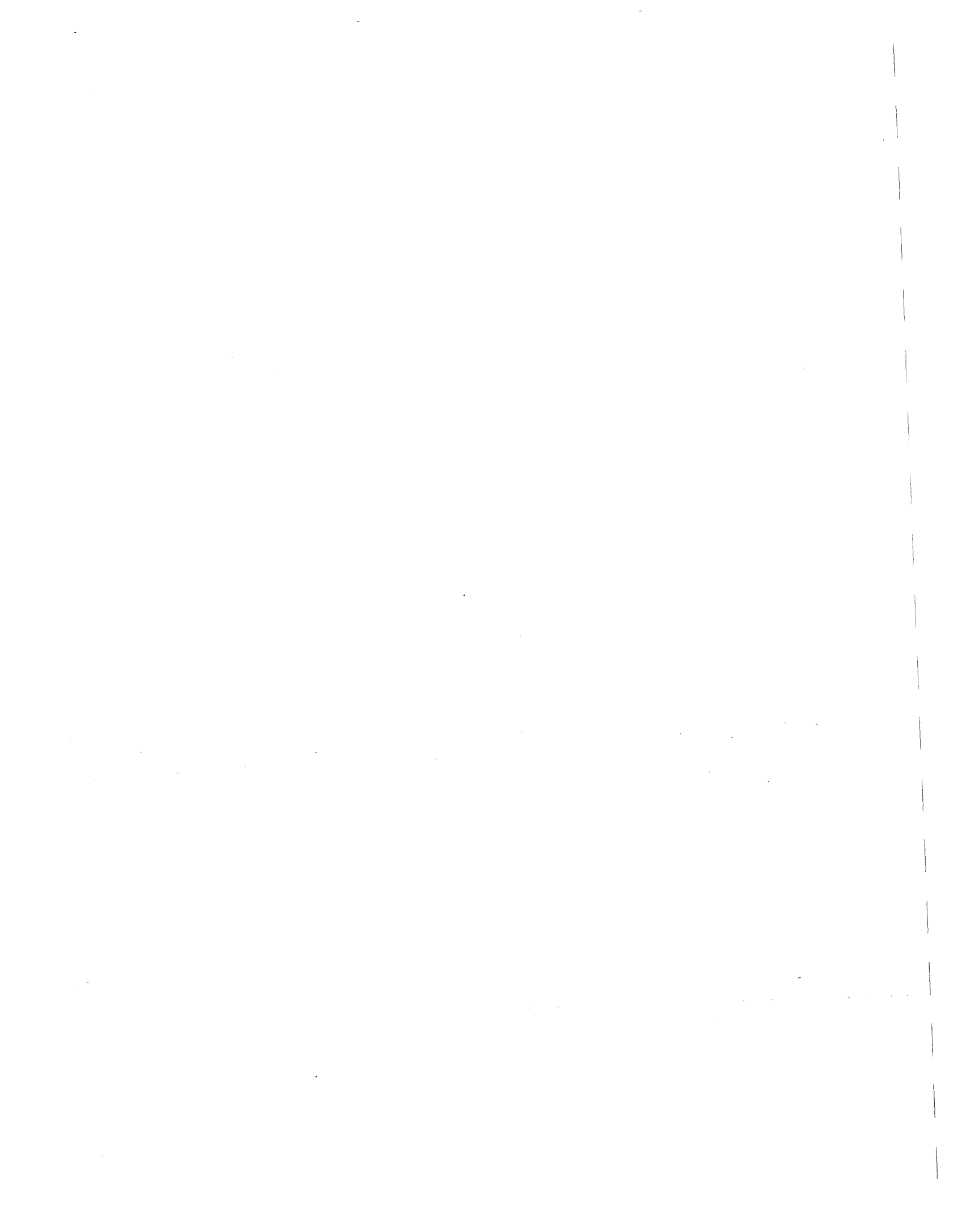
3.5. HAUL

- A. No payment will be made separately or directly for haul on any part of the work for removed rock. All haul will be considered a necessary and incidental part of the work, and the cost thereof shall be considered by the Contractor in the contract unit price for the pay items of the work involved.

3.6. ROCK REMOVAL

- A. **Rock removal is not a pay item.** Cost associated with rock removal shall be incidental to the project and shall be considered by the contractor in the unit price for the pay items of the work involved.

END OF SECTION



SECTION 02220

EXCAVATION

PART 1 - GENERAL

All excavation on this project is unclassified.  
**Rock removal is not a pay item.**

PART 2 - PRODUCTS

Not used.

PART 3 - EXCAVATION FOR TRENCHES

3.1. INSPECTION

- A. All excavation on this project is unclassified. Rock removal is not a pay item.
- B. If the foundation is good firm earth and the machine excavation has been accomplished, the remainder of the material shall be excavated by hand and the earth pared or molded to give full support to the lower quadrant of the barrel of each pipe. Where bell and spigot pipe are involved, bell holes shall be excavated during this latter operation to prevent the bells from being supported on undisturbed earth. If for any reason the machine excavation in earth is carried below an evaluation that will permit the type of bedding in undisturbed earth, then a layer of granular material shall be placed so that the lower quadrant of the pipe will be securely bedded in the granular fill as described in Section 02700, Part 3, Article 3.03.
- C. If the foundation is rock and the excavation has been undercut as set out hereinbefore, a bed of No. 9 crushed stone aggregate shall be placed to provide continuous support for the lower quadrant of the pipe. This bedding is incidental cost of construction and is not a pay item.
- D. 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 than 2'6" plus the nominal diameters of the pipe at the level of or below the top of the pipe. Trenches cut in roads and streets shall not exceed a maximum width of 3'6" plus the nominal diameters of the pipe at the level of the road or street surface.
- E. All excavated materials shall be placed a minimum of 2 feet back from the edge of the trench.

- F. Unless specifically directed otherwise by the Engineer, not more than 500 feet of trench shall be opened ahead of the pipe laying work of any one crew, and not more than 500 feet or open ditch shall be left behind the pipe laying work of any one crew or a total of 1000 feet or open ditch. Watchmen or barricades, lanterns, 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.
- G. When so required, or when directed by the Engineer, only one-half of street crossings and road crossings shall be excavated before placing temporary bridges over the side excavated, for the convenience of the traveling public. All backfilled ditches shall be maintained in such manner that they will offer no hazard to the passage of traffic. The convenience of the traveling public and the property owners abutting the improvements shall be taken into consideration. All public or private drives shall be promptly backfilled or bridged at the direction of the Engineer.
- H. Where existing drainage ditches coincide with the proposed gravity sewer alignment, the Contractor shall re-establish the drainage ditch after the sewer line has been laid and properly backfilled. The drainage ditch shall be of equal size as the previously existing one and free of any restrictions which might impede flow.

### 3.2. REMOVAL OF WATER

- A. The Contractor, at his own expense, shall provide adequate facilities for promptly and continuously removing water from all excavation.
- B. To ensure proper conditions at all times during construction, the Contractor shall provide and maintain ample means and devices (including spare units kept ready for immediate use in case of breakdowns) with which to intercept and/or remove promptly and dispose properly for all water entering trenches and other excavations. Such excavation shall be kept dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged.
- C. All water pumped or drained from the work shall be disposed of in a suitable manner without undue interference with other work, damage to pavements, other surfaces, or property. Suitable temporary pipes, flumes, or channels shall be provided for water that may flow along or across the site of work.
- D. If necessary, The Contractor shall dewater the excavations by means of an efficient drainage wellpoint system which will drain the soil and prevent saturated soil from flowing into the excavation. The wellpoints shall be designed especially for this type of service. The pumping unit shall be designed for use with the wellpoints, and shall be capable of maintaining a high vacuum and of handling large volumes of air and water at the same time.

- E. The installation of the wellpoints and pump shall be done under the supervision of a competent representative of the manufacturer. The Contractor shall do all special work such as surrounding the wellpoints with sand or gravel or other work which is necessary for the wellpoint system to operate for the successful dewatering of the excavation

### 3.03 DISPOSITION OF EXCAVATED MATERIAL

Material excavated for gravity sewers, manholes, or other structures shall be disposed of by the Contractor at his own expense. All excavated material which is not needed or is unacceptable for backfilling purposes shall be disposed of by the Contractor in a manner satisfactory to the Engineer.

### 3.04 UNAUTHORIZED EXCAVATION

Whenever the excavation is carried beyond or below the required lines and grades, the Contractor, at his own expense, shall refill said excavated space with suitable material in a manner approved by the Engineer.

### 3.05 EXISTING UTILITIES AND OTHER OBSTRUCTIONS

The Engineer has endeavored to show all existing utilities and or obstructions to the best of his ability within the confines of information furnished by others. It is the full responsibility of the Contractor to verify locations as set out hereinafter and open sufficient ditch in advance to assure no conflicts. Relocations, adjustments, and damages due to improper planned methods and procedures will be at the cost of the Contractor. Any conflicts or damages by this project with existing utilities shall be immediately brought to the attention of the Engineer. If any utility is damaged or disrupted the Contractor must take what ever measures necessary to restore service immediately at his cost.

Prior to the commencement of construction on the project, the Contractor shall contact the utility companies whose lines (above and below ground) may be affected during construction and verify the locations of the utilities as shown on the Contract Drawings. The Contractor shall ascertain from said companies if he will be allowed to displace or alter, by necessity, those lines encountered or replace those lines disturbed by accident during construction, or if the companies themselves are only permitted by policy to perform such work. If the Contractor is permitted to perform such work, he shall leave the lines in as good condition as were originally encountered and complete the work as quickly as possible. All such lines or underground structures damaged or disrupted in the construction shall be replaced at the Contractors expense, unless, in the opinion of the Engineer, such damage was caused through no fault of the Contractor

END OF SECTION



SECTION 02221

EXCAVATION, TRENCHING, AND BACKFILLING  
FOR UTILITIES SYSTEMS

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. Excavation, trenching and backfilling for the following systems:
  - 1. Water Systems
  - 2. Sewer System
  - 3. Natural Gas Piping Systems

1.2. RELATED WORK

- A. Section 02202 – Rock Removal
- B. Section 02701 – Polyvinyl Chloride Pipe (Water mains)
- C. Section 02720 – Pressure Pipelines Installation
- D. Section 02722 – Ductile Iron Pipe

1.3 APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION  
OFFICIALS (AASHTO)

AASHTO T 180 (1986) Moisture-Density Relations of Soils Using a  
10-lb. Rammer and an 18 inch Drop

AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)

ASTM D 2487 (1985) Classification of Soils for Engineering  
Purposes

1.4 DEFINITIONS

- A. Degree of Compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASSHTO T 180, Method D.

PART 2 - PRODUCTS

## 2.1 MATERIALS

Satisfactory materials shall consist of any material classified by -ASTM D 2487- as GW, GP, and SW.

- A. Unsatisfactory materials shall be materials that do not comply with the requirements for satisfactory materials. Unsatisfactory materials include but are not limited to those materials containing roots and other organic matter, trash, debris, frozen materials and stones larger than 3 inches, and materials classified in -ASTM D 2487-, as PT, OH, and OL. Unsatisfactory materials also include man-made fills, refuse, or backfills from previous construction.
- B. Cohesionless materials shall include materials classified in -ASTM D 2487- as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic.
- C. Rock shall consist of boulders measuring 1/2 cubic yard or more and materials that cannot be removed without systematic drilling and blasting such as rock material in ledges, bedded deposits, unstratified masses and conglomerate deposits, and below ground concrete or masonry structures, exceeding 1/2 cubic yard in volume, except that pavements will not be considered as rock.
- E. Unyielding material shall consist of rock and gravelly soils with stones greater than 3 inches in any dimension or as defined by the pipe manufacturer, whichever is smaller.
- F. Unstable material shall consist of materials too wet to properly support the utility pipe, conduit, or appurtenant structure.
- G. Select granular material shall consist of well-graded sand, gravel, crushed gravel, crushed stone or crushed slag composed of hard, tough and durable particles, and shall contain not more than 10 percent by weight of material passing a No. 200 mesh sieve and no less than 95 percent by weight passing the 1-inch sieve. The maximum allowable aggregate size shall be 1 inch, or the maximum size recommended by the pipe manufacturer, whichever is smaller.
- H. Initial backfill shall consist of select granular material or satisfactory materials free from rocks 3 inches or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer, whichever is smaller. When the pipe is coated or wrapped for corrosion protection, the initial backfill material shall be free of stones larger than 2 inches in



any dimension or as recommended by the pipe manufacturer, whichever is smaller.

### PART 3 - EXECUTION

#### 3.1 GENERAL EXCAVATION

- A. Excavation shall be performed to the lines and grades indicated.
- B. Rock excavation shall include removal and disposition of material defined as rock in paragraph "MATERIALS."
- C. Earth excavation shall include removal and disposal of material not classified as rock excavation.
- D. During excavation, material satisfactory for backfilling shall be stockpiled in an orderly manner at a distance from the banks of the trench equal to 1/2 the depth of the excavation, but in no instance closer than 2 feet.
- E. Excavated material not required or not satisfactory for backfill shall be removed from the site.
- F. Grading shall be done as may be necessary to prevent surface water from flowing into the excavation, and any water accumulating therein shall be removed to maintain the stability of the bottom and sides of the excavation.

#### 3.2 TRENCH EXCAVATION

- A. The trench shall be excavated as recommended by the manufacturer of the pipe to be installed.
- B. Trench walls below the top of the pipe shall be sloped, or made vertical, and of such width as recommended in the manufacturer's installation manual.
- C. Where no manufacturer's installation manual is available, trench walls shall be made vertical.
- D. Trench walls more than 4 feet high shall be shored, cut back to a stable slope, or provided with equivalent means of protection for employees who may be exposed to moving ground or cave in.
- E. Vertical trench walls more than 4 feet high shall be shored.

- F. Trench walls which are cut back shall be excavated to at least the angle of repose of the soil.
- G. Special attention shall be given to slopes which may be adversely affected by weather or moisture content.
- H. The trench width below the top of pipe shall not exceed 24 inches plus pipe outside diameter (O.D.) for pipes of less than 24 inches inside diameter and shall not exceed 36 inches plus pipe outside diameter for sizes larger than 24 inches inside diameter.
- I. Where recommended trench widths are exceeded, redesign, stronger pipe, or special installation procedures shall be utilized by the Contractor.
- J. The cost of redesign, stronger pipe, or special installation procedures shall be borne by the Contractor without any additional cost to the Government.

### 3.3 BOTTOM PREPARATION

- A. The bottoms of trenches shall be accurately graded to provide uniform bearing and support for the bottom quadrant of each section of the pipe.
- B. Bell holes shall be excavated to the necessary size at each joint or coupling to eliminate point bearing.
- C. Stones of 3 inches or greater in any dimension, or as recommended by the pipe manufacturer, whichever is smaller, shall be removed to avoid point bearing.

### 3.4 REMOVAL OF UNYIELDING MATERIALS

Where overdepth is not indicated and unyielding material is encountered in the bottom of the trench, such material shall be removed 4 inches below the required grade and replaced with suitable materials as provided in paragraph "BACKFILLING AND COMPACTION."

### 3.5 REMOVAL OF UNSTABLE MATERIALS

- A. Where unstable material is encountered in the bottom of the trench, such material shall be removed to the depth directed and replaced to the proper grade with select granular material as provided in paragraph "BACKFILLING AND COMPACTION."
- B. When removal of unstable material is required due to the fault or neglect of the Contractor in his performance of the work, the resulting material

shall be excavated and replaced by the Contractor without additional cost to the Government.

### 3.6 JACKING, BORING AND TUNNELING

Unless otherwise indicated, excavation shall be by open cut, except that sections of a trench may be jacked, bored, or tunneled if, in the opinion of the Engineer, the pipe, cable, or duct can be safely and properly installed and backfill can be properly compacted in such sections.

### 3.7 STOCKPILES

- A. Stockpiles of satisfactory and wasted materials shall be placed and graded.
- B. Stockpiles shall be kept in a neat and well-drained condition, giving due consideration to drainage at all times.
- C. The ground surface at stockpile locations shall be cleared, grubbed, and sealed by rubber-tired equipment, excavated satisfactory and unsatisfactory materials shall be separately stockpiled.
- D. Stockpiles of satisfactory materials shall be protected from contamination, which may destroy the quality and fitness of the stockpiled material.
- E. If the Contractor fails to protect the stockpiles, and any material becomes unsatisfactory, such material shall be removed and replaced with satisfactory material from approved sources at no additional cost to the Government.

### 3.8 BACKFILLING AND COMPACTION

- A. Backfill material shall consist of satisfactory material, select granular material, or initial backfill material as required.
- B. Backfill shall be placed in layers not exceeding 6 inches loose thickness for compaction by hand operated machine compactors, and 8 inches loose thickness for other than hand operated machines, unless otherwise specified.
- C. Each layer shall be compacted to at least 95 percent maximum density for cohesionless soils and 90 percent maximum density for cohesive soils, unless otherwise specified.

### 3.9 TRENCH BACKFILL

- A. Trenches shall be backfilled to the grade shown. The trench shall be backfilled to 2 feet above the top of pipe prior to performing the required pressure tests.
- B. The joints and couplings shall be left uncovered during the pressure tests.

### 3.10 REPLACEMENT OF MATERIALS

- A. Unyielding material removed from the bottom of the trench shall be replaced with select granular material or initial backfill material.
- B. Unstable material removed from the bottom of the trench or excavation shall be replaced with select granular material placed in layers not exceeding 6 inches loose thickness.

### 3.11 BEDDING AND INITIAL BACKFILL

- A. Bedding 4" thick shall be placed under sewer and water lines.
- B. Initial backfill material shall be placed and compacted with approved tampers to a height of at least one foot above the utility pipe or conduit.
- C. The backfill shall be brought up evenly on both sides of the pipe for the full length of the pipe.
- D. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe.

### 3.12 FINAL BACKFILL

- A. The remainder of the trench shall be filled with satisfactory material. Backfill material shall be placed and compacted as follows:
- B. Sidewalks, Turfed or Seeded Areas and Miscellaneous Areas: Backfill shall be deposited in layers of a maximum of 12-inch loose thickness, and compacted to 85 percent maximum density for cohesive soils and 90 percent maximum density for cohesionless soils.
- C. Compaction by water flooding or jetting will not be permitted. This requirement shall also apply to all other areas not specifically designated above.

### 3.13 TESTING

After other required tests have been performed and the trench backfill compacted to the finished grade surface, the pipe shall be inspected to determine whether

significant displacement has occurred. This inspection shall be conducted in the presence of the Engineer.

END OF SECTION



SECTION 02270

EROSION CONTROL, SEDIMENTATION, AND CONTAINMENT  
OF CONSTRUCTION MATERIALS

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. The Contractor shall do all work and take all measures necessary to control soil erosion resulting from construction operations, shall prevent the flow of sediment from the construction site, and shall contain construction materials (including excavation and backfill) within his protected working area so as to prevent damage to the adjacent wetlands.
- B. The Contractor shall not employ any construction method that violates a rule, regulation, guideline, or procedure established by Federal, State or local agencies having jurisdiction over the environmental effects of construction.
- C. Pollutants such as chemicals, fuels, lubricants, bitumen, raw sewage, and other harmful waste shall not be discharged into or alongside of any body of water or into natural or man-made channels leading thereto.

PART 2 - PRODUCTS

2.1. METHODS OF CONSTRUCTION

- A. The Contractor shall use any of the acceptable methods necessary to control soil erosion and prevent the flow of sediment to the maximum extent possible. These methods shall include, but not be limited to, the use of water diversion structures, diversion ditches, and settling basins.
- B. Construction operations shall be restricted to the areas of work indicated on the Drawings and to the area, which must be entered for the construction of temporary or permanent facilities. The Engineer has the authority to limit the surface area of awardable earth material erodible by clearing and grubbing, excavation, borrow and fill operations, and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of the wetlands and adjacent watercourses. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains, and use of temporary mulches, mats, or other control devices or methods as necessary to control erosion.

- C. Excavated soil material shall not be placed adjacent to the wetlands or watercourses in a manner that will cause it to be washed away by high water or runoff. Earth berms or diversions constructed to intercept outlets shall be stable or shall be stabilized by means acceptable to the Engineer. If for any reason construction materials are washed away during the course of construction, the Contractor shall remove those materials from the fouled areas as directed by the Engineer.
- D. For work within easements, all materials used on construction such as excavation, backfill, roadway and pipe bedding and equipment, shall be kept within the limits of the easements.
- E. The Contractor shall not pump silt-laden water from trenches or other excavations into the wetlands or adjacent watercourses. Instead, silt-laden water from his excavations shall be discharged within areas surrounded by baled hay or into sediment traps to ensure the only sediment-free water is returned to the watercourses. Damage to vegetation by excessive watering or silt accumulation in the discharge area shall be avoided.
- F. Prohibited construction procedures include, but are not limited to, the following:
1. Dumping of spoil material into any streams, wetlands, surface waters, or unspecified locations.
  2. Indiscriminate, arbitrary, or capricious operation of equipment in wetlands or surface waters.
  3. Pumping of silt-laden water from trenches or excavations into surface waters or wetlands.
  4. Damaging vegetation adjacent to our outside of the construction area limits.
  5. Disposal of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, washwater from concrete trucks or hydroseeders, or any other pollutant in wetlands, surface waters, or unspecified locations.
  6. Open burning of debris from the construction work.
- G. Any temporary working roadways required shall consist of clean fill approved by the Engineer. In the event fill is used, the Contractor shall take every precaution to prevent the fill from mixing with native materials of the site. All such foreign materials shall be removed from the site following construction.



## 2.2. EROSION CHECKS

- A. The Contractor shall furnish and install baled hay or straw erosion checks in all locations indicated on the Drawings, surrounding the base of all deposits of stored excavated material outside of the disturbed area, and where indicated by the Engineer.
- B. Checks, where indicated on the Drawings, shall be installed immediately after the site is cleared and before trench excavation is begun at the location indicated. Checks located surrounding stored material shall be located approximately 6 feet from that material.
- C. Bales shall be held in place with two 2-inch by 2-inch by 4-foot wooden stakes. Each bale shall be butted tightly against the adjoining bale to preclude short-circuiting of the erosion check.

END OF SECTION



SECTION 02480

SEEDING, FERTILIZING AND MULCHING

PART 1 - GENERAL

1.1. WORK INCLUDED

A. CONDITIONS

1. General provisions of CONTRACT DOCUMENTS apply to this section.

B. DESCRIPTION OF WORK

1. Provide labor, material, equipment and services necessary for proper and complete seeding, fertilizing and mulching.
2. Seed all new and disturbed lawn areas not otherwise indicated to be sodded.

1.2. QUALITY ASSURANCE

- A. The intent of these Specifications is to require the Contractor to provide, in all areas to be seeded, fertilized and mulched, a smooth uniform turf of the grasses specified free from bare spots, eroded areas, weeds or other deficiencies. Acceptance by the Engineer is conditional upon compliance with this intent after initial growing season.
- B. Areas outside limits of construction, damaged by work under this Contract, shall be repaired as required to match existing conditions. This includes borrow areas for excavation.

PART 2 - PRODUCTS

2.1. MATERIALS

- A. Mulch shall be straw or hay mulch, tacked with asphalt, straw or hay mulch fixed in place with disk land packers or disk harrows; or fiber mulch applied simultaneously with grass seed and fertilizer by the use of hydroseeding machinery.
  1. Straw shall be stalks from oats, wheat, rye, barley, or rice that are free from noxious weeds, mold, or other objectionable material. Straw shall be in an air-dry condition suitable for placing with

blower equipment.

2. Hay shall be native hay, sudan-grass hay, broomsedge hay, or other herbaceous mowing, free from noxious weeds, mold or other objectionable material. Hay shall be in an air-dry condition and suitable for placing with blower equipment.
3. Wood cellulose fiber for use with hydraulic application or grass seed and fertilizer shall consist of specially prepared wood cellulose fiber or a combination of wood cellulose and recycled newsprint fibers, processed to contain no growth or germination - inhibiting factors and dyed an appropriate color to facilitate visual metering of the application of materials. On an air-dry weight basis, the wood cellulose fiber shall contain a maximum of 12 percent moisture, plus or minus 3 percent at the time manufactured. The combination of wood cellulose and recycled newsprint fibers shall contain a maximum of 10 percent moisture plus or minus 3 percent at the time of manufacture. The pH range for either mix shall be between 4.5 and 6.5.

- B. Commercial fertilizer shall be a complete commercial fertilizer of 10-10-10 formula, uniform in composition, dry and free flowing. Fertilizer which becomes caked or otherwise damaged making it unsuitable for use will not be accepted.
- C. Limestone shall be finely pulverized (calcium carbonate) containing equivalent of at least 45% calcium oxide, and so pulverized that the residue on #30 and #200 sieves is not more than 0.5% and 15% respectively.
- D. Seed Mixture  
Lawn seed shall be guaranteed by dealer and distributed as follows:

50% Fine Leaf Falcon Fescue  
20% Kentucky Bluegrass "Ken-Blue"  
30% Perennial Ryegrass

## 2.2 SOIL IMPROVEMENTS

- A. A soil test shall be performed for pH, chemical analysis and mechanical analysis to establish the quantities and type of soil amendments required to meet local growing conditions for the type and variety of turf specified. Cost of soil tests is not a pay item and is an incidental cost to the Contractor.
- B. Lime shall be applied at the rate recommended by the soil test. Lime shall be incorporated into the soil to a minimum depth of 4 inches or may be incorporated as part of the tillage operation.

- C. Fertilizer shall be applied at the rate recommended by the soil test. Fertilizer shall be incorporated into the soil to a minimum depth of 4 inches or may be incorporated as part of the tillage or hydroseeding operation.

## 2.3 SEEDING AND MULCHING

- A. Planting Seasons and Conditions: Planting shall not be done when the ground is frozen, snow-covered, or in an unsatisfactory condition for planting. Spring seeding season shall be between February 15 and April 15. Fall seeding shall be between August 15 and October 15.
- B. Seeding seasons may be extended only at direction of Engineer.
  - 1. Seeding:
    - a. Seed shall be broadcast uniformly by approved sowing equipment at the rate of 5 pounds per 1,000 square feet over a designated area. One half of the seed shall be sown in one direction, and the remainder shall be sown at right angles to the first sowing. The seed shall be covered to an average depth of (0.2-0.4) inch by means of spike tooth harrow, cultipacker, or other approved device. Seed shall not be broadcast when winds are above 10 miles per hour.
    - b. Drill seeding shall be accomplished using approved equipment such as cultipacker seeders and grass seed drills. The seed shall be drilled uniformly to an average depth of (0.2-0.4) inch at a rate of 5 pounds per 1,000 square feet.
    - c. When hydroseeding, the (seed and fertilizer), (seed, fertilizer, and approved mulch material) shall be mixed in the required amount of water to produce a homogeneous slurry and then uniformly applied. Wood cellulose or straw mulch shall be added after the seed and fertilizer have been thoroughly mixed. Lime, when applied hydraulically, shall be a single, separate operation.
    - d. Immediately after seeding, the entire area shall be firmed with a roller not exceeding 90 pounds for each foot of roller width. If seeding is performed with a cultipacker-type seeder or if seed is applied in combination with hydromulching, rolling will not be required.
  - 2. Mulching (Straw and Asphalt):
    - a. All seeded areas indicated or directed by the Engineer shall be mulched with a straw and asphalt mat. Mulching shall

follow seeding operation not later than 48 hours. The asphalt mat will not be required on areas adjacent to buildings, sidewalks or concrete curbs.

- b. Straw and asphalt mat shall be applied at rate of two and one-half (2½) tons of straw per acre, and 200 gallons of asphalt per acre. Asphalt shall either be emulsified RS-1 grade or cutback RC-1 grade. Method of application may be:
  - 1) by spreading straw evenly over seeded area after which asphalt tie-down is sprayed over straw in a solid pattern, or
  - 2) by applying mat in one operation by a jet type mulch spreader in which straw and asphalt are sprayed in mixture evenly over area.

## 2.4 SEED PROTECTION ON SLOPES

- A. Cover seeded slopes where grade is 3:1 or greater with jute matting. Roll matting down over slopes without stretching or pulling.
- B. Lay matting smoothly on soil surface, boring top end of each section in narrow 6-inch trench. Leave 12 inches overlap from top roll over bottom roll. Leave 4 inches overlap over adjacent section.
- C. Staple outside edges and overlaps at 36-inch intervals.
- D. Lightly dress slopes with topsoil to ensure close contact between matting and soil.
- E. In ditches, unroll matting in direction of flow. Overlap ends of strips 6 inches with upstream section on top.

## 2.5 WATERING

- A. Immediately following seeding, the Contractor shall water areas thoroughly, including subgrade.
- B. The prepared area is to be watered a minimum of two times per week until it has been accepted. This will not be required if sufficient rain occurs during the week.

## 2.6 CLEAN-UP

- A. Soil, peat or similar material which has been brought onto paved areas within or outside construction limit by hauling operations or otherwise shall be removed promptly, keeping these areas clean at all times.
- B. Upon completion of seeding, all excess soil, stones and debris which have not previously been cleaned up shall be removed from site or disposed of as directed by the Engineer.
- C. All attended areas shall be prepared for final inspection.

## 2.7 MAINTENANCE

- A. Maintenance shall begin immediately following last operation of seeding and shall continue until turf is formally accepted.
- B. Maintenance shall include watering, weeding, cultivating, mulching, regular mowing or seeded areas, and removal of dead materials.

## 2.8 INSPECTION FOR ACCEPTANCE

- A. Inspection of work of this section to determine completion, exclusive of possible replacement of seed, will be made by the Engineer upon written notice requesting such inspection submitted at least ten (10) days prior to anticipated date of inspection and provided that an 80% minimum coverage per square foot for all seeded areas has been established. Contractor shall guarantee, at the time of compliance with the intent of this Specification described herein. This guarantee shall apply to all permanent seeding performed in conjunction with project, regardless of type protection used or season in which seeding performed.
- B. When seeding does not meet guarantee requirements at time of inspection, the Contractor will be advised of amount and location of corrective work deemed necessary. Additional work required may include preparation of a new seedbed, refertilizing, reseeding, remulching, or any erosion control items that were originally required. Contractor shall perform all corrective work as soon as favorable working conditions occur after being advised of corrective work required. Corrective work and materials required to fulfill guarantee requirements will not be paid for, except as hereinafter provided for unavoidable damage.
- C. When unavoidable damage occurs after date project is declared complete and before inspection previously described, then payment will be made at original contract unit prices for additional seeding and protection work ordered by the Engineer. Unavoidable damage may result from slides,

vehicular traffic, fires, and deluges. Failure of seed to sprout and grow will not be considered unavoidable damage.

- D. From time seeding and protection work begins until date project is declared complete, keep all seeded areas in good condition at all times. Damage to seeded areas or to mulch materials shall be promptly repaired as directed. All work and materials necessary to protect, maintain and restore seeded areas during life of contract shall be performed at no additional cost to Owner, except additional work caused by changes in project by the Engineer.
- E. When it becomes necessary to disturb previously seeded areas at direction of the Engineer, payment for a reasonable amount of additional work, as determined by the Engineer, will be made at original contract unit price. No payment will be made for additional work due to changes made for benefit of Contractor, nor will payment be made for corrective work required because Contractor has failed to properly coordinate his entire erosion control schedule thus causing previously seeded areas to be disturbed by operations that could have been performed prior to seeding.
- F. After inspection, Contractor will be notified in writing by Engineer or acceptance of all work of this Section and Contractor will be notified in writing if there are deficiencies of requirements for completion of work. Replacements, maintenance or repair work remaining to be done shall be subject to re-inspection before acceptance.

## 2.9 PLANT WARRANTY AND REPLACEMENT

- A. The Contractor shall warrant 80% coverage per square foot of established grass area for duration of one (1) growing season after final acceptance of seeding by Owner. Seed shall be alive and in satisfactory growth at end of warranty period.
- B. Owner will be responsible for all maintenance necessary to keep grass alive and healthy between time lawns are accepted and end of warranty period. Basic needs of lawn during this period are for adequate water and protection from insects and other similar pests.
- C. Should contractor find lawn is not receiving proper maintenance at any time prior to end of the warranty period, he shall advise Engineer and Owner immediately in writing so corrective measures may be initiated.

END OF SECTION



SECTION 02722  
DUCTILE IRON PIPE

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. 01300 – Submittals
- B. 01600 - Material and Equipment

PART 2 - PRODUCTS

2.1 PIPE

- A. Ductile cast iron pipe shall conform to the American Standard for "Ductile Iron Pipe Centrifugally Cast in Metal Molds for Water or Other Liquids", ASA A21.5 (AWWA C151).
- B. The pipe shall be Thickness Class 51, unless otherwise noted.

2.2 JOINTS

- A. Mechanical joints, bell and spigot joints and flange joints for ductile iron pipe in sizes from 2-inches through 48-inches in diameter shall conform to all of the dimensions, shapes and requirements of ASA A21.10 (AWWA C110), "Cast Iron Fittings, 2-Inches through 48-Inches, for Water and Other Liquids." The mechanical joint shall also conform in all respects to ASA A21.11 (AWWA C111), "Rubber Gasket Joints for Cast Iron Pressure Pipe and Fittings."
- B. Push-on joints shall be a single rubber gasket joint designed to be assembled by the positioning of a continuous, molded, rubber ring gasket in an annular recess in the pipe and forcing of the plain end of the entering pipe into the socket, thereby compressing the gasket radially to the pipe to form a positive seal. The gasket and the annular recess shall be so designed and shaped that the gasket is locked in place against displacement as the joint is assembled. The push-on type joint shall conform to the requirements of ASA A21.10 (AWWA C110) and ASA A21.11 (AWWA C111) where applicable.
- C. Where ductile iron pipe with ball and socket type joints are specified, they shall be of the mechanical gland type. Provisions shall be made for longitudinal expansion and contraction with a positive stop against disengagement of the joint. Up to fifteen (15) degrees angular deflection

shall be accommodated without leakage and without decrease in full diameter of pipe.

### 2.3 FITTINGS

- A. Cast iron or ductile iron fittings in sizes 2-inches through 48-inches for mechanical joints, bell and spigot joints and flange joints shall conform to all the requirements of ASA A21.10 (AWWA C110), "Cast Iron Fittings, 2-Inches through 48-Inches, for Water and Other Liquids," and to the requirements of ASA A21.11 (AWWA C111), "Rubber Gasket Joints for Cast Iron Pressure Pipe and Fittings," for mechanical joints and push-on type joints. Push-on joints for cast iron fittings shall be as described in Section 2 of this section.
- B. The cast iron or ductile iron fittings in sizes larger than 12-inch shall have a pressure rating of 150 psi unless the proposal sheets and/or the construction drawings stipulate that 250 psi cast iron fittings are required.
- C. Unless specifically described on the proposal sheets and/or construction drawings, the cast iron fittings may be supplied in gray iron or ductile iron.

### 2.4 COATINGS FOR DUCTILE IRON PIPE AND FITTINGS

- A. The ductile iron pipe and cast iron or ductile iron fittings for water service shall be furnished with cement mortar lining in accordance with ASA Specifications A21.4 (AWWA C104), "Cement Mortar Lining for Cast Iron Pipe and Fittings." The lining will be 1/16-inch thick for pipe sizes 4-inches through 12-inches in diameter and 3/32-inch thick for sizes 14-inch through 24-inches in diameter. A bituminous seal coat shall be applied to the lining surface immediately following the lining operation to prevent loss of moisture and insure proper curing of the cement mortar. The outside of the iron pipe shall be furnished with a protective coating as outlined in Section 09910, "Painting."
- B. All cast iron or ductile iron fittings and ductile iron pipe which will carry sewage shall be completely coated inside with cement lining and outside with a bituminous coating.
- C. All ductile iron pipe and fittings not installed in a trench condition shall not be coated with a coal-tar pitch on the outside. The pipe and fitting shall be coated in accordance with the Section 09910, "Painting".

### 2.5 MISCELLANEOUS JOINTING MATERIAL

- A. Poured joints for bell and spigot pipe, if required for connection to existing pressure mains, shall be constructed of a yarning or packing material and

lead. The lead for caulking material shall contain not less than 99.73% pure lead. Impurities shall not exceed the following limits:

Arsenic, Antimony & Tin Together	0.015%
Copper	0.08%
Zinc	0.002%
Iron	0.25%
Bismuth	0.25%
Silver	0.02%

- B. The producer's name or the mark of the lead industries shall be clearly cast or stamped upon each piece of lead.
- C. Yarning or packing material shall consist of one of the following: (1) molded or tubular rubber rings, or (2) treated paper rope. The material shall be free of oil, tar or greasy substances.
- D. Victaulic couplings for ductile iron pipe shall consist of malleable iron housing-clamps in two (2) or more parts, a single C-shaped rubber gasket and two (2) or more track-head steel bolts as required to assemble the housing clamps. The coupling shall be of the proper type to encircle the outside diameter of the ductile iron pipe as specified. The malleable iron in the segmental casting shall conform to ASTM A47. The track-type oval neck bolts shall conform to ASTM A183. The rubber gasket shall be Grade "R" natural rubber.
- E. Ductile iron pipe and fittings to be joined with victaulic couplings shall be furnished with shoulders to engage the entire inner circumference of the housing-clamp. The outside surface of the pipe between the shoulder and the pipe end must be smooth and free from deep pits or swells to provide a leaktight seal for the victaulic gasket.
- F. Compression sleeve couplings for plain end ductile iron pipe shall consist of one cylindrical steel middle ring with a pipe stop, two (2) resilient wedge-shaped gaskets, two (2) steel follower rings and a set of high strength steel track-head bolts. The number of bolts furnished will depend on the diameter of the couplings.

### PART 3 – EXECUTION

#### 3.1 ANCHORING ASSEMBLIES

- A. Anchoring assemblies for setting valves, fire hydrants, and special bends shall consist of two (2) mechanical joint cast iron or ductile iron gland fittings cast integrally with the pipe nipple.

- B. The anchor assembly fittings shall have a laying length of fourteen (14) inches. Anchoring pipe shall be used where long lengths of pipe are required to anchor fire hydrants. Anchoring pipe may be furnished with regular anchoring glands cast with the pipe or with a ring gland which will allow free movement of the standard mechanical joint tee and anchoring piece for fire hydrant installations where applicable.

### 3.2 JOINTING PIPE

- A. Joints for buried cast iron or ductile iron pressure main shall be mechanical joint, rubber compression type (push-on joint), poured bell and spigot or victaulic. Cast iron or ductile iron joints within structures may also be flange type or compression sleeve type as shown on the construction drawings. The joints shall be made in the following manner.
- B. Mechanical Joint - The mechanical joint shall conform to the requirements of AWWA A21.11, "Rubber Gasket Joints for Cast Iron Pressure Pipe and Fittings." All surfaces that come in contact with the rubber gasket shall be brushed thoroughly with a wire brush just prior to assembly to remove all rust or foreign material. The clean surface and the rubber gasket shall then be brushed with soapy water. The iron gland shall then be placed on the spigot end with the lip extension facing the joint. The rubber gasket shall then be slipped on the pipe with the thick end toward the gland. The spigot end of the pipe shall then be pushed into the bell seat after which the rubber gasket shall be forced into its retaining space in the bell. Care shall be taken to assure an even seat all around the inner surface of the bell. The gland shall be moved into place for bolting; the bolts shall be inserted and the nuts made up tightly with the fingers only.
- C. The normal range of bolt torques to be applied and length of wrench to produce that torque to the standard cast iron bolts in a joint are as follows:

Size of Bolt Inches	Range of Torque Ft.-lbs	Length of Wrench Inches
3/4	60 - 90	10
1	70 - 100	12
1-1/4	90 - 120	14

- D. The gland shall be brought up toward the pipe flange evenly, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket when tightening bolts. It shall be done by partially tightening the bottom bolt first, then the top bolt, next the bolts at either side, and last the remaining bolts. This process shall be repeated until all bolts are within the specified range of torque. If effective sealing is not attained at the maximum torque, the joint shall be

disassembled and reassembled after thorough cleaning. The bolts shall not be overstressed to compensate for poor assembly.

- E. Rubber Seal Type Joint (Push-On Joint) - The push-on type joint shall conform to the requirements of AWWA A21.11, "Rubber Gasket Joints for Cast Iron Pressure Pipe and Fittings." Before assembly of the rubber seal type joint, the inside of the bell and the rubber gasket shall be wiped clean with a cloth. The gasket should then be placed in the groove of the bell in the manner that conforms to the contour of the bell. A thin film of special lubricant, of the type recommended by the manufacturer of the pipe, is then applied to the inside of the gasket by brush or hand.
- F. The plain end of the pipe shall be wiped clean and placed in approximate alignment with the bell of the pipe. The joint is then made up by exerting sufficient force on the entering pipe so that its plain end is moved past the gasket until it makes contact with the base of the socket. Pipe eight (8) inches in diameter and larger shall be socketed by fork tools or jacks.
- G. The spigot ends of field cut pipe shall be tapered back one-eighth (1/8) inch at an angle of about thirty (30) degrees to the barrel of the pipe with a coarse file or portable grinder. All sharp or rough edges that may injure the rubber gasket shall be removed in this operation.
- H. Bell and Spigot Joints (used only for Connections to Existing Bell and Spigot Piping - The bell and spigot end of the pipe and/or fitting shall be wiped clean before assembly. The spigot end should then be centered in the bell and the pipe forced home to the back of the bell at the correct line and grade and securely held until the joint is completed.
- I. After the spigot end of the pipe or fitting has been properly seated in the bell of the next pipe or fitting with a uniform annular space around the entire spigot end, yarning material shall be driven tightly against the inside base of the bell with suitable yarning tools.
- J. A space of not less than two and one-quarter (2-1/4) inches shall be left in the bell for lead joints in pipe having a nominal diameter of twenty (20) inches or less. The space shall be not less than two and one-half (2-1/2) inches for 24-inch, 30-inch, and 36-inch diameter pipe and three (3) inches for pipe larger than 36-inch diameter.
- K. Lead should be heated in a melting pot kept in easy reach of the joint to be poured and shall be brought to a proper temperature so that when stirred it will show a rapid change of color. Before pouring, all scum shall be removed. Each joint shall be made with one continuous pour filling the entire joint space with solid lead. Spongy or imperfectly filled joints shall be burned out and re-poured.

- L. The joint runner shall fit snugly against the face of the bell and the outside of the pipe. It shall be dammed with clay to form a pouring lip to provide for filling the joint flush with the face and to the top of the bell.
- M. After the lead has cooled to the temperature of the pipe, lead joints shall be caulked with pneumatic or hand tools operated by competent workmen, until such joints are thoroughly compacted and watertight. The finished joint shall show a hard and even hammered surface overall. Care shall be taken not to overstrain the bells during caulking.
- N. Flanged Joints - The flanged joints shall conform to the requirements of AWWA A21.10, "Cast Iron Fittings, 2-Inches through 48-Inches, for Water and Other Liquids." Flanged joints shall be assembled with bolts and flat ring gaskets of the size and number as specified for "Cast Iron Pipe Flanges and Flanged Fittings," ASA B16.1 for Class 125. The construction drawings will show the details of ASA B16.1b, Class 250 flange assemblies, if such are required. Stud or tap bolts shall be furnished when shown on the construction drawings, and when required to complete special assemblies. All exposed bolts, heads, and nuts shall be coated with two (2) coats of asphaltum or other approved metal coating after the joint has been completed.
- O. Restrained Joints - Special anchorage shall include the use of mechanical joint anchoring fittings, couplings and pipe or positively restrained push-on type pipe and fittings which allow for deflection at the joint after assembly, the equal of "Super-Lock" manufactured by the Clow Corporation. No reduction in pipe wall thickness from that specified shall be permitted in connection with a restrained joint.

### 3.3 DEFLECTION OF DUCTILE IRON PIPE

Whenever it is desirable to deflect mechanical-joint or push-on joint pipe in order to form a long radius curve, the amount of the deflection shall not exceed the maximum limits shown for the respective type pipe.

TABLE 1Maximum Permissible Deflection in Laying Mechanical-Joint Pipe

Size Of Pipe In Inches	<u>Maximum Permissible Deflection Per Length - Inches</u>			
	<u>12-Ft. Length</u>	<u>16-Ft. Length</u>	<u>18-Ft. Length</u>	<u>20-Ft. Length</u>
6	18	24	27	
8	13	18	20	
10	13	18	20	
12	13	18	20	22
16	9	12	13-1/2	15
20	7-1/2	10	11	12
24	6	8	9	10

TABLE 2Maximum Permissible Deflection in Laying Push-On-Joint Pipe

Size Of Pipe In Inches	<u>Maximum Permissible Deflection Per Length - Inches</u>			
	<u>12-Ft. Length</u>	<u>16-Ft. Length</u>	<u>18-Ft. Length</u>	<u>20-Ft. Length</u>
6	12	17	19	21
8	12	17	19	21
10	12	17	19	21
12	12	17	19	21
16	7-1/2	10	11	12
20	7-1/2	10	11	12
24	7-1/2	10	11	12

END OF SECTION





SECTION 02940

TEMPORARY SILT AND EROSION CONTROL

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. This work shall consist of furnishing all labor, material, equipment, and incidentals for the construction of silt control structures to reduce the amount of sediment delivered to waterways. Silt control structures shall be constructed as required to control any silt runoff into streams or at the locations directed by the Engineer or his designated Representative.
- B. A written silt control plan shall be prepared and submitted to the Owner for approval before start of construction.
- C. During the life of the contract, the silt control structures shall be maintained by the Contractor, and silt accumulations which threaten to damage the structures, or preclude their effective operation as determined by the Engineer, shall be removed and replaced.

1.2. RELATED SECTIONS

- A. 01600 – Materials and Equipment

PART 2 - PRODUCTS

2.1. STRAW OR HAY BALE SILT CHECK

- A. This silt check shall be constructed with straw or hay bales firmly bound by twine and solidly staked to remain in place, as shown on the Standard Details.
- B. The location of straw or hay bale silt checks shall be as shown on the Plan drawings, or as directed by the Engineer at the time of construction. When the usefulness of the silt checks has ended, they shall be removed, and surplus materials shall be disposed of properly.

PART 3 - EXECUTION

3.1. MEASUREMENT AND PAYMENT

- A. Payment for installation and maintenance of the temporary silt and erosion control structures shall be considered an incidental expense to the construction. All costs for same shall be included in the prices bid for the items included with the project.

END OF SECTION



SECTION 03100  
CONCRETE FORMWORK

PART 1 - GENERAL

1.1. WORK INCLUDED

This Section shall cover Concrete Forms, Metal Forms, Form Ties and Form Release Agents

1.2. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 347 (1978; R 1984) Concrete Formwork

AMERICAN HARDBOARD ASSN (AHA)

AHA A135.4 (1982) Basic Hardboard

DEPARTMENT OF COMMERCE (DOC)

DOC PS 1 (1983) Construction and Industrial Plywood

1.3. SUBMITTALS

NOT APPLICABLE

1.4. DESIGN

- A. METHODOLOGY: Formwork shall be designed in accordance with methodology of ACI 347 for anticipated loads, lateral pressures, and stresses. Forms shall be capable of producing a surface, which meets the requirements of the class of finish specified in Section 03300 CONCRETE FOR BUILDING CONSTRUCTION.
- B. PRESSURES: Forms shall be capable of withstanding the pressures resulting from placement and vibration of concrete.

## PART 2 - PRODUCTS

### 2.1. FORM MATERIALS

- A. **FORMS FOR CLASS B FINISH:** Forms for Class B finished surfaces shall be plywood panels conforming to DOC PS 1, Grade B-B concrete form panels, Class I or II. Other form materials or liners may be used provided the smoothness and appearance of concrete produced will be equivalent to that produced by the plywood concrete form panels. Forms for round columns shall be the prefabricated seamless type.
- B. **FORMS FOR CLASS D FINISH:** Forms for Class D finished surfaces, except where concrete is placed against earth, shall be wood or steel or other approved concrete form material.
- C. **FORM TIES:** Form ties shall be factory-fabricated metal ties, shall be of the removable or internal disconnecting or snap-off type, and shall be of a design that will not permit form deflection and will not spill concrete upon removal. Solid backing shall be provided for each tie. Except where removable tie rods are used, ties shall not leave holes in the concrete surface less than 1/4 inch nor more than 1 inch deep and not more than 1 inch in diameter. Removable tie rods shall be not more than 1-1/2 inches in diameter.
- D. **FORM RELEASING AGENTS:** Form releasing agents shall be commercial formulations that will not bond with, stain or adversely affect concrete surfaces. Agents shall not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water or curing compounds

## PART 3 - EXECUTION

### 3.1. INSTALLATION

- A. Forms shall be mortar tight, properly aligned and adequately supported to produce concrete surfaces meeting the surface requirements specified in Section 03300 CONCRETE FOR BUILDING CONSTRUCTION and conforming to construction tolerance given in TABLE 1.
- B. Where concrete surfaces are to have a Class B finish, joints in form panels shall be arranged as approved.
- C. Where forms for continuous surfaces are placed in successive units, care shall be taken to fit the forms over the completed surface so as to obtain accurate alignment of the surface and to prevent leakage of

mortar.

- D. Forms shall not be reused if there is any evidence of surface wear and tear or defects which would impair the quality of the surface.
- E. Surfaces of forms to be reused shall be cleaned of mortar from previous concreting and of all other foreign material before reuse.
- F. Form ties that are to be completely withdrawn shall be coated with a non-staining bond breaker.

### 3.2. CHAMFERING

Except as otherwise shown, external corners that will be exposed shall be chamfered, beveled, or rounded by moldings placed in the forms

### 3.3. COATING

- A. Forms for Class B finished surfaces shall be coated with a form releasing agent before the form or reinforcement is placed in final position. The coating shall be used as recommended in the manufacturer's printed or written instructions.
- B. Forms for Class C and D finished surfaces may be wet with water in lieu of coating immediately before placing concrete, except that in cold weather with probable freezing temperatures coating shall be mandatory.
- C. Surplus coating on form surfaces and coating on reinforcing steel and construction joints shall be removed before placing concrete.

### 3.4. REMOVAL OF FORMS

- A. Forms shall be removed in a manner that will prevent injury to the concrete and ensure the complete safety of the structure.
- B. Formwork for columns, walls, side of beams and other parts not supporting the weight of concrete may be removed when the concrete has attained sufficient strength to resist damage from the removal operation but not before at least 24 hours has elapsed since concrete placement.
- C. Supporting forms and shores shall not be removed from beams, floors and walls until the structural units are strong enough to carry their own weight and any other construction or natural loads.

- D. In no case will supporting forms or shores be removed before the concrete strength has reached 70 percent of design strengths as determined by field cured cylinders or other approved methods. This strength shall be demonstrated by job-cured test specimens, and by a structural analysis considering the proposed loads in relation to these test strengths and the strength of forming and shoring system.
- E. The job-cured test specimens for form removal purposes shall be provided in numbers as directed and shall be in addition to those required for concrete quality control. The specimens shall be removed from molds at the age of 24 hours and shall receive, insofar as possible, the same curing and protection as the structures they represent.

TABLE 1

TOLERANCES FOR FORMED SURFACES

- |    |   |                            |
|----|---|----------------------------|
| 1. | Variations from the plumb:<br>1/4 inch  | In any 10 feet of length - |
|    | a. In the lines and surfaces:<br>Maximum for entire length - 1 inch of columns, piers, walls and in arises  |                            |
|    | b. For exposed corner columns:<br>In any 20 feet of length - 1/4 inch control-joint grooves,<br>maximum for entire length - 1/2 inch other conspicuous lines                      |                            |
| 2. | Variation from the level or from the grades indicated on the drawings:<br>In any 10 feet of length - 1/4 inch<br>In any bay or in any 20 feet of length - 3/8 inch                |                            |
| 3. | Variation of the linear building lines from established position in plan:<br>In any 20 feet - 1/2 inch<br>Maximum - 1 inch  |                            |
| 4. | Variation of distance between walls, columns, partitions:<br>1/4 inch per 10 feet of distance, but not more than 1/2 inch in any one bay and not more than 1 inch total variation |                            |

5. Variation in the sizes and locations of sleeves, floor openings, and wall opening:  
Minus - 1/4 inch  
Plus - 1/2 inch
6. Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls:  
Minus - 1/4 inch  
Plus - 1/2 inch
7. Footings:
  - a. Variation of dimensions in plan when formed or when placed against unformed excavation:  
Minus - 1/2 inch  
Plus - 2 inches or 3 inches
  - b. Misplacement of 2 percent of the footing width in eccentricity the direction of misplacement but not more than 2 inches
  - c. Reduction in thickness:  
Minus - 5 percent of specified thickness

END OF SECTION





## SECTION 03200

## CONCRETE REINFORCEMENT

## PART 1 - GENERAL

## 1.1. REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## AMERICAN CONCRETE INSTITUTE (ACI)

ACI 318 (1983; Rev 1986) Building Code Requirements for Reinforced Concrete

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53 (1989a) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

ASTM A 82 (1988) Steel Wire, Plain, for Concrete Reinforcement

ASTM A 184 (1988) Fabricated Deformed Steel Bar Mats for Concrete Reinforcement

ASTM A 185 (1985) Steel Welded Wire Fabric, Plain, for Concrete Reinforcement

ASTM A 497 (1989) Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement

ASTM A 499 (1981; R 1988) Steel Bars and Shapes, Carbon Rolled from "T" Rails

ASTM A 615 (1989) Deformed and Plain Billet Steel Bars for Concrete Reinforcement

ASTM A 675 (1988) Steel Bars, Carbon, Hot Wrought, Special Quality, Mechanical Properties

ASTM A 706 (1989) Low-Alloy Steel Deformed Bars for Concrete Reinforcement

AMERICAN WELDING SOCIETY (AWS)

AWS D1.4 (1979) Structural Welding Code - Reinforcing Steel

CONCRETE REINFORCING STEEL INSTITUTE (CRSI)

CRSI DA4 (Jan 1986; 24th Ed) Manual of Standard Practice

## 1.2. SUBMITTALS

Submit shop drawings and product data under provisions of Section 01300.

## 1.3. QUALIFICATIONS

- A. Welders shall be qualified in accordance with AWS D1.4.
- B. Qualification test shall be performed at the worksite and the Contractor shall notify the Owner 24 hours prior to conducting tests. .
- C. Welding procedures qualified by others and welders qualified by another employer may be accepted as permitted by AWS D1.4.

## 1.4. DELIVERY AND STORAGE

Reinforcement and accessories shall be stored off the ground on platforms, skids, or other supports.

## PART 2 - PRODUCTS

### 2.1. DOWELS

- A. Dowels shall conform to ASTM a 675, Grade 80, or ASTM a 499.
- B. Steel pipe conforming to ASTM a 53, Schedule 80, may be used as dowels provided the ends are closed with metal or plastic inserts or with mortar.

### 2.2. FABRICATED BAR MATS

Fabricated bar mats shall conform to ASTM a 184.

### 2.3. REINFORCING STEEL

- A. Reinforcing steel shall be deformed bars conforming to ASTM a 615 or ASTM a 706, grades and sizes as indicated.

- B. Cold drawn wire used for spiral reinforcement shall conform to ASTM A 82.

#### 2.4. WELDED WIRE FABRIC

Welded wire fabric shall conform to ASTM A 185 or ASTM A 497.

#### 2.5. WIRE TIES

Wire ties shall be 16 gauge or heavier black annealed steel wire.

#### 2.6. SUPPORTS

- A. Bar supports for formed surfaces shall be designed and fabricated in accordance with CRSI DA4 and shall be steel or precast concrete blocks.
- B. Precast concrete blocks shall be not less than 4 inches square when supporting reinforcement on ground. Precast concrete block shall have compressive strength equal to that of the surrounding concrete.
- C. Where concrete formed surfaces will be exposed to weather or where surfaces are to be painted, steel supports within 1/2 inch of concrete surface shall be plastic protected or of stainless steel.
- D. Concrete supports used in concrete exposed to view shall have the same color and texture as the finish surface.
- E. For slabs on grade, supports shall be precast concrete blocks, plastic coated steel fabricated with bearing plates, or specifically designed wire fabric supports fabricated of plastic.

### PART 3 - EXECUTION

#### 3.1. REINFORCEMENT

- A. Reinforcement shall be fabricated to shapes and dimensions shown and shall conform to the requirements of ACI 318.
- B. Reinforcement shall be cold bent unless otherwise authorized. Bending may be accomplished in the field or at the mill. Bars shall not be bent after embedment in concrete.
- C. Safety caps shall be placed on all exposed ends of vertical concrete reinforcement bars that pose a danger to life safety.

- D. **PLACEMENT:** Reinforcement shall be free from loose rust and scale, dirt, oil, or other deleterious coating that could reduce bond with the concrete. Reinforcement shall be placed in accordance with ACI 318 at locations shown plus or minus one bar diameter. Reinforcement shall not be continuous through expansion joints and shall be as indicated through construction or contraction joints. Concrete coverage shall be as indicated or as required by ACI 318. If bars are moved more than one bar diameter to avoid interference with other reinforcement, conduits or embedded items, the resulting arrangement of bars, including additional bars required to meet structural requirements, shall be approved before concrete is placed.
- E. **SPLICING:** Splices of reinforcement shall conform to ACI 318 and shall be made only as required or indicated. Splicing shall be by lapping or by mechanical or welded butt connection; except that lap splices shall not be used for bars larger than No. 11 unless otherwise indicated. Welding shall conform to AWS D1.4. Welded butt splices shall be full penetration butt welds. Lapped bars shall be placed in contact and securely tied or spaced transversely apart to permit the embedment of the entire surface of each bar in concrete. Lapped bars shall not be spaced farther apart than one-fifth the required length of lap or 6-inches. Mechanical butt splices shall be in accordance with the recommendation of the manufacturer of the mechanical splicing device. Butt splices shall develop 125 percent of the specified minimum yield tensile strength of the spliced bars or of the smaller bar in transition splices. Bars shall be flame dried before butt splicing. Adequate jigs and clamps or other devices shall be provided to support, align, and hold the longitudinal centerline of the bars to be butt spliced in a straight line.

### 3.2. WELDED-WIRE FABRIC

- A. Welded-wire fabric shall be placed in slabs as indicated. Fabric placed in slabs on grade shall be continuous between expansion, construction, and contraction joints.
- B. Lap splices shall be made in such a way that the overlapped area equals the distance between the outermost crosswires plus 2 inches. Laps shall be staggered to avoid continuous laps in either direction.
- C. Fabric shall be wired or clipped together at laps at intervals not to exceed 4 feet.
- D. Fabric shall be positioned by the use of supports.

### 3.3. DOWELS

- A. Dowels shall be installed in slabs on grade at locations indicated and at right angles to joint being doweled.
- B. Dowels shall be accurately aligned parallel to the finished concrete surface and rigidly supported during concrete placement.
- C. One end of dowels shall be coated with a bond breaker.

END OF SECTION



## SECTION 03250

## EXPANSION JOINTS, CONTRACTION JOINTS, AND WATERSTOPS

## 1.1 WORK INCLUDED

- A. Contraction-Joint Strips.
- B. Expansion Joint Filler
- C. Joint Sealant
- D. Waterstops

## 1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A135.4 (1982) Basic Hardboard

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1751 (1983) *Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)*

ASTM D 1752 (1984) *Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction*

ASTM D 2628 (1981) *Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements*

ASTM D 2835 (1972; R 1982) *Lubricant for Installation of Preformed Compression Seals in Concrete Pavements*

## CORPS OF ENGINEERS HANDBOOK FOR CONCRETE AND CEMENT (CRD)

CRD-C 513 (1974) Rubber Waterstops

CRD-C 572 (1974) Polyvinylchloride Waterstops

## FEDERAL SPECIFICATIONS (FS)

- |              |   |
|--------------|---|
| FS SS-S-200  | (Rev. E) Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold-Applied, for Portland Cement Concrete Pavement |
| FS SS-S-1401 | (Rec. C) Sealant, Joint, Non-Jet-Fuel-Resistant, Hot-Applied, for Portland Cement and Asphalt Concrete Pavements  |
| FS SS-S-1614 | (Rev. A) Sealants, Joint, Jet-Fuel-Resistant, Hot-Applied, for Portland Cement and Tar Concrete Pavements         |

### 1.3 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01300.

### 1.4 DELIVERY AND STORAGE

- A. Material delivered and placed in storage shall be stored off the ground and protected from moisture, dirt, and other contaminants.
- B. Sealants shall be delivered in the manufacturer's original unopened containers. Sealants whose shelf life has expired shall be removed from the site.

## PART 2 - PRODUCTS

### 2.1 CONTRACTION-JOINT STRIPS

- A. Contraction-joint strips shall be 1/8-inch thick tempered hardboard conforming to ANSI A135.4, Class 1.
- B. In lieu of hardboard strips, rigid polyvinylchloride (PVC) insert strips specifically designed to induce controlled cracking in slabs on grade may be used. Such insert strips shall have removable top section.

### 2.2 EXPANSION-JOINT FILLER

- A. Expansion-joint filler shall be premolded material conforming to ASTM D 1751 or ASTM D 1752.



- B. Unless otherwise indicated, filler material shall be 3/8-inch thick and of a width applicable for the joint formed.

## 2.3 JOINT SEALANT

- A. Joint sealant shall conform to the following:
- B. Preformed Polychloroprene Elastomeric Joint Seals ASTM D 2628.
- C. Lubricant for Installation of Preformed Compression Seals ASTM D 2835.
- D. Hot-Poured Type FS SS-S-1401.
- E. Cold-Applied Jet-Fuel Resistant Type FS SS-S-200, Type M.
- F. Hot-Applied Jet-Fuel Resistant Type FS SS-S-1614.

## 2.4 WATERSTOPS

- A. Waterstops shall conform to CRD-C 513 or CRD-C 572.

# PART 3 - EXECUTION

## 3.1. JOINTS

Joints shall be installed at locations indicated and as authorized.

- A **Contraction Joints:** Contraction joints may be constructed by inserting tempered hardboard strips or rigid PVC insert strips into the plastic concrete or by cutting the concrete with a saw after concrete has set. Joints shall be approximately 1/8-inch wide and shall extend into the slab approximately one-fourth the slab thickness but not less than 1 inch.
  - 1. **Joint Strips:** Strips shall be of the required dimensions and as long as practicable. After the first floating, the concrete shall be grooved with a tool at the joint locations. The strips shall be inserted in the groove and depressed until the top edge of the vertical surface is flush with the surface of the slab. The slab shall be floated and finished as specified. Working of the concrete adjacent to the joint shall be the minimum necessary to fill voids and consolidate the concrete. Where indicated, the top portion of the strip shall be sawed out after the curing period to form a recess for sealer. The removable section of PVC strips shall be discarded and the insert left in place. Means shall be provided to insure true alignment of the strips is maintained during insertion.

2. Sawed Joints: Joint sawing shall be early enough to prevent uncontrolled cracking in the slab, but late enough that this can be accomplished without appreciable spalling. Concrete-sawing machines shall be adequate in number and power, and with sufficient replacement blades to complete the sawing at the required rate. Joints shall be cut to true alignment and shall be cut in sequence of concrete placement. Sludge and cutting debris shall be removed.
- B. Expansion Joints: Premolded expansion joint filler shall be used in expansion and isolation joints in slabs around columns and between slabs on grade and vertical surfaces where indicated. The filler shall extend the full slab depth, unless otherwise indicated. The edges of the joint shall be neatly finished with an edging tool of 1/8-inch radius, except where a resilient floor surface will be applied. Where the joint is to receive a sealant, the filler strips shall be installed at the proper level below the finished floor with a slightly tapered, dressed-and-oiled wood strip temporarily secured to the top thereof to form a recess 3/4-inch deep to be filled with sealant. The wood strip shall be removed after the concrete has set. In lieu of the wood strip a removable expansion filler cap designed and fabricated for this purpose may be used.
  - C. Joint Sealant: Sawed contraction joints and expansion joints in slabs shall be filled with joint sealant, unless otherwise shown. Types and locations of sealants shall be as indicated. Joint surfaces shall be clean, dry, and free of oil or other foreign material which would adversely affect the bond between sealant and concrete. Joint sealant shall be applied as recommended by the manufacturer of the sealant. Joints sealed with field molded sealant shall be completely filled with sealant.

### 3.2. WATERSTOPS

- A. Waterstops shall be of the type indicated and shall be installed at the locations shown to form a continuous watertight diaphragm.
- B. Adequate provision shall be made to support and completely protect the waterstops during the progress of the work. Any waterstop punctured or damaged shall be repaired or replaced.
- C. Splices shall be made in conformance with the recommendations of the waterstop manufacturer. Continuity of cross sectional features shall be maintained across the splice. Splices showing evidence of separation after bending shall be remade.

END OF SECTION

## SECTION 03300

## CONCRETE

## PART 1 GENERAL

## 1.1 WORK INCLUDED

- A. Admixtures
- B. Cementitious Materials
- C. Aggregates
- D. Curing Materials
- E. Embedded Items
- F. Nonshrink Grout
- G. Nonslip Surfacing Material
- H. Floor Hardener
- I. Perimeter Insulation
- J. Vapor Barrier
- K. Water

## 1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## AMERICAN CONCRETE INSTITUTE (ACI)

- |           |   |
|-----------|---|
| ACI 211.1 | (1981; Rev 1985) Selecting Proportions for Normal, Heavyweight, and Mass Concrete |
| ACI 211.2 | (1981) Selecting Proportions for Structural Lightweight Concrete                  |
| ACI 301   | (1984; Rev 1988) Structural Concrete for Buildings                                |
| ACI 305R  | (1977; Rev 1982) Hot Weather Concreting   |

ACI 318 (1983; Rev 1986) Building Code Requirements for Reinforced Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 31	(1988) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(1986) Concrete Aggregates
ASTM C 39	(1986) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 42	(1987) Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C 78	(1984) Flexural Strength of Concrete (Using Simple Beam with Third Point Loading)
ASTM C 94	(1986b) Ready Mixed Concrete
ASTM C 109	(1987) Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)
ASTM C 143	(1978) Slump of Portland Cement Concrete
ASTM C 150	(1986) Portland Cement
ASTM C 171	(1969; R 1986) Sheet Materials for Curing Concrete
ASTM C 172	(1982) Sampling Freshly Mixed Concrete
ASTM C 173	(1978) Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C 192	(1988) Making and Curing Concrete Test Specimens in the Laboratory
ASTM C 231	(1982) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(1986) Air-Entraining Admixtures for Concrete
ASTM C 309	(1981) Liquid Membrane-Forming Compounds for Curing Concrete

ASTM C 330	(1987) Lightweight Aggregates for Structural Concrete
ASTM C 494	(1986) Chemical Admixtures for Concrete
ASTM C 552	(1988) Cellular Glass Thermal Insulation
ASTM C 567	(1985) Unit Weight of Structural Lightweight Concrete
ASTM C 578	(1987a) Preformed, Cellular Polystyrene Thermal Insulation
ASTM C 595	(1986) Blended Hydraulic Cements
ASTM C 597	(1983) Pulse Velocity through Concrete
ASTM C 618	(1987) Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete
ASTM C 803	(1982) Penetration Resistance of Hardened Concrete
ASTM C 805	(1985) Rebound Number of Hardened Concrete
ASTM C 989	(1988) Ground Iron Blast Furnace Slag for Use in Concrete and Mortars
ASTM C 1017	(1985) Chemical Admixture for Use in Producing Flowing Concrete
ASTM D 98	(1987) Calcium Chloride
ASTM E 96	(1980) Water Vapor Transmission of Materials

#### FEDERAL SPECIFICATIONS (FS)

FS HH I-530	(Rev B; Int Am 1) Insulation Board, Thermal, Unfaced, Polyurethane or Polyisocyanurate
FS CCC-C-467	(Rev C) Cloth, Burlap, Jute (or Kenaf)

#### NATIONAL READY-MIXED CONCRETE ASSOCIATION (NRMCA)

NRMCA 01	(Jan 1, 1984) Certification of Ready Mixed Concrete Production Facilities
NRMCA CPMB 100	(8th Rev 1986) Concrete Plant Standards &

NRMCA TMMB-01 (Jan 1, 1982; 11th Rev) Truck Mixer and Agitator Standards &

CORPS OF ENGINEERS (COE) &

COE CRD-C 621 (1989) Specification for Non-Shrink Grout

1.3 SUBMITTALS

A. Submit shop drawings and product data under provision of Section 01300.

1.4 GENERAL REQUIREMENTS

A. Strength Requirements

Structural concrete for all work shall have a 28-day compressive strength of 4000 pounds per square inch. Concrete slabs on-grade as indicated shall have a 28-day flexural strength of 600 pounds per square inch. Concrete made with high-early strength cement shall have a 7-day strength equal to the specified 28-day strength for concrete made with Type I or II Portland Cement.

B. Air Entrainment

Concrete may, at the option of the Contractor, be air entrained to produce concrete with 3 to 5 percent total air.

C. Special Properties

Concrete may contain other admixtures, such as water reducers, superplasticizers, or set retarding agents to provide special properties to the concrete, if approved.

D. Slump

Slump shall be within the following limits:

Structural Element	Slump in inches	
	Minimum	Maximum
Walls, columns and beams	2	4
Foundation walls, substructure walls, footings, pavement, and slabs	1	3

Any structural concrete approved  
for placement by pumping                      None              6

\*Where use of superplasticizers are approved to produce flowing concrete these slump requirements do not apply.

E. Technical Service for Specialized Concrete

The service of a technical representative shall be obtained to oversee proportioning, batching, mixing, placing, consolidating and finishing of specialized structural concrete, such as lightweight or flowing concrete until field controls indicate concrete of specified quality is furnished.

1.5 PROPORTIONS OF MIX

A. Mixture Proportioning, Normal Weight Concrete

Trial batches shall contain materials proposed to be used in the project. Trial mixtures having proportions, consistencies and air content suitable for the work shall be made based on methodology described in ACI 211.1, using at least three different water-cement ratios. Trial mixes shall be proportioned to produce concrete strengths specified. In the case where ground iron blast-furnace slag is used, the weight of the slag will be substituted in the equations for the term P which is used to denote the weight of pozzolan. Trial mixtures shall be designed for maximum permitted slump and air content. The temperature of concrete in each trial batch shall be reported. For each water-cement ratio at least three test cylinders for each test age shall be made and cured in accordance with ASTM C 192. They shall be tested at 7 and 28 days in accordance with ASTM C 39. From these test results a curve shall be plotted showing the relationship between water-cement ratio and strength.

B. Average Strength

In meeting the strength requirements specified, the selected mixture proportion shall produce an average compressive strength exceeding the specified strength by the amount indicated below. Where a concrete production facility has test records, a standard deviation shall be established. Test records from which a standard deviation is calculated shall represent materials, quality control procedures, and conditions similar to those expected; shall represent concrete produced to meet a specified strength or strengths within 1000 psi of that specified for proposed work; and shall consist of at least 30 consecutive tests. A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days or at other test age designated for determination of the specified strength.

1. Test Records Exceeding 29

Required average compressive strength used as the basis for selection of concrete proportions shall be the larger of the specified strength plus the standard deviation multiplied by 1.34 or the specified strength plus the standard deviation multiplied by 2.33 minus 500.

2. Test Records Less Than 29

Where a concrete production facility does not have test records meeting the above requirements but does have a record based on 15 to 29 consecutive tests, a standard deviation may be established as the product of the calculated standard deviation and a modification factor from the following table:

No. of tests (1)	Modification factor for standard deviation
less than 15	See Note
15	1.16
20	1.08
25	1.03
30 or more	1.00

(1) Interpolate for intermediate numbers of tests.

When a concrete production facility does not have field strength test records for calculation of standard deviation or the number of tests is less than 15, the required average strength shall be:

- a. The specified strength plus 1000 specified strength of less than 3000 psi.
- b. The specified strength plus 1200 for specified strengths of 3000 to 5000 psi.
- c. The specified strength plus 1400 for specified strengths greater than 5000 psi.



## 1.6 STORAGE OF MATERIALS

Cement and pozzolan shall be stored in weathertight buildings, bins, or silos which will exclude moisture and contaminants. Aggregate stockpiles shall be arranged and used in a manner to avoid excessive segregation and to prevent contamination with other materials or with other sizes of aggregates. Reinforcing bars and accessories shall be stored above the ground on platforms, skids or other supports. Other materials shall be stored in such a manner as to avoid contamination and deterioration. Admixtures which have been in storage at the project site for longer than 6 months or which have been subjected to freezing shall not be used unless retested and proven to meet the specified requirements.

## PART 2 PRODUCTS

### 2.1 ADMIXTURES

Admixtures shall conform to the following:

- A. Accelerating Admixture  
ASTM C 494, Type C or E; or calcium chloride conforming to ASTM D 98.
- B. Air Entraining Admixture  
ASTM C 260.
- C. Flowing Concrete Admixture  
ASTM C 1017, Type 1 or 2.
- D. Water-Reducing or Retarding Admixture  
ASTM C 494, Type A, B, D, F, or G.

### 2.2 CEMENTITIOUS MATERIALS

Cementitious materials shall each be of one type and from one source when used in concrete which will have surfaces exposed in the finished structure. Cementitious materials shall conform to one of the following:

- A. Cement  
ASTM C 150, Type I or II low alkali.

- B. Portland Blast-Furnace-Slag Cement  
ASTM C 595, Type IS.
- C. Portland-Pozzolan Cement  
ASTM C 595, Type IP.
- D. Pozzolan  
ASTM C 618, Class F.
- E. Ground Iron Blast-Furnace Slag  
ASTM C 989, Grade 120.

### 2.3 AGGREGATES

Aggregates shall conform to the following:

- A. Lightweight Aggregate  
ASTM C 330
- B. Normal Weight Aggregate  
ASTM C 33.

### 2.4 CURING MATERIALS

- A. Burlap  
FS CCC-C-467.
- B. Impervious Sheets  
ASTM C 171, type optional, except that polyethylene film, if used, shall be white opaque.
- C. Membrane-Forming Compounds  
ASTM C 309, Type 1-D, Class A or B.

## 2.5 EMBEDDED ITEMS

Embedded items shall be of the size and type indicated or as needed for the application.

## 2.6 NONSHRINK GROUT

Nonshrink grout shall conform to & COE CRD-C 621- & and shall be a formulation suitable for the application.

## 2.7 FLOOR HARDENER

Floor hardener shall be a colorless aqueous solution containing zinc silicofluoride, magnesium silicofluoride, or sodium silicofluoride. These silicofluoride can be used individually or in combination.

## 2.8 PERIMETER INSULATION

Perimeter insulation shall be 2-inch thick polystyrene conforming to ASTM C 578, Type II; polyurethane conforming to FS HH-I-530, Type II; or cellular glass conforming to ASTM C 552, Type I or IV.

## 2.9 VAPOR BARRIER

Vapor barrier shall be polyethylene sheeting with a minimum thickness of 6 mils or other equivalent material having a vapor permeance rating not exceeding 0.5 perms as determined in accordance with ASTM E 96.

## 2.10 WATER

Water shall be potable, except that nonpotable water may be used if it produces mortar cubes having 7- and 28-day strengths at least 90 percent of the strength of similar specimens made with water from a municipal supply. The strength comparison shall be made on mortars, identical except for mixing water, prepared and tested in accordance with ASTM C 109. Water for curing shall not contain any substance injurious to concrete, or which causes staining.

# PART 3 EXECUTION

## 3.1 PREPARATION OF SURFACES

Surfaces to receive concrete shall be clean and free from frost, ice, mud, and water. Conduit and other similar items shall be in place and clean of any deleterious substance.

#### A. Foundations

Earthwork shall be as specified on Drawings. Flowing water shall be diverted without washing over freshly deposited concrete. Rock foundations shall be cleaned by high velocity air-water jets, sandblasting, or other approved methods. Debris and loose, semi-detached or unsound fragments shall be removed. Rock surfaces shall be moist but without free water when concrete is placed. Semiporous subgrades for foundations and footings shall be damp when concrete is placed. Pervious subgrades shall be sealed by blending impervious material with the top 6 inches of the in-place pervious material or by covering with an impervious membrane.

#### B. Perimeter Insulation

Perimeter insulation shall be installed at locations indicated. Adhesive shall be used where insulation is applied to the interior surface of foundation walls.

#### C. Vapor Barrier

Unless otherwise indicated, subgrades for slabs in buildings shall be covered with a vapor barrier. Vapor barrier edges shall be lapped at least 4 inches and ends shall be lapped not less than 6 inches. Patches and lapped joints shall be sealed with pressure-sensitive adhesive or tape not less than 2 inches wide and compatible with the membrane.

#### D. Preparation of Previously Placed Concrete

Concrete surfaces to which other concrete is to be bonded shall be roughened in an approved manner that will expose sound aggregate uniformly without damaging the concrete. Laitance and loose particles shall be removed. Surfaces shall be moist but without free water when concrete is placed.

### 3.2 INSTALLATION OF EMBEDDED ITEMS

Embedded items shall be free from oil, loose scale or rust, and paint. Embedded items shall be installed at the locations indicated and required to serve the intended purpose. Voids in sleeves, slots and inserts shall be filled with readily removable material to prevent the entry of concrete.

### 3.3 BATCHING, MIXING AND TRANSPORTING CONCRETE

Ready-mixed concrete shall be batched, mixed and transported in accordance with ASTM C 94, except as otherwise specified. Truck mixers, agitators, and

nonagitating units shall comply with NRMCA TMMB-01. Ready-mix plant equipment and facilities shall be certified in accordance with NRMCA 01. Site-mixed concrete shall be mixed in accordance with ACI 301. On-site plant shall conform to the NRMCA CPMB-100.

A. Admixtures

Admixtures shall be batched within an accuracy of 3 percent. Where two or more admixtures are used in the same batch, they shall be batched separately and must be compatible. Retarding admixture shall be added within one minute after addition of water is complete or in the first quarter of the required mixing time, whichever is first. Superplasticizing admixtures shall be added as recommended by manufacturer. Concrete that shows evidence of total collapse or segregation caused by the use of admixture shall be removed from the site.

B. Control of Mixing Water

No water from the truck system or elsewhere shall be added after the initial introduction of mixing water for the batch except when on arrival at the jobsite, the slump of the concrete is less than that specified. Water added to bring the slump within the specified range shall not change the total water in the concrete to a point that the approved water-cement ratio is exceeded. The drum shall be turned an additional 30 revolutions, or more, if necessary, until the added water is uniformly mixed into the concrete. Water shall not be added to the batch at any later time.

C. Mixing of Lightweight Concrete

The mixing cycle shall be as recommended by the aggregate producer for the batching and mixing as required by the absorptivity of the aggregate. Typically, the mixer is charged with approximately 2/3 of the total mixing water and all of the aggregate. Ingredients are mixed for not less than 30 seconds in a stationary mixer nor less than 10 revolutions at mixing speed in a truck mixer. Cement, air entraining admixture, and the rest of the mixing water are added to obtain the required slump and mixing is continued for 30 revolutions at mixing speed.

### 3.4 SAMPLING AND TESTING

Sampling and Testing is the responsibility of the Contractor and shall be performed by an approved testing agency.

A. Aggregates

Aggregates for normal weight concrete shall be sampled and tested in

accordance with ASTM C 33. Gradation tests shall be performed on the first day and every other day thereafter during concrete construction.

## B. Sampling of Concrete

Samples of concrete for air, slump, unit weight, and strength tests shall be taken in accordance with ASTM C 172.

### 1. Air Content

Test for air content shall be performed in accordance with ASTM C 173 or ASTM C 231. A minimum of 1 test per day shall be conducted.

### 2. Slump

At least 2 slump tests shall be made on randomly selected batches of each mixture of concrete during each day's concrete placement. Tests shall be performed in accordance with ASTM C 143.

## C. Evaluation and Acceptance of Concrete

### 1. Frequency of Testing

Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 150 cubic yards of concrete, nor less than once for each 5000 square feet of surface area for slabs or walls. If this sampling frequency results in less than 5 strength tests for a given class of concrete, tests shall be made from at least 5 randomly selected trucks or from each truck if fewer than 5 truck loads are used. Field cured specimens for determining form removal time or when a structure may be put in service shall be made in numbers directed to check the adequacy of curing and protection of concrete in the structure. The specimens shall be removed from the molds at the age of 24 hours and shall be cured and protected, insofar as practicable, in the same manner as that given to the portion of the structure the samples represent.

### 2. Testing Procedures

Cylinders and beams for acceptance tests shall be molded and cured in accordance with ASTM C 31. Cylinders shall be tested in accordance with ASTM C 39 and beams shall be tested in accordance with ASTM C 78. A strength test shall be the average of the strengths of two cylinders made from the same sample of

concrete and tested at 28 days or at another specified test age.

### 3. Evaluation of Results

Concrete specified on the basis of compressive strength will be considered satisfactory if the averages of all sets of three consecutive strength test results equal or exceed the specified strength and no individual strength test result falls below the required strength by more than 500 pounds per square inch. For flexural strength concrete, the strength level of the concrete will be considered satisfactory if the averages of all sets of five consecutive strength test results equal or exceed the required flexural strength.

#### D. Investigation of Low-Strength Test Results

When any strength test of standard-cured test cylinder falls below the specified strength requirement by more than 500 pounds per square inch, or if tests of field-cured cylinders indicate deficiencies in protection and curing, steps shall be taken to assure that load-carrying capacity of the structure is not jeopardized. Non-destructive testing in accordance with ASTM C 597, ASTM C 803 or ASTM C 805 may be permitted by the Owner to determine the relative strengths at various locations in the structure as an aid in evaluating concrete strength in place or for selecting areas to be cored. Such tests, unless properly calibrated and correlated with other test data, shall not be used as a basis for acceptance or rejection. When strength of concrete in place is considered potentially deficient, cores shall be obtained and tested in accordance with ASTM C 42. At least three representative cores shall be taken from each member or area of concrete in place that is considered potentially deficient. The location of cores shall be determined by the Owner to least impair the strength of the structure. If the concrete in the structure will be dry under service conditions, the cores shall be air-dried (temperature 60 to 80 degrees F, relative humidity less than 60 percent) for seven days before testing and shall be tested dry. If the concrete in the structure will be more than superficially wet under service conditions, the cores shall be tested after moisture conditioning in accordance with ASTM C 42. Concrete in the area represented by the core testing will be considered adequate if the average strength of the cores is equal to or at least 85 percent of the specified strength requirement and if no single core is less than 75 percent of the specified strength requirement. If the core tests are inconclusive or impractical to obtain, or if structural analysis does not confirm the safety of the structure, load tests may be directed by the Owner in accordance with the requirements of ACI 318. Concrete work evaluated by structural analysis or by results of a load test and found deficient shall be corrected in a manner satisfactory to the Owner. All investigations, testing, load

tests, and correction of deficiencies shall be performed, and approved by the Owner, at the expense of the Contractor.

### 3.5 CONVEYING CONCRETE

Concrete shall be conveyed from mixer to forms as rapidly as possible and within the time interval specified in paragraph "CONCRETE PLACEMENT" by methods which will prevent segregation or loss of ingredients.

#### A. Chutes

When concrete can be placed directly from a truck mixer or other transporting equipment, chutes attached to this equipment may be used. Separate chutes will not be permitted except when specifically approved.

#### B. Buckets

Bucket design shall be such that concrete of the required slump can be readily discharged. Bucket gates shall be essentially grout tight when closed. The bucket shall provide means for positive regulations of the amount and rate of deposit of concrete in each dumping position.

#### C. Belt Conveyors

Belt conveyors may be used when approved. Belt conveyors shall be designed for conveying concrete and shall be operated to assure a uniform flow of concrete to the final place of deposit without segregation or loss of mortar. Conveyors shall be provided with positive means for preventing segregation of the concrete at transfer points and point of placement.

#### D. Pumps

Concrete may be conveyed by positive displacement pumps when approved. Pump shall be the piston or squeeze pressure type. Pipeline shall be steel pipe or heavy duty flexible hose. Inside diameter of the pipe shall be at least three times the maximum size of the coarse aggregate. Distance to be pumped shall not exceed the limits recommended by the pump manufacturer. Concrete shall be supplied to the pump continuously. When pumping is completed, the concrete remaining in the pipeline shall be ejected without contaminating the concrete in place. After each use, the equipment shall be thoroughly cleaned. Flushing water shall be wasted outside the forms.



### 3.6 CONCRETE PLACEMENT

Mixed concrete which is transported in truck mixers or agitators or concrete which is truck mixed, shall be discharged within 1-1/2 hours or before the drum has revolved 300 revolutions, whichever comes first after the introduction of the mixing water to the cement and aggregates or the introduction of the cement to the aggregates. These limitations may be waived by the Owner if the concrete is of such slump after the 1-1/2 hour time or 300 revolution limit has been reached that it can be placed, without the addition of water to the batch. When the concrete temperature exceeds 85 degrees F, the time shall be reduced to 45 minutes. Concrete shall be placed within 15 minutes after it has been discharged from the truck.

#### A. Placing Operation

Concrete shall be handled from mixer to forms in a continuous manner until the approved unit of operation is completed. Adequate scaffolding, ramps and walkways shall be provided so that personnel and equipment are not supported by in-place reinforcement. Placing will not be permitted when the sun, heat, wind, or limitations of facilities furnished by the Contractor prevent proper consolidation, finishing and curing. Concrete shall be deposited as close as possible to its final position in the forms, and there shall be no vertical drop greater than 8 feet except where suitable equipment is provided to prevent segregation and where specifically authorized. Depositing of the concrete shall be so regulated that it will be effectively consolidated in horizontal layers not more than 12 inches thick, except that all slabs shall be placed in a single layer. Concrete to receive other construction shall be screeded to the proper level to avoid excessive shimming or grouting.

#### B. Consolidation

Immediately after placing, each layer of concrete shall be consolidated by internal vibrators, except for slabs 4 inches or less. The vibrators shall at all times be adequate in effectiveness and number to properly consolidate the concrete; a spare vibrator shall be kept at the jobsite during all concrete placing operations. The vibrators shall have a frequency of not less than 8000 vibrations per minute, and the head diameter and amplitude shall be appropriate for the concrete mixture being placed. Vibrators shall be inserted vertically at uniform spacing over the area of placement. The distance between insertions shall be approximately 1-1/2 times the radius of action of the vibrator so that the area being vibrated will overlap the adjacent just-vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the preceding layer if there is such. Vibrator shall be held stationary until the concrete is consolidated and then withdrawn slowly. The use of form

vibrators must be specifically approved. Vibrators shall not be used to transport concrete within the forms. Slabs 4 inches and less in thickness shall be consolidated by properly designed vibrating screeds or other approved technique. Excessive vibration of lightweight concrete resulting in segregation and flotation of coarse aggregate shall be avoided.

#### C. Cold Weather Requirements

Special protection measures, approved by the Owner, shall be used if freezing temperatures are anticipated before the expiration of the specified curing period. The ambient temperature of the air where concrete is to be placed and the temperature of surfaces to receive concrete shall be not less than 40 degrees F. The temperature of the concrete when placed shall be not less than 50 degrees F nor more than 75 degrees F. Heating of the mixing water or aggregates will be required to regulate the concrete placing temperature. Materials entering the mixer shall be free from ice, snow, or frozen lumps. Salt, chemicals or other materials shall not be incorporated in the concrete to prevent freezing. Upon written approval, calcium chloride or chemical admixture conforming to ASTM C 494 Type C or E may be used. The amount of calcium chloride shall not exceed 2 percent by weight of the cement, and it shall be batched in solution form. Calcium chloride shall not be used where concrete will be in contact with aluminum or zinc-coated items, or where sulfate resistant or prestressed concrete is specified.

#### D. Warm Weather Requirements

The temperature of the concrete placed during warm weather shall not exceed 85 degrees F except where an approved retarder is used. The mixing water and/or aggregates shall be cooled, if necessary, to maintain a satisfactory placing temperature. In no case shall the placing temperature exceed 95 degrees F.

### 3.7 CONSTRUCTION JOINTS

Construction joints shall be located as indicated or approved. Where concrete work is interrupted by weather, end of work shift or other similar type of delay, location and type of construction joint shall be subject to approval of the Owner. Unless otherwise indicated and except for slabs on grade, reinforcing steel shall extend through construction joints. Construction joints in slabs on grade shall be keyed or doweled as shown. Concrete columns, walls, or piers shall be in place at least 2 hours, or until the concrete is no longer plastic, before placing concrete for beams, girders, or slabs thereon. In walls having door window openings, lifts shall terminate at the top and bottom of the opening. Other lifts shall terminate at such levels as to conform to structural requirements or architectural details. Where horizontal construction joints are required, a strip of 1-inch square-edge

lumber, beveled and oiled to facilitate removal, shall be tacked to the inside of the forms at the construction joint. Concrete shall be placed to a point 1 inch above the underside of the strip. The strip shall be removed 1 hour after the concrete has been placed, and any irregularities in the joint line shall be leveled off with a wood float, and all laitance shall be removed. Prior to placing additional concrete, horizontal construction joints shall be prepared as specified in paragraph "PREPARATIONS OF SURFACES."

### 3.8 FINISHING CONCRETE

#### A. Formed Surfaces

##### 1. Repair of Surface Defects

Surface defects shall be repaired within 24 hours after the removal of forms. Honeycombed and other defective areas shall be cut back to solid concrete or to a depth of not less than 1 inch, whichever is greater. Edges shall be cut perpendicular to the surface of the concrete. The prepared areas shall be dampened and brush-coated with neat cement grout. The repair shall be made using mortar consisting of not more than 1 part cement to 2-1/2 parts sand. The mixed mortar shall be allowed to stand to stiffen (approximately 45 minutes), during which time the mortar shall be intermittently remixed without the addition of water. After the mortar has attained the stiffest consistency that will permit placing, the patching mix shall be thoroughly tamped into place by means approved by the Owner and finished slightly higher than the surrounding surface. For [Class A and] Class B finished surfaces the cement used in the patching mortar shall be a blend of job cement and white cement proportioned to produce a finished repair surface matching, after curing, the color of adjacent surfaces. Holes left after the removal of form ties shall be cleaned and filled with patching mortar. Holes left by the removal of tie rods shall be reamed and filled by dry packing. Repaired surfaces shall be cured as required for adjacent surfaces. The temperature of concrete, mortar patching material, and ambient air shall be above 50 degrees F while making repairs and during the curing period. Concrete with defects which affect the strength of the member or with excessive honeycombs will be rejected, or the defects shall be corrected as directed.

##### 2. Class A Finish

Where a Class A finish is indicated, fins shall be removed. A mortar mix consisting of one part Portland Cement and two parts well-graded sand passing a No. 30 sieve, with water added to give

the consistency of thick paint, shall be prepared. White cement shall be used to replace part of the job cement. After the surface has been thoroughly wetted and allowed to approach surface dryness, the mortar shall be vigorously applied to the area by clean burlap pads or by cork or wood-floating, to completely fill all surface voids. Excess grout shall be scraped off with a trowel. As soon as it can be accomplished without pulling the mortar from the voids, the area shall be rubbed with burlap pads until all visible grout film is removed. The rubbing pads shall have on their surfaces the same sand-cement mix specified above but without any mixing water. The finish of any area shall be completed in the same day, and the limits of a finished area shall be made at natural breaks in the surface. The surface shall be continuously moist cured for 48 hours. The temperature of the air adjacent to the surface shall be not less than 50 degrees F for 24 hours prior to, and 48 hours after, the application. In hot, dry weather the smooth finish shall be applied in shaded areas.

3. Class B Finish

Where a Class B finish is indicated, fins shall be removed. Concrete surface shall be smooth with a texture at least equal to that obtained through the use of Grade B-B plywood forms.

4. Class C Finish

Where a Class C finish is indicated, fins shall be removed. Concrete surfaces shall be relatively smooth with a texture imparted by the forms used.

5. Class D Finish

Where a Class D finish is indicated, fins exceeding 1/4 inch in height shall be chipped or rubbed off. Concrete surfaces shall be left with the texture imparted by the forms used.

B. Unformed Surfaces

In cold weather, the air temperature in areas where concrete is being finished shall not be less than 50 degrees F. In hot windy weather when the rate of evaporation of surface moisture, as determined by methodology presented in ACI 305R, may reasonably be expected to exceed 0.2 pounds per square foot per hour; coverings, windbreaks, or fog sprays shall be provided as necessary to prevent premature setting and drying of the surface. The dusting of surfaces with dry materials or the addition of water during finishing will not be permitted. Finished

surfaces shall be plane, with no deviation greater than 1/4 inch when tested with a 10-foot straightedge. Surfaces shall be pitched to drains.

1. Trowel Finish

- a. Slabs shall be given a trowel finish immediately following floating. Surfaces shall be trowelled to produce smooth, dense slabs free from blemishes including trowel marks. In lieu of hand finishing, an approved power-finishing machine may be used in accordance with the directions of the machine manufacturer. A final hard steel troweling shall be done by hand.
- b. Trowel finish will be specified for most wearing surfaces and where a smooth finish is required.

2. Broom Finish (Concrete Stoops)

After floating, slabs shall be lightly trowelled, and then broomed with a fiber-bristle brush in a direction transverse to that of the main traffic.

### 3.9 CURING AND PROTECTION

A. General

1. All concrete shall be cured by an approved method for the period of time given below:

Concrete with Type III cement	3 days
Concrete with Type I, II, IP or IS cement	7 days
Concrete with Type I or Type II cement blended with pozzolan	7 days

2. Immediately after placement, concrete shall be protected from premature drying, extremes in temperatures, rapid temperature change, mechanical injury and injury from rain and flowing water. Air and forms in contact with concrete shall be maintained at a temperature above 50 degrees F for the first 3 days and at a temperature above 32 degrees F for the remainder of the specified curing period. Exhaust fumes from combustion heating units shall be vented to the outside of the enclosure and heaters and ducts shall be placed and directed so as not to cause areas of overheating and drying of concrete surfaces or to create fire hazards. All materials and equipment needed for adequate curing and protection shall be available and at the site prior to placing

concrete. No fire or excessive heat shall be permitted near or in direct contact with the concrete at any time. Curing shall be accomplished by any of the following methods, or combination thereof, as approved.

**B. Moist Curing**

Concrete to be moist-cured shall be maintained continuously wet for the entire curing period. If water or curing materials used stains or discolors concrete surfaces which are to be permanently exposed, the concrete surfaces shall be cleaned. When wooden forms are left in place during curing, they shall be kept wet at all times. If the forms are removed before the end of the curing period, curing shall be carried out as on unformed surfaces, using suitable materials. Horizontal surfaces shall be cured by ponding, by covering with a 2-inch minimum thickness of continuously saturated sand, or by covering with waterproof paper, polyethylene sheet, polyethylene-coated burlap or saturated burlap.

**C. Membrane Curing**

Membrane curing shall not be used on surfaces that are to receive any subsequent treatment depending on adhesion or bonding to the concrete; except a styrene acrylate or chlorinated rubber compound meeting ASTM C 309, Class B requirements may be used for surfaces which are to be painted or are to receive bituminous roofing or waterproofing, or floors that are to receive adhesive applications of resilient flooring. The curing compound selected shall be compatible with any subsequent paint, roofing, waterproofing or flooring specified. Membrane curing compound shall not be used on surfaces that are maintained at curing temperatures with free steam. Curing compound shall be applied to formed surfaces immediately after the forms are removed and prior to any patching or other surface treatment except the cleaning of loose sand, mortar, and debris from the surface. Surfaces shall be thoroughly moistened with water and the curing compound shall be applied to slab surfaces as soon as the bleeding water has disappeared, with the tops of joints being temporarily sealed to prevent entry of the compound and to prevent moisture loss during the curing period. Compound shall be applied in a one-coat continuous operation by mechanical spraying equipment, at a uniform coverage in accordance with the manufacturer's printed instructions. Concrete surfaces which have been subjected to rainfall within 3 hours after curing compound has been applied shall be resprayed by the method and at the coverage specified. On surfaces permanently exposed to view, the surface shall be shaded from direct rays of the sun for the duration of the curing period. Surfaces coated with curing compound shall be kept free of foot and vehicular traffic, and from other sources of abrasion and contamination during the curing period.

### 3.10 SETTING BASE PLATES AND BEARING PLATES

After being properly positioned, column base plates, bearing plates for beams and similar structural members, and machinery and equipment base plates shall be set to the proper line and elevation with damp-pack bedding mortar, except where non-shrink grout is indicated. The thickness of the mortar or grout shall be approximately 1/24 the width of the plate, but not less than 3/4 inch. Concrete and metal surfaces in contact with grout shall be clean and free of oil and grease, and concrete surfaces in contact with grout shall be damp and free of laitance when grout is placed.

#### A. Damp-Pack Bedding Mortar

Damp-pack bedding mortar shall consist of 1 part cement and 2-1/2 parts fine aggregate having water content such that a mass of mortar tightly squeezed in the hand will retain its shape but will crumble when disturbed. The space between the top of the concrete and bottom of the bearing plate or base shall be packed with the bedding mortar by tamping or ramming with a bar or rod until it is completely filled.

#### B. Nonshrink Grout

Nonshrink grout shall be mixed and placed in accordance with material manufacturer's written recommendations. Forms of wood or other suitable material shall be used to retain the grout. The grout shall be placed quickly and continuously, completely filling the space without segregation or bleeding of the mix.

#### C. Treatment of Exposed Surfaces

For metal-oxidizing nonshrink grout, exposed surfaces shall be cut back 1 inch and immediately covered with a parget coat of mortar consisting of 1 part Portland Cement and 2-1/2 parts fine aggregate by weight, with sufficient water to make a plastic mixture. The parge coat shall have a smooth finish. For other mortars or grouts, exposed surfaces shall be left untreated. Curing shall comply with paragraph "CURING AND PROTECTION."

END OF SECTION





## SECTION 05540

### CASTINGS

#### PART 1 - GENERAL

##### 1.1 SCOPE OF WORK

- A. Furnish all labor, materials, and equipment required to install castings as shown on the Drawings and specified herein. Included in this section are manhole covers, steps, and valve boxes.

##### 1.2 RELATED WORK

- A. Section 03300 - Concrete.

##### 1.3 SUBMITTALS

- A. The Contractor shall submit to the Engineer, in accordance with Division 1, Section 01300, copies of construction details of castings proposed for use. The Engineer shall review the submittals, making notations if necessary, and distribute to the Contractor and the Resident Project Representative.

#### PART 2 - MATERIALS

##### 2.1 GENERAL

- A. All casting shall be gray iron, conforming to the requirements of the ASTM Standards, Designation A 48-76, Class 30 for manhole castings, and Class 20 for valve boxes.

##### 2.2 VALVE BOXES

- A. Slide Type for Iron Body Valves
  - 1. Valve boxes shall be provided for each buried valve. They shall be cast iron, of heavy pattern slide adjustable type without screw and provided with cast iron cover of sufficient length to allow for 30 inches of cover over the top of the pipe. The upper section of each box shall have a bottom flange of sufficient bearing area to prevent settling. The bottom of the lower section shall enclose the stuffing box and operating nut of the valve. Boxes shall have barrels of not less than 5 inch in diameter and be of length adapted to pipe cover. Boxes shall be slide type adjustable,

without screw, with a lap of at least 6 inch when in the most extended position. The covers shall be circular with a corrugated surface and have pick holes in the periphery and be marked "Water", "Gas", "Sewer", or "Air" according to use. Covers shall also have the word "OPEN" and an arrow indicating the direction of opening cast into covers in raised letters. Provide valve stem extensions for all buried valves.

## 2.3 MISCELLANEOUS SLAB CASTINGS

### A. Floor Boxes

1. Floor boxes for openings through slabs for key operation of valve nuts shall be at least 5-1/4 inch diameter and 6 inches deep with circular caps having a corrugated surface. The setting shall be flush with the top surface. Furnish M & H Style 1106, or equal.

## 2.4 BOX COVERS

- ### A.
- Meter box covers shall be two piece cast iron with a minimum 11 inch circular opening and a base sized to fit an 18 inch inside diameter box. Furnish Ford Meter Box Company No. C32 for non-traffic areas and No. C32H for traffic areas, or equal.

## PART 3 - EXECUTION

- 3.1 The insulation of castings is generally covered under specifications for pipe work and manholes. Castings shall be leveled, plumbed and secured before pouring concrete or attaching to masonry with solid, watertight, cement mortar joints.

END OF SECTION

## SECTION 09901

### SURFACE PREPARATION & COATING NEW STEEL WATER STORAGE TANK

#### 1. SCOPE OF WORK:

- A. The intent of these specifications is to solicit bidding on **welded steel tanks**.

The drawings and specifications are set up to allow as much latitude as possible to BIDDERS.

- B. The Contractor shall furnish all labor, material and equipment of any kind required to perform painting on the project as hereinafter set forth. The Contractor shall provide materials and labor to produce a first class job. Painting shall be performed at such times and in such places as the Contractor and Engineer may agree upon in order that dust-free and neat work be obtained. All painting shall be done in strict accordance with the recommendations of the manufacturer and shall be performed in a manner satisfactory to the Engineer.

#### 2. APPLICABLE PUBLICATIONS:

The publications listed below form a part of this specification to the extent referenced. The publications referred to in text by the basic designation only.

##### 2.1 American Water Works Association, Inc. (AWWA) Standards:

D100-Latest Revision	Welded Steel Tanks For Water Storage
D102-Latest Revision	Painting Steel Water Storage Tanks

##### 2.2 Steel Structures Painting Council (SSPC) Specifications:

SSPC-SP 1	Solvent Cleaning
SSPC-SP 10	Near White Blast Cleaning

#### 3. MATERIALS:

- 3.1 Quality of Coatings: The paints and paint products of the **Induron Protective Coatings**, Birmingham, Alabama, mentioned in the following specifications are set up as standards of quality. Coatings manufacturer shall have a local technical representative who is familiar with elevated water tank surface preparation and coating system design and is familiar with climbing elevated water tanks. **Coating system representative shall be a NACE Level 3 Certified Coating Inspector and shall have all OSHA approved climbing equipment for accessing the tank as required.** The usual "or equal" clause shall apply. No request for substitution will be considered which decreases the film thickness and/or the number of coats to be applied, or which offers a change from the generic type of coating specified. Request for substitution shall contain the following:

- A. FULL NAME OF EACH PRODUCT
- B. DESCRIPTIVE LITERATURE
- C. DIRECTIONS FOR USE
- D. GENERIC TYPE
- E. NON VOLATILE CONTENT BY VOLUME
- F. PERFORMANCE CRITERIA AS LISTED IN SECTION 11 OF THESE SPECIFICATIONS.

Bidders desiring to use paints other than those specified shall submit their proposal based on the specified materials, together with the information noted above, and indicate the sum which will be added to or deducted



from the base bid, should the alternate materials be acceptable. In no case will the request be considered unless received, in writing, ten days prior to the bid opening date.

- 3.2 Certifications: Protective coatings for interior wet application shall be listed by NSF International as approved for potable water contact in accordance with ANSI/NSF Std. 61, Section 5 Protective (Barrier) Materials.

3.3 Shipping, Storage and Handling:

All paints shall be properly prepared by the manufacturer and delivered to the site for field painting in the original unbroken containers with manufacturer's label plainly printed thereon. Type of material to be applied at each location shall be submitted to the Engineer with the manufacturer's written recommendation of the type paint for each item to be painted.

All coatings shall be stored in an enclosed structure to protect them from weather and excessive heat or cold. Flammable coatings must be stored to conform to City, County, State and Federal safety codes for flammable coatings or paint materials. At all times coatings shall be protected from freezing.

3.4 SUBMITTALS

A. Submittals shall be as specified in Section of 01300 of these specifications.

B. Submit the following:

1. Coating manufacturer's certificate for each coating proposed for use attesting that the coatings meet the specifications in this Section and are proper for the proposed application;
2. Coating manufacturer's specifications and data sheets and application instructions for each coating proposed for use on the interior and exterior of the tank including the coating for the logo;
3. Color chart for Engineer's/ Owner's selection of colors
4. Certificate of compliance to each product performance requirement.

4. APPLICATION:

4.1 General:

No paint shall be applied when the air or surface temperature, as measured in the shade, is below that which is recommended by the manufacturer. Paint shall not be applied to wet or damp surfaces, and shall not be applied in rain, snow, fog, mist, or when the surface temperature will be less than 5 F above the dew point. No paint shall be applied when it is expected that the surface temperature will drop below the manufacturer's recommendation within 2 - 4 hours after the application of the paint. Dew or moisture condensation should be anticipated, and if such conditions are prevalent, painting shall be delayed until it is certain that the surfaces are dry. In addition, the days painting shall be completed well in advance of the probable time of day when moisture condensation will occur in order to permit the film the required drying time as specified by the manufacturer prior to the formation of moisture. Care must be exercised that the coatings are applied in the film thickness range recommended by the manufacturer and that adequate drying time is permitted between coats to assure proper release of solvents.

4.2 Workmanship:

Workmanship shall be of first class quality. Finish painting shall show no drips, runs, sags, holidays, or other defects. The finish coat shall be free from noticeable laps or brush marks. Paint during application shall be



continuously stirred . Paint shall be thoroughly worked into all joints, corners, and well brushed out over all surfaces. Should any coat or paint be judged unsatisfactory, the Contractor shall remove the coat(s) as necessary and repaint at no additional cost to the Owner.

#### 4.3 Existing Utilities, Structures and Properties:

It shall be the responsibility of the contractor to locate and avoid damage or overspray or fugitive dust encroachment to any and all existing water, gas, sewer, electric, telephone, and other utilities, structures, property or appurtenances. The Contractor shall repair or pay for all damages caused by his operations or his personnel to existing utilities, structures, appurtenances, or properties, either below ground or above ground and shall settle in full all damage suites which may arise as a result of his operations.

#### 4.4 Ventilation:

It is essential that the solvent vapors released during and after application of coatings be removed from the tank. During coating application the capacity of ventilating fans shall be at least 300 cfm per gallon of coating applied per hour. Continuous forced ventilation at a rate of at least one complete air change per 4 hours shall be provided for at least 7 days after coating application is completed. Air shall be exhausted from the lowest portions of the tank with the top openings kept open and clear. A minimum of seven days following application of the final coat on the interior shall be allowed before the tank is sterilized or filled with water.

### 5. TESTING EQUIPMENT & PROCEDURES:

#### 5.1 General:

The Contractor shall have on the project site the following testing equipment. Equipment shall be in calibration and proper working order. Equipment shall be used in accordance with the manufacturers' instructions or as directed by the Engineer. The Engineer shall be notified of time of testing so that he might be present to witness testing. The Contractor shall keep a daily log of environmental conditions, work schedule, and any other pertinent information. The log shall be turned over to the Owner at the end of the project to be included in the permanent record.

- A. Sling Psychrometer: Relative humidity and dew point readings shall be taken at intervals throughout the days work. Readings shall be taken at the start of the mornings work, mid day and afternoon. Should environmental conditions change, additional reading shall be taken to assure that coatings are being applied under the conditions as outlined by the coatings manufacturer.
- B. Surface Temperature Thermometer: Surface temperatures shall be taken in areas where work is being performed. Surface temperature shall be that as specified by the coatings manufacturer.
- C. Replica Tape & Micrometer: Testex X-Course Replica Tape shall be employed to determine the surface profile of blasted surfaces. Surface profile shall be as specified.
- D. Dry Film Thickness Measurements: Dry film thickness reading shall be taken with a properly calibrated (per the manufacturer's instructions) Type 1 (magnetic) or Type 2 (electromagnetic) instrument. Dry film thickness reading will be taken and recorded in the in a frequency and manner as dictated by the Engineer.
- E. Holiday Detection: After completion of the interior coating system, interior surfaces shall be holiday detected in accordance with ASTM G 62 low voltage holiday detection. Holiday detector shall be a Tinker & Razor Model M-1 or equal. Areas found to have holidays shall be marked and repaired in accordance with the paint manufacturer's instructions. The Engineer shall be notified of time of testing so that he might be present to witness testing. The Contractor shall provide ladders, rigging, etc. as necessary to allow the Engineer to spot check paint thickness of each coat.





## 6. CLEANING AND PAINTING:

- 6.1 Shop Surface Preparation: Prior to surface preparation, all surfaces shall be cleaned of all oil and grease in accordance with SSPC-SP 1 Solvent Cleaning. All interior and exterior surfaces shall be sand blasted to remove all dust, rust and scale, as well as all other foreign matter and shall result in a surface preparation equal to that of SSPC-SP 10 Near White Blast Cleaned Surface. Surface profile shall be 1.5 - 2.5 mils.
- 6.2 Following surface preparation, all interior and exterior surfaces shall receive one coat of primer as hereinafter specified. The primer shall be applied in accordance with the recommendations of the manufacturer and not more than eight hours after surface preparation.
- A. Interior Primer: All interior surfaces shall receive one full coat of Induron PE-54 Epoxy applied at a rate to achieve 3.0 - 5.0 dry mils. **Color: Tan.**
- B. Exterior Primer: All exterior surfaces shall receive one full coat of Induron Indurazinc MC67 applied at a rate to achieve 2.5-3.5 mils. **Color: Greenish Gray.**
- 6.3 Field Cleaning: After erection and prior to painting, all interior and exterior surfaces shall be cleaned of all grease, oil, dirt, dust, rust, weld flux and spatter, and all other foreign matter or contaminants. All field welded edges and joints, as well as all abraded areas, shall be Near White Blasted in accordance with SSPC-SP 10 on the interior and SSPC-SP 6 on the exterior
- 6.4 Field Painting: After the tank is completely erected, any abraded spots and all field-welded areas shall be cleaned as specified in the paragraph above. Field application of the coatings to a field sandblasted area shall be done the same day that the cleaning operation is carried out. Surfaces not coated the same day as surface preparation operations shall be re-blasted prior to application of the prime coat. All field-sandblasted areas shall be primed and the entire interior and exterior of the tank shall be finish painted as hereinafter specified.
- A. INTERIOR:
1. Spot Prime: After spot blasting, all surfaces cleaned to bare metal shall receive one full coat of Induron PE-54 Epoxy Primer applied at a rate to achieve 3.0 - 5.0 dry mils. **Color: Tan.**
  2. Seam Treatment/Stripe Coat: Following spot prime coat, all weld seams, ladders, sharp edges, and any other difficult to coat areas shall receive one additional coat of Induron PE-54 Epoxy Finish applied, by brush, at a rate to achieve 2.0 - 4.0 dry mils. **Color: White.**
  3. Intermediate: After proper cure of the Prime coat, all interior surfaces shall receive one full coat of Induron PE-54 Epoxy applied at a rate to achieve 3.0 - 5.0 dry mils. **Color: Gray.**
  4. Finish: After installation of the intermediate coat, all surfaces shall receive one full finish coat of Induron PE-54 Epoxy applied at a rate to achieve 3.0 - 5.0 dry mils. **Color: White.**
  5. THE INTERIOR COATING SYSTEMS SHALL HAVE A TOTAL DRY FILM THICKNESS OF NOT LESS THAN 12.0 DRY MILS OR GREATER THAN 15.0 MILS.
- B. EXTERIOR:
1. Spot Prime: All exterior surfaces that have been spot blast cleaned in accordance with the paragraph above shall receive one coat of Induron Indurazinc MC67 Primer applied at a rate to achieve 2.5-3.5 dry mils. **Color: Greenish-Gray.**
  2. Intermediate: After the prime coat has been properly installed, all exterior surfaces shall receive one intermediate coat of Induron Armorguard Epoxy applied at a rate to achieve 2.5 - 4.0 dry mils. **Color: Shall be noticeably different from the finish coat selected.**



3. Finish Coat: Following the intermediate coat, all exterior surfaces shall receive one full finish coat of Induron Indurethane 5500PLUS (Aliphatic Acrylic Polyurethane) applied at a rate to achieve 2.0 – 3.0 dry mils. Color: As Selected.
4. Lettering (if required): Lettering and / or logos shall be located in accordance with the drawings and shall be applied using two coats of Induron Indurethane 5500-PLUS Polyurethane applied at a rate to achieve 2.0 – 2.5 dry mils per coat. Color: As Selected.

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**The Contractor shall submit to Engineer a scaled drawing of the tank with actual letter dimensions, spacing between letters and words, and the placement of said words. The direction the letters shall face will be determined by the Owner and Engineer at time of construction.**

5. THE EXTERIOR COATING SYSTEM SHALL HAVE A MINIMUM DRY FILM THICKNESS OF 7.0 DRY MILS.
7. **DAMAGED COATINGS:**
  - 7.1 Damaged coatings, pinholes, and holidays shall have edges feathered and repaired in accordance with the recommendations of the manufacturer, as approved by the Engineer.
  - 7.2 All finish coats, including touch up and damage-repair coats shall be applied in a manner which will present a uniform texture and color-match appearance.
8. **UNSATISFACTORY APPLICATION:**
  - 8.1 If the item has an improper finish, color, or insufficient film thickness, the surface shall be cleaned and topcoated with the specified material to obtain the specified color and coverage. Specific surface preparation information to be secured from the coatings manufacturer and the Engineer.
  - 8.2 All visible areas of chipped, peeled, or abraded paint shall be hand or power-sanded, feathering the edges. The areas shall then be primed and finish coated in accordance with the specifications.
  - 8.3 Work shall be free of runs, bridges, shiners, laps, or other imperfections. Evidence of these conditions shall be cause for rejection.
  - 8.4 Any defects in the coating system shall be repaired by the Contractor per written recommendations of the coating manufacturer.
9. **CLEAN UP & DISINFECTION:**
  - 9.1 All cloths and waste that might constitute a fire hazard shall be placed in closed metal containers or destroyed at the end of each day. Upon completion of the work, all staging, scaffolding, and containers shall be removed from the site and/or destroyed in an approved and legal manner. Paint spots, oil, or stains upon adjacent surfaces and floors shall be completely removed, and the entire job left clean and acceptable to the Engineer.

**Disinfection of Water Contact Surfaces and Filling of Water Storage Tanks:**

Do not disinfect water contact surfaces or fill water storage tanks until application of coating systems is complete, coatings have fully cured, and field quality control inspection is complete.

Allow number of days in accordance with manufacturer's instructions and as directed by Engineer for full cure of coating systems on water contact surfaces before flushing, disinfecting, or filling with water.



Disinfection: AWWA C 652 Method 2 or 3.

The tank shall be filled by the Contractor to testing, disinfection and flushing at his cost as set out in special conditions – paragraph 44.

The tank shall be filled with clean water after disinfection and flushing is complete.

#### 10. GUARANTEE AND ANNIVERSARY INSPECTION:

- 10.1 In accordance with AWWA D102-97, Section 5.2, all work shall be warranted for a period of one year from the date of completion.
- 10.2 The Owner will notify the Contractor at least 30 days prior to the anniversary date and shall establish a date for the inspection. The tank will be drained and the Owner's representative and the Contractor shall thoroughly inspect all surfaces both inside and out. Any defects in the coating system shall be repaired by the Contractor at no additional cost to the Owner. Should a failure occur to 25% of the painted surface, either interior or exterior, the entire surface shall be cleaned and painted in accordance with these specifications.

#### 11. COATING PERFORMANCE CRITERIA:

##### 11.1 Interior Coating System Testing Requirements:

The following test data shall be provided to the Engineer Owner should the Contractor wish to utilize coatings other than those specified.

- A. TYPE: Polyamide Epoxy
- B. SOLIDS BY VOLUME: 70% Minimum.
- C. ASTM D-3359 Method B, Class. 5B
- D. ASTM B-117-73 Salt Spray (Unscribed): 8,760 Hours.
- E. ASTM D-3363-74 Pencil Hardness.
- F. ASTM D-522 Elongation - 1/2 inch Mandrel
- G. ASTM D-2794 Direct Impact (16 Gauge Panel)
- H. ASTM A-4060 CS-17 WHEEL, 1,000 Cycles, CS-17 Wheel.
- I. ASTM 96-66 @ 4.88 mils DFT
- J. IMMERSION -Distilled Water: 56,000 Hours
- K. IMMERSION - Jet Fuel: 31,000 Hours.
- L. IMMERSION - Gasoline: 14,400 Hours
- M. IMMERSION - Mineral Oil: 31,000 Hours.

##### 11.2 Exterior Coating System Testing Requirements (Primer):

- A. TYPE: Polyamide Epoxy
- B. SOLIDS BY VOLUME: 70% Minimum.
- C. ASTM D-3359 Method B, Class. 5B
- D. ASTM B-117-73 Salt Spray (Unscribed): 8,760 Hours.
- E. ASTM D-3363-74 Pencil Hardness.
- F. ASTM D-522 Elongation - 1/2 inch Mandrel
- G. ASTM D-2794 Direct Impact (16 Gauge Panel)
- H. ASTM A-4060 CS-17 WHEEL, 1,000 Cycles, CS-17 Wheel.
- I. ASTM 96-66 @ 4.88 mils DFT
- J. IMMERSION -Distilled Water: 56,000 Hours
- K. IMMERSION - Jet Fuel: 31,000 Hours.
- L. IMMERSION - Gasoline: 14,400 Hours
- M. IMMERSION - Mineral Oil: 31,000 Hours.

##### 11.3 Exterior Coating System Testing Requirements (Intermediate):



The following test data shall be provided to the Engineer/Owner should the Contractor wish to utilize coatings other than those specified.

- A. PRIMER TYPE: Rust Inhibitive Polyamide Epoxy.
- B. INTERMEDIATE TYPE: Polyamide Epoxy.
- C. SOLIDS BY VOLUME: 51% Minimum.
- D. ASTM 3359 Cross Hatch Adhesion
- E. IMMERSION: 25% Sodium Hydroxide, 2,800 hours.
- F. IMMERSION: 3% Sulfuric Acid, 77F., 2,800 hours.
- G. IMMERSION: Distilled Water, 77F., 2,800 hours.
- H. IMMERSION: JP4 Jet Fuel, 77F., 2,800 hours.

11.4 Exterior Coating System Testing Requirements (Finish Coat):

The following test data shall be provided to the Engineer/Owner should the Contractor wish to utilize coatings other than those specified.

- A. QUV (UV B) (Artificial Weathering) 1,544 Hours Exposure. Requirement: Report % gloss retained.
- B. QUV (UV A) (Artificial Weathering) 4,500 Hours Exposure. Requirement: Report % gloss retained.
- C. ASTM D 2729 direct Impact.
- D. ASTM D-522 Mandrel Bend.
- E. ASTM D 3359 B (Cross Hatch Adhesion).
- F. CHEMICAL RESISTANCE, SPLASH: 30% Sodium Hydroxide.
- G. CHEMICAL RESISTANCE, SPLASH: 10% Sodium Hydroxide.
- H. CHEMICAL RESISTANCE, SPLASH: 10% Acetic Acid.
- I. CHEMICAL RESISTANCE, SPLASH: 30% Sulfuric Acid.
- J. CHEMICAL RESISTANCE, SPLASH: Xylol.
- K. CHEMICAL RESISTANCE, SPLASH: Mineral Spirits.
- L. CHEMICAL RESISTANCE, SPLASH: Transformer Oil.
- M. Graffiti Clean Up: Spray Paint.

**END OF SECTION**





## SECTION 13501

## 150,000 GALLON ELEVATED WATER TANK

## PART 1 - GENERAL

## 1.1. GENERAL SCOPE

The work to be performed under this section consists of the furnishing of all materials, tools, equipment, labor, and incidentals necessary for the design, manufacture, delivery, erection, and painting of an elevated steel all-welded construction, water storage tank. The tank is to be complete with all accessories specified herein and/or shown on shop drawings, and is to be erected on foundation to be designed and certified by Kentucky licensed professional engineer and constructed by the tank Contractor. The tank shall have a capacity of 150,000 gallons stored above the bottom capacity line.

## 1.2. EXPERIENCE

- A. The contracting company shall be a specialist in the design and construction of elevated steel tanks, and shall have built in its own name not less than ten (10) comparable tanks within the last five years now giving satisfactory service. Each bidder shall provide a letter with his bid, listing such examples giving the Engineer, tank size, date constructed, consulting engineer, and engineer's address and telephone number. Such company shall have on its staff a full time professional engineer with not less than five years experience in design and field construction of elevated steel tanks and who will be in responsible engineering charge of the work to be done.
- B. The contracting company shall own their fabrication facilities. Divided responsibilities between erection and fabrication will not be allowed.

## 1.3. GOVERNING SPECIFICATIONS

- A. Material, design, welding, shop fabrication, erection, testing, and inspection of the proposed elevated water storage tank shall conform to the latest edition of American Water Works Association D-100, and the latest edition of American Welding Society, except as hereinafter stipulated.
- B. The following design parameters shall apply, and the structures shall safely withstand the following loads acting separately or in combination:
  - 1. Weight of the structure.



2. Weight of the water in the tank.
3. Wind stresses incurred by blowing at a minimum rate of 100 MPH from any direction or a greater amount if specified by the Purchaser.
4. Earthquake Zone 1 per AWWA D-100.
5. Snow load minimum of 25 PSF as specified in AWWA D-100.

#### 1.4. ELEVATED STORAGE TANK

##### A. Tank

1. Capacity: 500,000 gallons above low capacity level.
2. Style: Torus Bottom.
3. Height to Overflow: See drawings.
4. All portions of the tank shall be of water-tight construction and all material in contact with water shall have a minimum thickness of 1/4 inch.

##### B. Tower

The tank shall be supported on a suitable tower of structural tubular columns thoroughly braced by tie rods and struts to provide for maximum wind loading.

##### C. Riser

The diameter of the steel riser shall not be less than 4 feet. Minimum thickness shall be 1/4 inch, and it shall be designed to carry all loads required by AWWA D-100. It shall be equipped with a round manhole not less than 24" diameter with Davit arm or hinge and located approximately 3 feet above the riser base. The riser shall have one (1) 1" threaded nipple to be used for the altitude valve pit.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

#### A. Balcony

The tank shall be equipped with a balcony not less than 24 inches wide with a handrail not less than 42 inches high. The floor of the balcony shall be designed for a minimum vertical load of 1000 pounds assumed to be applied to any point. The floor shall be perforated for drainage. The handrail shall be capable of withstanding a 300 pound load applied laterally at the top rail.



**B. Ladders**

1. Fixed ladders on the tower from a point 10' above grade level to balcony.
2. The tower shall be equipped with a ladder which extends up one column from near the base and connection with the balcony.
3. There shall be a tank ladder from the balcony extending to the roof hatch. The ladder will be located so that the roof hatch, cathodic protection entry way, and obstruction Beacon light roof vent has easy access from the ladder.
4. Each ladder shall be equipped with an OSHA approved safety climbing device.
5. The tank Contractor shall furnish the appropriate belt and sleeve for use with the climbing device to the Owner.

**C. Roof Hatch**

A roof hatch shall be 24 inches in dimension or diameter and shall have a rainproof cover.

**D. Vent**

A vent shall be provided at the apex of the roof and shall be of adequate size to safely vent the tank during the periods of maximum pumping or withdrawal without using the overflow pipe as a vent.

**E. Overflow Pipe**

An overflow pipe shall be provided which extends from the high water level to grade. The diameter shall be 6 inches minimum and the end shall be covered with screen to prevent the ingress of foreign objects.

**F. Inlet/Outlet Connection**

1. The inlet connection to the bottom of the riser shall be a six (6) inch steel pipe bolted flange with appropriate transition to a cast iron or ductile iron base elbow. The 6" ductile iron line shall continue from the base of the riser for 20' located on the 20' section of line shall be a (1) 6" x 6" tee, (1) section of 6" ductile iron line to empty into the overflow pit (as shown on the drawings). The purpose of this line is for emptying the tank during times of maintenance or inspection. A 6" flap valve shall be installed on the end of the drain lines.
2. A valve box shall be located on the 6" ductile iron line going to the base of the riser (see drawings). This box shall have a 3/4"



saddle with a 3/4" corp stop. The valve box shall be the same as a typical household meter pit. A 1" conduit shall run from the valve box to the tank base leg as shown on the drawings. The conduit shall be used for telemetry.

3. A 1" conduit shall run from the service pole to the base leg telemetry control location (as shown on the drawings). For the purpose of telemetry.

#### G. Obstruction Lighting

The Contractor shall furnish and install all required lighting to meet all FAA requirements. See Section 16577. Lighting shall be a flashing Beacon with 110v single phase power. The obstruction light shall be wired from the dome light to a specified point at the base of the tank. The electrical connection from the base to the electrical outlet will be done by others.

#### H. Telemetry

The Contractor shall provide and install one (1) base plate for the purpose of mounting telemetry controls located on the balcony railing as specified by the Engineer. An appropriate size conduit for the telemetry shall be installed from the balcony railing to a specified point on the base leg. The telemetry components and wiring shall be installed under this contract shall provide the telemetry vault as shown on the drawings.

#### I. Water Level Indicator

The contractor shall provide and install a water level indicator at the new 150,000 gallon tank. The level indicator shall show Full, 3/4, 1/2, 1/4, Empty. All metal parts shall be painted with the same type and conditions as the 150,000 gallon tank. All cable shall be stainless steel. The indicator assembly shall be located at tank dome ladder as directed by the Engineer.

- J. A tank identification plate shall be mounted on the tank riser pipe above the access manhole. The identification plate shall contain the following information:

1. Tank Contractor
2. Contractors project or file number
3. Tank capacity
4. Height to overflow
5. Date erected





## PART 3 - EXECUTION

### 3.1 FOUNDATION

The tank Contractor shall design the foundation for soil bearing loads, as recommended in the attached subsurface investigation report by Thelen and Associates (see Thelen geotechnical report Section 01731). The foundation drawings shall be signed and sealed by a structural engineer registered in the Commonwealth of Kentucky. These drawings shall be submitted for approval with the tank shop drawings.

### 3.2 SITE WORK

The Contractor shall not use or store any materials on any property not in the temporary construction site boundaries or the owners property boundary. All materials required to install or erect the tank shall be removed after construction is complete. The Contractor shall remove any debris, trash, or material used to construct the tank when completed. Seeding, fencing and grading shall be provided under this contract. The Contractor shall construct all temporary excess roads necessary to install the tank. Erosion control measures must be taken to insure proper drainage of nearby property and creeks.

## PART 4 - TANK CONSTRUCTION

### 4.1 ERECTION OF TANK

- A. All parts forming the structure shall be built in accordance with reviewed shop drawings prepared by the Contractor. The workmanship and finishing shall be the best in modern shop practice. Welding must be done by operators who have been qualified within the previous year, in accordance with the requirements of the American Welding Society. Records of these qualification tests shall be available to the Engineer. The work at all times shall be open to the Engineer or his representative.
- B. Upon completion of the tank erection, the Tank Contractor will remove or dispose of all rubbish and other unsightly material caused by its operation, and will leave the premises in good appearance.
- C. **Seal Welding of Roof Interior** – All interior lap joints and roof rafter reinforcement shall be continuous seal welded. This shall include penetrations of roof accessories. Intermittent or stitch welding will not be permitted.



## 4.2 TESTING

- A. After tank construction has been completed, the tank shall be hydrostatically tested by filling with water which will be furnished by the Owner. Any leaks shall be repaired and the structure made watertight. No repair work will be done on any joints unless the water level in the tank is at least two feet below the joint being repaired.
- B. In addition the Tank Contractor shall test the weld joints by means of the radiographic method. All testing shall be done in accordance with the latest revisions of AWWA D100, Section 11. The radiographic film test results will become the property of the Owner.

## 4.3 CLEANING AND DISINFECTION

The contractor shall thoroughly clean and disinfect the inside of the tank after the paint is thoroughly dried and all other work has been completed.

The inside surfaces from six (6) inches above the overflow elevation to the lowest elevation in contact with water shall be scrubbed with brushes or completely sprayed over the entire surface with a solution of hypochlorite. The solution shall have a chlorine residual of at least 100 ppm.

END OF SECTION



SECTION 15030  
MECHANICAL CHECK VALVES

PART 1 - GENERAL

1.1 SUBMITTALS

- A. Manufacturer's Data:
  - 1. Material and component data.
  - 2. Performance data.
  - 3. Product warranties.
- B. Submit in accordance with Section 01300.

1.2 RELATED SECTIONS

- A. 01300 – Submittals
- B. 01600 - Materials and Equipment
- C. 01610 - Transportation and Handling

PART 2 PRODUCTS

2.1 SWING CHECK TYPE

Swing check valves shall be constructed with heavy cast iron or cast steel body with a bronze or stainless steel seat ring, and a non-corrosive shaft for attachment of weighted lever that shall be keyed to the shaft. The seat ring must be renewable and shall be securely held in place by a threaded joint.

The valve shall be full ported with the disc unseated 25° to ensure quiet closing. The valve disc shall be constructed of cast iron or cast steel and shall be suspended from a non-corrosive shaft which will pass through a stuffing box and be connected to a weighted lever. O-ring seals will not be acceptable.

The swing check valves shall have flanged ends, be suitable for a working pressure not less than 175 PSIG, and shall be G. A. Industries, Mueller Model A-2600-6-01, or equal as approved by the Engineer.

## 2.2 SILENT CHECK TYPE

The silent check valve shall be a globe type, non-slam check valve. The body of the check valve shall be semi-steel. The plug, seat and guide bushings shall be bronze and conform to ASTM Designation B-143. The valve spring and seat retainers shall be stainless steel and conform to ASTM Designation A-276. The valve plug shall be guided at both ends by a center shaft integral with the valve plug. Alignment of the center shaft shall be provided through the usage of guide bushings. The check valve shall be designed to prevent water hammer by returning the valve plug to the seat before reversal of flow occurs. The check valves shall be designed so as to be easily repaired in the field.

The valve supplied shall be flanged and drilled to conform to 125 lb. ANSI standards and sized as shown on the drawings.

The valve shall be G. A. Industries, Val-Matic 1800 series, or equal.

## 2.3 TILTED DISC CHECK TYPE

The check valve shall be of the tilted disc, full body flange type.

The valve housing shall consist of two body sections bolted together at a central diagonal flange, which shall be inclined at an angle of 55 degrees. The inlet body section shall contain a seat ring positioned and captured by the diagonal flange. The outlet body section shall accept two, eccentrically located, in-line pivot trunnions about which a disc shall rotate.

The eccentric pivot trunnions must be so located as to divide the disc into approximately a one-third/two-third proportion, and also must allow the seating surface of the disc to rotate away from the seating surface of the seat ring cleanly, without contact. A small amount of clearance must exist between the pivot pin and bushing when the disc is seated to prevent binding and to insure a drop tight seal. To demonstrate the capability of the valve to maintain excellent seating and sealing characteristics over an extended service life, a 250,000 cycle test shall be conducted and witnessed by an independent consulting firm. The results of the test must indicate a leakage rate not to exceed 75 percent of the allowable rate for new valves as called for by A.W.W.A. and M.S.S. check valve specifications.

The disc shall travel no more than 40 degrees from the closed to the fully open position. The design contours of the disc, and its position during flow, must prevent disc flutter at a minimum flow velocity of four (4) F.P.S.

The flow area, through the valve body inlet and outlet, shall be equal to pipe size, and gradually increase to an area 40 percent greater than pipe size through the valve seat.

Inspection ports shall be provided upstream and downstream of the valve disc. An indicator must be supplied and visually show the disc position at all times.

Materials of construction: body sections to be cast iron ASTM A126, Class B, disc to be cast iron ASTM A126, Class B, seat ring to be centrifugally cast aluminum bronze ASTM B271, copper alloy #954. Disc ring to be centrifugally cast aluminum bronze ASTM B271, copper alloy #955. Pivot pins to be aluminum bronze ASTM B505, copper alloy #954. Pivot pin bushings to be aluminum bronze ASTM B505, copper alloy #954.

The tilted disc check valve shall be series 9000 as manufactured by Val-Matic Valve and Manufacturing Corporation, Elmhurst, Illinois, or approved equal.

PART 3 EXECUTION

NOT USED

END OF SECTION





SECTION 15040  
BUTTERFLY VALVES

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. Butterfly valves shall be one piece iron body with integral cast iron hub sections.
- B. Valves shall be designed, manufactured and tested in accordance with AWWA C504. Valve seats shall be retained in a groove in the body of the valve. Valve disc edge shall be 304 S.S. permanently welded to the disc. Valves shall be rated and tested for absolute zero leakage at rated pressure when closed. The valve shall be of wafer or flanged design with short face to face dimensions.
- C. Lug wafer will not be allowed.

1.2. SUBMITTALS

- A. Manufacturer's Data:
  - 1. Material and component data.
  - 2. Performance data.
  - 3. Product warranties.
- B. Submit in accordance with Section 01300.

1.3. RELATED SECTIONS

- A. 01300 – Submittals
- B. 01600 - Materials and Equipment
- C. 01610 - Transportation and Handling

PART 2 – PRODUCTS

1.4. GENERAL

- A. The valve body and workings shall be rated for a minimum working pressure of 150 psi on the inlet side of the booster pump and 300 psi on the outlet side of the pump.

- B. The valve disc shall be constructed of bronze materials meeting ASTM B584 standards or of cast iron meeting requirements of ASTM A48.
- C. The disc seat shall be of rubber material and shall seal against the disc edge. The valve shaft shall be constructed of stainless steel material which meets the standards of ASTM A582. Stainless steel materials shall also be used for shaft wedge keys and retaining nuts.
- D. Shaft bearings shall be self lubricating type with a nylon or woven Teflon backed sleeve for bearing surfaces. The bearings shall be press fitted to the valve body to inhibit rust formation between the body and bearings.
- E. Valve packing shall be "O" ring, self adjusting type contained in a removable corrosion resistant recess. Unless otherwise indicated on the plans, valves 6 inches and smaller shall be operated by hand lever.
- F. Valves 8 inches and larger shall have a traveling nut hand-wheel operator assembly.
- G. Valves shall be Henry Pratt or equal. Valve shall be able to sit in any position with-out movement and the assist of locking device.

PART 3 - EXECUTION

NOT USED

END OF SECTION

## SECTION 15065

## FIRE HYDRANTS WITH AUXILIARY GATE VALVES

## PART 1 - GENERAL

Fire hydrants with auxiliary gate valves shall be provided at the locations as shown on the plans or in locations as directed by the Engineer.

## 1.1 FIRE HYDRANTS

- A. The fire hydrants shall be of standard manufacturer and of a pattern approved by the Engineer. The name or mark of the manufacturer, and the size of the valve openings shall be plainly cast in raised letters and be placed in the hydrant barrel as to be visible after the hydrant has been installed.
- B. As a minimum requirement, all hydrants shall be designed for a working pressure of 250 PSIG and in workmanship, design, and material, shall conform to the AWWA Standards, latest revision. The hydrant body shall be cast iron, fully mounted with approved non-corrodible material, and there shall be no moving bearings or contact surfaces or iron in contact with iron or steel. All contact surfaces shall be finished or machined to the best workmanlike manner and all wearing surfaces shall be easily renewable.
- C. The design of the hydrant shall be such that all working parts may be removed through the top of the hydrant and shall have the required AWWA specified number of turns of the stem to open the gate in area equal to the valve opening. Any change in the area of the water passage through the valve must have an easy curve, and all outlets must have round corners.
- D. Hydrants shall be provided with a breakaway safety flange, which will allow the hydrant barrel to separate at approximately ground level with the minimum breakage of hydrant parts. There shall also be provided at this point a safety stemmed coupling on the operating stem that will shear at the time of impact. All hydrants shall be equipped with o-ring stem seals.
- E. Fire hydrants shall have a six (6) inch inlet connection and be fitted with an auxiliary gate valve as described below. Two, 2 1/2-inch hose nozzles and one dumper nozzle shall be provided. All nozzles shall be fitted with cast iron thread caps with operating nuts of the same design and proportions as the hydrant stem nut. Caps shall be threaded to fit the corresponding nozzles and shall be fitted with suitable gaskets for positive water tightness under test pressures.
- F. The valves in all hydrants shall be 5-1/4 inches in diameter.
- G. The operating nut on the hydrant stems and nozzle caps shall be the same for all hydrants and shall be similar to those now in use by the Owner.
- H. All parts of the hydrant both inside and outside, shall be cleaned and painted. All inside surfaces and outside surfaces below the ground line shall be coated with asphalt varnish and shall be covered with two coats, the first

having dried thoroughly before the second is applied. The outside of the hydrant above the finished ground shall be thoroughly cleaned and thereafter primed with one coat of paint of a durable composition and one additional coat of paint, color as selected by the Engineer.

- I. The contractor shall verify the depth of bury for each hydrant prior to placing an order with the manufacturer. Fire hydrants shall be standard AWWA C502, latest revision type. Fire hydrants shall be Waterous Pacer Model number WB-67-250 or Engineer approved equal.

## 1.2 AUXILIARY GATE VALVES AND BOXES

The gate valves and boxes used as auxiliary gate valves shall be the same as gate valves and boxes specified for water distribution and transmission lines and other portions of these specifications. At the Contractor's option, he may purchase fire hydrants with a flanged inlet connection, and may use an auxiliary gate valve having a flanged end on one side and a connection on the other side suitable for the pipe to which it will be connected. In either case, the coat of the auxiliary gate valve and valve box shall be included in the cost of the fire hydrant. No separate payment will be made for these items.

## 1.3 INSTALLATION

- A. Hydrants and auxiliary gate valves shall be installed in such a manner that they shall be plumb and shall be set so that the lowest hose connection is at least fifteen (15) inches above the surrounding finished grade. All hydrants shall be inspected in the field on delivery to the job to insure proper operation before installation. Care shall be taken to insure that weep holes are not covered by concrete. Reference should be made to Standard Details to these specifications.
- B. The Contractor shall furnish the owner one (1) pentagon nut operating wrench per hydrant which shall be included as an incidental expense.

## PART 2 - PRODUCTS

NOT USED

## PART 3 - EXECUTION

NOT USED

END OF SECTION

SECTION 16010

BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. General Requirements specifically applicable to Division 16.

1.2. CONTRACT DOCUMENTS

- A. The Instructions to Bidders, General and Special Conditions and all other Contract Documents shall apply to the Electrical Contractor's work as well as to each of his subcontractor's work.
- B. Each Contractor is directed to familiarize himself in detail with all documents pertinent to this Contract. In case of conflict between these General Provisions and the General and/or Special Conditions, the affected Contractor shall contact the Engineer for clarification and final determination.

1.3. WORK SEQUENCE

- A. Construct Work in sequence under provisions of this specification.
- B. Schedule power outages with owners' representative.

1.4. COORDINATION

- A. Coordinate the Work specified in this Division under provisions of this specification.
- B. Prepare drawings showing proposed rearrangement of Work to meet job conditions, including changes to Work specified under other Sections. Obtain permission of Architect/ Engineer before proceeding.

1.5. REFERENCES

- A. ANSI/IEEE C2 - National Electrical Safety Code.
- B. ANSI/NFPA 70 - National Electrical Code.
- C. NECA - Standard of Installation.

## 1.6. REGULATORY REQUIREMENTS

- A. Conform to ANSI/NFPA 70 as incorporated in the Kentucky Building Code.
- B. Conform to ANSI/IEEE C2.
- C. Conform to Kentucky Building Code.
- D. Conform to 702 KAR 4:070.
- E. Inspections: Contractor is to pay for electrical inspection and is to provide a final certificate of inspection.

## 1.7. SUBMITTALS

- A. Submit inspection and permit certificates under provisions of this specification.
- B. Include certificate of final inspection and acceptance from authority having jurisdiction.
- C. Submit shop drawings as specified in other divisions of this specification.
  - 1. Shop drawings and/or manufacturer's descriptive literature shall have the Architect/Engineer project numbers indicated thereon and shall be clearly referenced to the specification section number, schedule, materials, etc., so the Engineer may readily determine the particular item the Contractor or subcontractor proposes to furnish. Each submission shall also contain Date Submitted. If shop drawings and/or other items are transmitted by correspondence, each item of correspondence shall bear the Architect/Engineer project number.
  - 2. The Contractor shall submit with such promptness as to cause no delay in his own work or in that of any other Contractor, with a two (2) week allowance for the Architect/Engineer's review, eight (8) copies plus those required by the Contractor and his suppliers, of all Shop drawings and schedules required for the work of the various trades, and the Engineer shall pass on them with reasonable promptness, making desired corrections relating to the design concept. The Contractor shall make any corrections required by the Engineer, and if the Engineer so requests file with him eight (8) corrected copies and furnish such other copies as may be needed. The Engineer's approval of such drawings or schedules shall not relieve the Contractor from responsibility for deviations from drawings or specifications, unless he has in writing

- called to the Engineer's attention such deviations at the time of submission, nor shall it relieve him from responsibility for errors of any sort in shop drawings or schedules. The term "as specified" will not be acceptable as shop drawings must be submitted on all equipment.
3. The Contractor shall request that shop drawings be prepared by the subcontractors and be submitted to him for approval. The Contractor shall correct the shop drawings in colored pencil, if necessary, return them to the subcontractor for correction, then submit correct shop drawings in their final form to the Engineer for approval. All shop drawings must not only bear the Contractor's stamp of approval, but shall show evidence that he has thoroughly checked each drawing submitted. Any drawings submitted without this evidence and stamp of approval will not be considered and will be returned to the Contractor for proper resubmission.
  4. Schedules, brochures or equipment, operating instructions and manuals, material literature, etc. shall be processed by the Contractor and submitted to the Engineer for approval in the same manner as outlined herein for shop drawings.
  5. The Contractor shall maintain at least one (1) set of all approved shop drawings and specification documents at the site for reference.

## PART 2 – PRODUCTS

### 2.1. MATERIALS AND EQUIPMENT

- A. Materials and Equipment: Acceptable to the authority jurisdiction as suitable for the use intended.
- B. Unregistered Bidders are required to obtain 10 day prior approval.

## PART 3 - EXECUTION

### 3.1. WORKMANSHIP

- A. Install Work using procedures defined in NECA Standard of Installation.

END OF SECTION





## SECTION 16111

### CONDUIT

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Rigid metal conduit.
- B. Flexible metal conduit.
- C. Liquidtight flexible metal conduit.
- D. Electrical metallic tubing.
- E. Thickwall nonmetallic conduit.
- F. Fittings and conduit bodies.

##### 1.2 RELATED SECTIONS

- A. Section 16130 - Boxes.
- B. Section 16170 - Grounding and Bonding.
- C. Section 16190 - Supporting Devices.
- D. Section 16195 - Electrical Identification.

##### 1.3 REFERENCES

- A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
- B. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
- C. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- D. ANSI/NFPA 70 - National Electrical Code.
- E. NECA "Standard of Installation."
- F. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.4 DESIGN REQUIREMENTS

- A. Conduit Size: ANSI/NFPA 70.

1.5 SUBMITTALS

- A. Submit under provisions of Section 15010/16010.
- B. Product Data: Provide for metallic conduit, flexible metal conduit, liquid-tight flexible metal conduit, metallic tubing, nonmetallic conduit, fittings, and conduit bodies.

1.6 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 15010/16010.
- B. Accurately record actual routing of conduits larger than 2 inches.

1.7 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle Products to site under provisions of Section 15010/16010.
- B. Accept conduit on site. Inspect for damage.
- C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- D. Protect PVC conduit from sunlight.

1.9 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Verify routing and termination locations of conduit prior to rough-in.
- C. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

## PART 2 - PRODUCTS

### 2.1 CONDUIT REQUIREMENTS

- A. Minimum Size: 3/4 inch unless otherwise specified.
- B. Underground Installations:
  - 1. More than Five Feet from Foundation Wall:
  - 2. Use thickwall nonmetallic conduit with galvanized rigid steel elbows through concrete slab.
  - 3. Within Five Feet from Foundation Wall:
  - 4. Use thickwall nonmetallic conduit with galvanized rigid steel elbows through concrete slab.
- C. In or Under Slab on Grade:
  - 1. Use thickwall nonmetallic conduit with galvanized rigid steel elbows through concrete slab.
  - 2. Minimum Size: 3/4 inch.
- D. Outdoor Locations, Above Grade:
  - 1. Use rigid steel and intermediate metal conduit.
- E. Wet and Damp Locations:
  - 1. Use thickwall nonmetallic conduit.
- F. Dry Locations:
  - 1. Concealed: Use electrical metallic tubing.
  - 2. Exposed: Use electrical metallic tubing.

### 2.2 RIGID METAL CONDUIT

- A. Manufacturers:
  - 1. Allied Tube & Conduit.
  - 2. Wheatland Tube Co.
  - 3. Triangle PWC, DAC.
  - 4. Substitutions: Under provisions of Section 15010/16010.

- B. Rigid Steel Conduit: ANSI C80.1.
- C. Intermediate Metal Conduit (IMC): Rigid steel.
- D. Fittings and Conduit Bodies: ANSI/NEMA FB 1; material to match conduit.

### 2.3 FLEXIBLE METAL CONDUIT

- A. Manufacturers:
  - 1. Alflex Corp.
  - 2. AFC Co.
  - 3. Electri-Flex Corp.
  - 4. Substitutions: Under provisions of Section 15010/16010.
- B. Description: Interlocked steel construction.
- C. Fittings: ANSI/NEMA FB 1.

### 2.4 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Manufacturers:
  - 1. Alflex Corp.
  - 2. AFC Co.
  - 3. Electri-Flex Corp.
  - 4. Substitutions: Under provisions of Section 15010/16010.
- B. Description: Interlocked aluminum construction with PVC jacket.
- C. Fittings: ANSI/NEMA FB 1.

### 2.5 ELECTRICAL METALLIC TUBING (EMT)

- A. Manufacturers:
  - 1. Allied Tube & Conduit.
  - 2. Wheatland Tube Co.
  - 3. Triangle PWC, DAC.
  - 4. Substitutions: Under provisions of Section 15010/16010.
- B. Description: ANSI C80.3; galvanized tubing.
- C. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel, compression type.

## 2.6 THICKWALL NONMETALLIC CONDUIT

- A. Manufacturers:
  - 1. Carlon.
  - 2. Cantex Industries.
  - 3. Electri-Flex Corp.
  - 4. Substitutions: Under provisions of Section 15010/16010.
- B. Description: NEMA TC 2; Schedule 40 PVC.
- C. Fittings and Conduit Bodies: NEMA TC 3.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

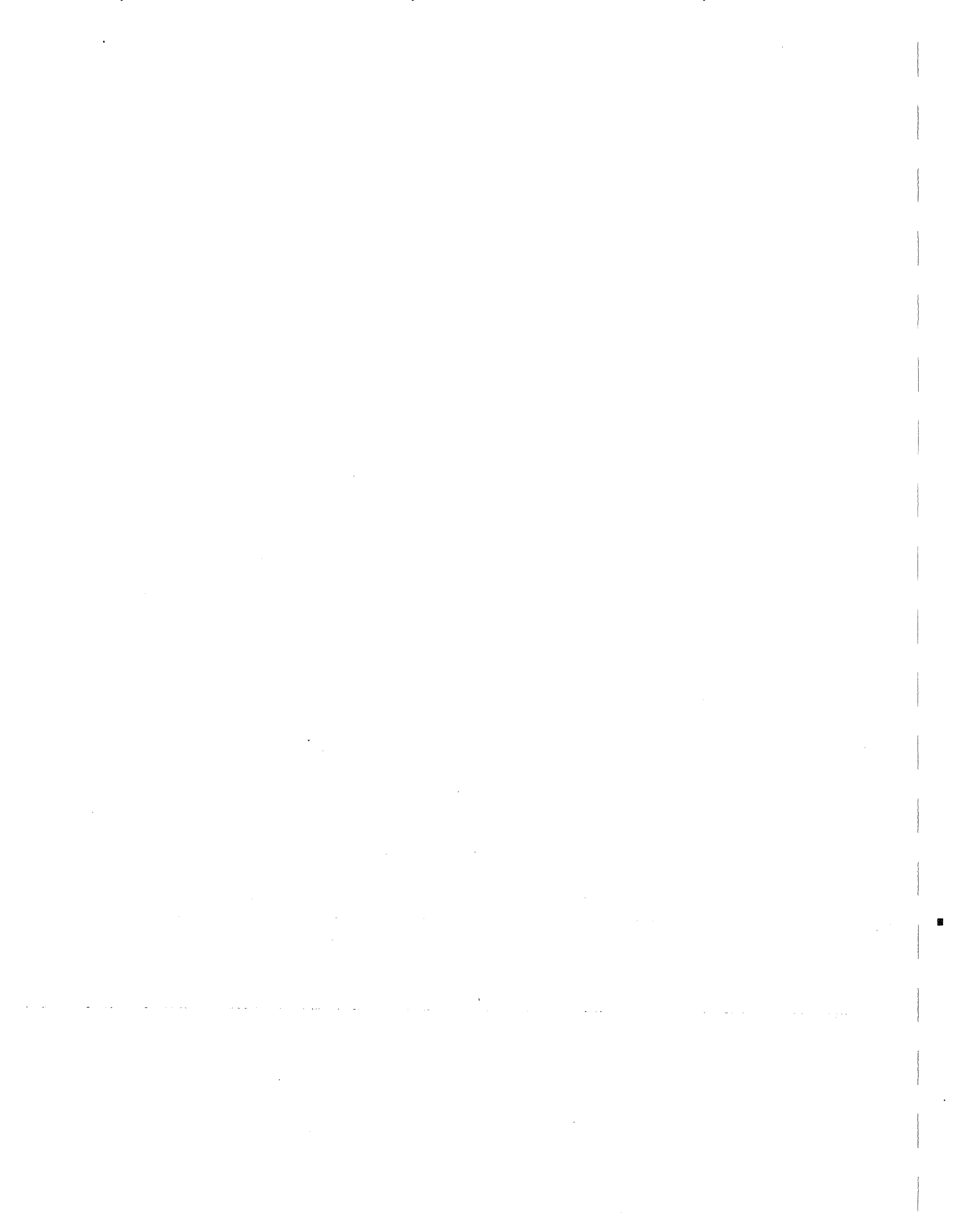
- A. Install conduit in accordance with NECA "Standard of Installation."
- B. Install nonmetallic conduit in accordance with manufacturer's instructions.
- C. Arrange supports to prevent misalignment during wiring installation.
- D. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- E. Group related conduits; support using conduit rack. Construct rack using steel channel.
- F. Fasten conduit supports to building structure and surfaces under provisions of Section 16190.
- G. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- H. Do not attach conduit to ceiling support wires.
- J. Arrange conduit to maintain headroom and present neat appearance.
- J. Route conduit parallel and perpendicular to walls.
- K. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- L. Route conduit in and under slab from point-to-point.

- M. Do not cross conduits in slab.
- N. Provide two coats of asphaltum paint on all underground or underslab metal conduits.
- O. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).
- P. Cut conduit square using saw or pipecutter; de-burr cut ends.
- Q. Bring conduit to shoulder of fittings; fasten securely.
- R. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- S. Use conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations.
- T. Install no more than equivalent of four 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender or factory elbows for bends in metal conduit larger than 2 inch size.
- U. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- V. Provide suitable fittings to accommodate expansion and deflection where conduit crosses control and expansion joints.
- W. Provide suitable pull string in each empty conduit except sleeves and nipples.
- X. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- Y. Ground and bond conduit under provisions of Section 16170.
- Z. Exposed surface mounted conduit feeding device boxes in finished areas shall be mounted securely to wall with one-hole straps and offset at device box connections. Conduit hangers with exposed bolts used to space the conduit from the wall shall not be acceptable for this type installation.

### 3.2 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation.

END OF SECTION





SECTION 16123  
BUILDING WIRE AND CABLE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Building wire and cable.
- B. Wiring connectors and connections.

1.2 RELATED SECTIONS

- A. Section 16111 - Conduit.
- B. Section 16130 - Boxes.
- C. Section 16195 - Identification.

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Submit under provisions of Section 15010/16010.
- B. Product Data: Provide for each cable assembly type.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years documented experience.

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.7 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.

- B. Conductor sizes are based on copper unless indicated as aluminum or "AL".
- C. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.
- D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

#### 1.8 COORDINATION

- A. Determine required separation between cable and other work.
- B. Determine cable routing to avoid interference with other work.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS - BUILDING WIRE AND CABLE

- A. Capital Wire and Cable.
- B. General Cable.
- C. Carol.
- D. Substitutions: Under provisions of Section 15010/16010.

#### 2.2 BUILDING WIRE AND CABLE

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: ANSI/NFPA 70, Type THHN/THWN.

#### 2.3 WIRING CONNECTORS

- A. Split Bolt Connectors:
  - 1. Burndy.
  - 2. IlSCO.
  - 3. Kearney.

4. Substitutions: Under provisions of Section 15010/16010.
- B. Solderless Pressure Connectors:
1. Buchanan.
  2. Ideal.
  3. Thomas & Betts.
  4. Substitutions: Under provisions of Section 15010/16010.
- C. Spring Wire Connectors:
1. Buchanan.
  2. Ideal.
  3. Thomas & Betts.
  4. Substitutions: Under provisions of Section 15010/16010.
- D. Compression Connectors:
1. Buchanan.
  2. Ideal.
  3. Thomas & Betts.
  4. Substitutions: Under provisions of Section 15010/16010.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.

### 3.2 WIRING METHODS

- A. Concealed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
- B. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
- C. Above Accessible Ceilings: Use only building wire, Type THHN/THWN insulation, in raceway.
- D. Wet or Damp Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
- E. Exterior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.

- F. Underground Installations: Use only building wire, Type THHN/THWN insulation, in raceway.

### 3.3 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Use solid conductor for feeders and branch circuits 12 AWG and smaller.
- C. Use stranded conductors for control circuits.
- D. Use conductor not smaller than 12 AWG for power and lighting circuits.
- E. Use conductor not smaller than 16 AWG for control circuits.
- F. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 100 feet.
- G. Pull all conductors into raceway at same time.
- H. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- I. Protect exposed cable from damage.
- J. Support cables above accessible ceiling, using spring metal clips or plastic cable ties to support cables from structure or ceiling suspension system. Do not rest cable on ceiling panels.
- K. Use suitable cable fittings and connectors.
- L. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- M. Clean conductor surfaces before installing lugs and connectors.
- N. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- O. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
- P. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
- Q. Use insulated spring wire connectors with plastic caps for copper

conductor splices and taps, 10 AWG and smaller.

- R. Terminate stranded conductors under screws using crimp-on wire terminals. Wrapping stranded wire around screw stem and tightening shall not be permitted.

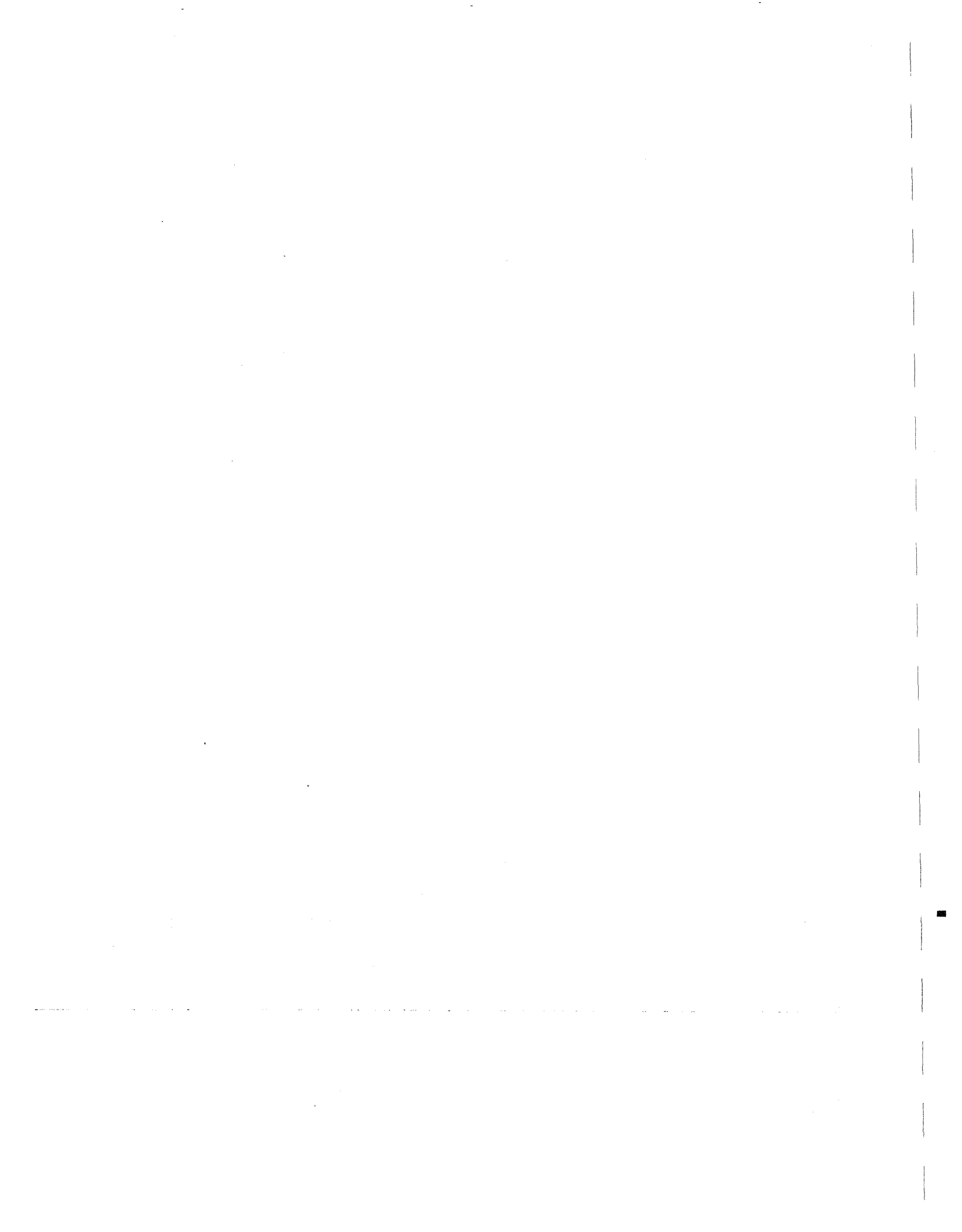
### 3.4 INTERFACE WITH OTHER PRODUCTS

- A. Identify wire and cable under provisions of Section 16195.
- B. Identify each conductor with its circuit number or other designation indicated on Drawings.

### 3.5 FIELD QUALITY CONTROL

- A. Inspect wire and cable for physical damage and proper connection.
- B. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
- C. Verify continuity of each branch circuit conductor.

END OF SECTION



## SECTION 16130

### BOXES

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Wall and ceiling device boxes.
- B. Pull and junction boxes.

##### 1.2 RELATED SECTIONS

- A. Section 16140 - Wiring Devices: Wall plates in finished/unfinished areas.
- B. Section 16160 - Cabinets and Enclosures.

##### 1.3 REFERENCES

- A. NECA - Standard of Installation.
- B. NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.
- C. NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- D. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- F. NFPA 70 - National Electrical Code.

##### 1.4 SUBMITTALS FOR CLOSEOUT

- A. Operation and Maintenance Data: Submittals for Project closeout.
- B. Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

##### 1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Provide Products listed and classified by Underwriters Laboratories, Inc., as

suitable for the purpose specified and indicated.

## PART 2 - PRODUCTS

### 2.1 DEVICE BOXES (RECESSED)

- A. Sheet Metal Device Boxes: NEMA OS 1, galvanized steel.
  - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
  - 2. Concrete Ceiling Boxes: Concrete type.
- B. Nonmetallic Device Boxes: NEMA OS 2.
- C. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer. Provide threaded hubs.
- D. Wall Plates for Finished/Unfinished Areas: As specified in Section 16140.

### 2.2 DEVICE BOXES (SURFACE)

- A. Cast Aluminum Device Boxes: NEMA FB 1, aluminum.
  - 1. Surface mounted device boxes shall be cast aluminum box with threaded conduit openings. Exterior of box shall be smooth with unused conduit openings filled with flush sealing plugs. Exterior of box, surface conduit and hangers shall be painted to match wall finish. Standard wall plates as specified in Section 16140 shall be used. Wall plate size shall be selected to match the exterior dimension of the box as closely as possible to avoid overhanging edge of box. Box shall be mounted using mounting ears in wet locations and mounted through holes in the back of the box in dry locations.
- B. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer for wet locations.

### 2.3 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- B. Hinged Enclosures: As specified in Section 16160.

## PART 3 - EXECUTION



### 3.1 INSTALLATION

- A. Install boxes in accordance with NECA "Standard of Installation."
- B. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- C. Set wall mounted boxes at elevations to accommodate mounting heights indicated.
- D. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Adjust box location up to 10 feet if required to accommodate intended purpose.
- E. Orient boxes to accommodate wiring devices oriented as specified in Section 16140.
- F. Maintain headroom and present neat mechanical appearance.
- G. Install boxes to preserve fire resistance rating of partitions and other elements.
- H. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.
- I. Align adjacent wall mounted device boxes for switches, thermostats, and similar devices.
- J. Use flush mounted device box in finished areas.
- K. Locate flush mounted device box in masonry wall to require cutting wall of masonry unit in block opening only. Coordinate masonry cutting to achieve neat opening.
- L. Do not install flush mounted boxes back-to-back in walls; provide minimum 6 inches separation. Provide minimum 24 inches separation in acoustic rated walls.
- M. Secure flush mounted boxes to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- N. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- O. Use adjustable steel channel fasteners for hung ceiling outlet box.

- P. Do not fasten boxes to ceiling support wires.
- Q. Support boxes independently of conduit.
- R. Use gang box where more than one device is mounted together. Do not use sectional box.
- S. Use gang box with plaster ring for single device outlets.
- T. Use cast device box in exterior locations exposed to the weather and other wet locations.
- U. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

### 3.2 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate installation of device boxes for equipment connected under Section 16180.

### 3.3 ADJUSTING

- A. Section 01650 - Testing, Adjusting, and Balancing: Adjusting installed work.
- B. Adjust flush-mounting devices to make front flush with finished wall material.
- C. Install knockout closures in unused box openings.

### 3.4 CLEANING

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 16141  
WIRING DEVICES

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. Wall switches.
- B. Receptacles.
- C. Device plates and box covers.

1.2. REFERENCES

- A. NEMA WD 1 - General-Purpose Wiring Devices.
- B. NEMA WD 5 - Specific-Purpose Wiring Devices.

1.3. SUBMITTALS

- A. Submit product data under provisions of this specification.
- B. Provide product data showing configurations, finishes, dimensions, and manufacturer's instructions.

PART 2 - PRODUCTS

2.1. ACCEPTABLE MANUFACTURERS - WALL SWITCHES.

- A. Hubbell.
- B. Sylvania.
- C. General Electric.

2.2. WALL SWITCHES

- A. Wall Switches for Lighting Circuits and Motor Loads Under ½ HP: NEMA WD; 1 AC general use snap switch with toggle handle, rated 20 amperes and 120-277 volts AC.
- B. Handle: Ivory plastic.

2.3. ACCEPTABLE MANUFACTURERS – RECEPTACLES

- A. Hubbell
- B. Pass & Seymour.
- C. Slater.

2.4. RECEPTACLES

- A. Convenience and Straight-blade Receptacles: NEMA WD 1.
- B. Convenience Receptacle Configuration: NEMA WD 1; Type 5 20 R, ivory plastic face.
- C. GFCI Receptacles: Duplex convenience receptacle with integral ground fault current interrupter.

2.5. ACCEPTABLE MANUFACTURERS - WALL PLATES

- A. Hubbell.
- B. General Electric.
- C. Sylvania.
- D. Substitutions: Approved equal.

2.6. WALL PLATES

- A. Decorative Cover Plate: Stainless Steel.

PART 3 – EXECUTION

3.1. INSTALLATION

- A. Install convenience receptacles as shown on drawings.
- B. Install stainless steel plates on switch, receptacle, and blank outlets.
- C. Install devices and wall plates flush and level.

END OF SECTION

SECTION 16195  
ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Nameplates.
- B. Wire and cable markers.

1.2 RELATED SECTIONS

- A. Section 16130 - Boxes.

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Submit under provisions of Section 15010/16010.
- B. Product Data: Provide catalog data for nameplates, labels, and markers.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 - PRODUCTS

2.1 NAMEPLATES

- A. Nameplates: Engraved three-layer laminated plastic, white letters on black background.
- B. Locations:
  - 1. Each electrical distribution and control equipment enclosure.

2. Communication cabinets.

3. Motor Starters.

C. Letter Size:

1. Use 1/8 inch letters for identifying individual equipment and loads.

2. Use 1/4 inch letters for identifying grouped equipment and loads.

## 2.2 WIRE MARKERS

A. Manufacturers:

1. Panduit.

2. Brady.

3. Thomas & Betts.

4. Substitutions: Under provisions of Section 15010/16010.

B. Description: Tape, split sleeve, or tubing type wire markers.

C. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes and each load connection.

D. Legend:

1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.

2. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on drawings

## 2.3 UNDERGROUND WARNING TAPE

A. Manufacturers:

1. Panduit.

2. Thomas & Betts.

3. Thor Enterprises.

4. Substitutions: Under provisions of Section 15010/16010.

B. Description: 4 inch wide plastic tape, colored red with suitable warning legend describing buried electrical lines.

## PART 3 - EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive nameplates.

3.2 APPLICATION

- A. Install nameplate parallel to equipment lines.
- B. Secure nameplate to equipment front using adhesive.
- C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.
- D. Identify underground conduits using underground warning tape. Install one tape per trench at 3 inches below finished grade.

END OF SECTION





SECTION 16440  
DISCONNECT SWITCHES

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. Disconnect switches.
- B. Fuses.
- C. Enclosures.

1.2. REFERENCES

- A. ANSI/UL 198C - High-Intensity Capacity Fuses; Current Limiting Types.
- B. ANSI/UL 198E - Class R Fuses.
- C. FS W-F-870 - Fuseholders (For Plug and Enclosed Cartridge Fuses).
- D. FS W-S-865 - Switch, Box, (Enclosed), Surface-Mounted.
- E. NEMA KS 1 - Enclosed Switches.

1.3. SUBMITTALS

- A. Submit product data under provisions of this specification.
- B. Include outline drawings with dimensions, and equipment ratings for voltage, capacity, horsepower, and short circuit.

PART 2 – PRODUCTS

2.1. ACCEPTABLE MANUFACTURERS - DISCONNECT SWITCHES

- A. Square D.
- B. General Electric.
- C. Westinghouse - Bryant.
- D. Substitutions: Approved equal.

## 2.2. DISCONNECT SWITCHES

- A. Fusible Switch Assemblies: NEMA KS 1; FS W-S-865; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse Clips: FS W-F-870. Designed to accommodate Class R fuses.
- B. Nonfusible Switch Assemblies: NEMA KS 1; Type GD; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
- C. Enclosures: NEMA KS 1; Type 1.

## 2.3. ACCEPTABLE MANUFACTURERS – FUSES

- A. General Electric.
- B. Westinghouse.
- C. Square D.
- D. Substitutions: Approved equal.

## 2.4. FUSES

- A. Fuses 600 Amperes and Less: ANSI/UL 198C, Class R; current limiting, delay, one-time fuse, 250 volt.
- B. Interrupting Rating: 200,000 rms amperes.

## PART 3 – EXECUTION

### 2.5. INSTALLATION

- A. Install disconnect switches where indicated on Drawings.
- B. Install fuses in fusible disconnect switches.
- C. Install disconnect switches on all relocated, and/or new equipment where required by code. Absence of disconnect on drawing does not relieve the Contractor of responsibility for meeting code.

END OF SECTION

SECTION 16470

PANELBOARDS

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. Distribution panelboards.
- B. Branch circuit panelboards.

1.2. RELATED SECTIONS

- A. Section 16190 - Supporting Devices.
- B. Section 16195 - Electrical Identification: Engraved nameplates.

1.3. REFERENCES

- A. NECA (National Electrical Contractors Association) "Standard of Installation."
- B. NEMA AB 1 - Molded Case Circuit Breakers.
- C. NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies.
- D. NEMA KS 1 - Enclosed Switches.
- E. NEMA PB 1 - Panelboards.
- F. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- G. NFPA 70 - National Electrical Code.

1.4. SUBMITTALS

- A. Submit under provisions of Section 15010/16010.
- B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.

- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.

#### 1.5. PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 15010/16010.
- B. Record actual locations of Products; indicate actual branch circuit arrangement.

#### 1.6. OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of Section 15010/16010.
- B. Maintenance Data: Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

#### 1.7. QUALITY ASSURANCE

Perform Work in accordance with NECA Standard of Installation.

#### 1.8. QUALIFICATIONS

Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

#### 1.9. REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and indicated.

#### 1.10. MAINTENANCE MATERIALS

- A. Provide maintenance materials under provisions of Section 15010/16010.
- B. Provide two of each panelboard key.

## PART 2 - PRODUCTS

### 2.1. MANUFACTURERS

- A. Square D.
- B. General Electric.
- C. Westinghouse/Cutler Hammer.
- D. Substitutions: Under provisions of Section 15010/16010.

### 2.2. DISTRIBUTION PANELBOARDS

- A. Panelboards: NEMA PB 1, circuit breaker type.
- B. Panelboard Bus: Copper, ratings as indicated. Provide copper ground bus in each panelboard.
- C. Minimum integrated short circuit rating: 10,000 amperes rms symmetrical for 240 volt panelboards, or as indicated.
- D. Molded Case Circuit Breakers: NEMA AB 1. Provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole. Provide circuit breakers UL listed as Type HACR for air conditioning equipment branch circuits.
- E. Molded Case Circuit Breakers with Current Limiters: NEMA AB 1. Provide circuit breakers with replaceable current limiting elements, in addition to integral thermal and instantaneous magnetic trip in each pole.
- F. Controllers: NEMA ICS 2, AC general-purpose Class A magnetic controller for induction motors rated in horsepower, with melting alloy overload relay. Coil operating voltage: 240 volts, 60 Hertz. Size as shown on Drawings. Provide HAND-OFF-AUTO selector, STOP-START pushbutton station, and GREEN indicating light in front cover.
- G. Provide circuit breaker accessory trip units and auxiliary switches as indicated.
- H. Enclosure: As indicated.
- I. Cabinet Front: Surface type, fastened with concealed trim clamps. Provide hinged door with flush lock. Finish in manufacturer's standard gray enamel.

### 2.3. BRANCH CIRCUIT PANELBOARDS

- A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB1, circuit breaker type.
- B. Panelboard Bus: Copper, ratings as indicated. Provide copper ground bus in each panelboard.
- C. Minimum integrated short circuit rating: 10,000 amperes rms symmetrical for 240 volt panelboards, or as indicated.
- D. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled. Do not use tandem circuit breakers.
- E. Enclosure: As indicated.
- F. Cabinet Front: Surface cabinet front with concealed trim clamps, concealed hinge, and flush lock all keyed alike. Finish in manufacturer's standard gray enamel.

## PART 3 – EXECUTION

### 3.1. INSTALLATION

- A. Install panelboards in accordance with NEMA PB 1.1.
- B. Install panelboards plumb. Provide supports in accordance with Section 16190.
- C. Height: 6 ft to top of panelboard; install panelboards taller than 6 ft with bottom no more than 4 inches above floor.
- D. Provide filler plates for unused spaces in panelboards.
- E. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.
- F. Provide engraved plastic nameplates under the provisions of Section 16195.

### 3.2. FIELD QUALITY CONTROL

*Visual and Mechanical Inspection:* Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION





SECTION 16577  
OBSTRUCTION LIGHTS

PART 1 - GENERAL

1.1. WORK INCLUDED

- A. Obstruction lighting equipment. (New Tank Only)

1.2. REFERENCES

- A. FAA AC 70/7460-1G - Obstruction Marking and Lighting.
- B. FAA AC 150/5340-21 - Airport Miscellaneous Lighting Visual Aids.
- C. FAA AC 150/5345-1 - Approved Airport Lighting Equipment.
- D. FAA AC 150/5345-43 - Specification for Obstruction Lighting Equipment.

1.3. SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide for each device.

1.4. QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum three years documented experience, and listed in FAA AC 150/5345-1.

1.5. REGULATORY REQUIREMENTS

- A. Conform to FAA AC 70/7460-1G.

PART 2 – PRODUCTS

2.1. OBSTRUCTION LIGHTS

- A. Flashing Red Beacon Lights: FAA AC 150/5345-43: Type L866, weatherproof duplex style.

## PART 3 – EXECUTION

### 3.1. INSTALLATION

- A. Install obstruction lighting equipment to the requirements of FAA AC 150/5340-21.
- B. Install obstruction lighting units on 1-1/4 inch threaded conduit ends.
- C. Install photocell unit on receptacle base.

### 3.2. FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 01410.
- B. Inspect and test obstruction lighting equipment to FAA AC 150/5340-21.

### 3.3. ADJUSTING

- A. Adjust flash rate and photocell level setpoints to meet requirements of FAA.

END OF SECTION

## **SECTION 7**

### **CONTRACT NO. 10 – WATER TANK**

#### **CONTRACT AND BOND FORMS**

**AGREEMENT**

**PAYMENT BOND**

**PERFORMANCE BOND**

**CERTIFICATE OF INSURANCE**

**NOTICE OF AWARD**

**NOTICE TO PROCEED**

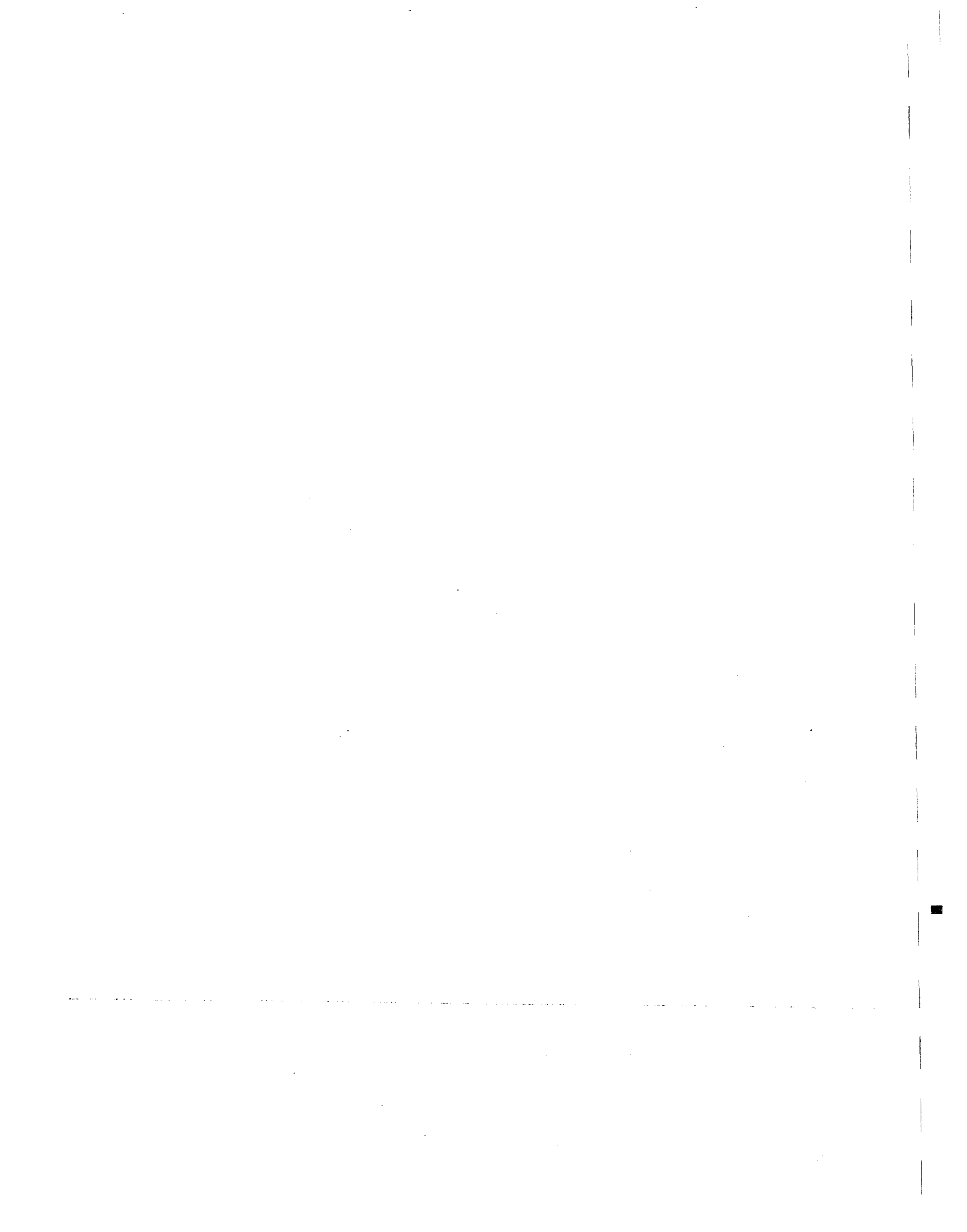
**CHANGE ORDER**

**PARTIAL PAYMENT REQUEST**

**CERTIFICATE OF SUBSTANTIAL COMPLETION**

**FORM OF WAIVER AND RELEASE OF LIEN**  
(General Contractor)

**FORM OF WAIVER AND RELEASE OF LIEN**  
(Sub-Contractor)



## AGREEMENT BETWEEN OWNER AND CONTRACTOR

THIS AGREEMENT is by and between the Nicholas County Water District ("Owner") and Caldwell Tanks, Inc. ("Contractor"), doing business as (an individual, corporation, or partnership). Owner and Contractor in consideration of the mutual covenants hereinafter set forth, agree as follows:

### ARTICLE 1 –WORK

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: **Contract No. 10 – 150,000 Gallon Elevated Water Tank**
- 

### ARTICLE 2 – THE PRODUCT

- 2.01. The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows: **Phase IX – Water System Improvements**

### ARTICLE 3 - ENGINEER

- 3.01. The Project has been designed by Sisler-Maggard Engineering, PLLC, who is to act as the Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

### ARTICLE 4 – CONTRACT TIMES

#### 4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

#### 4.02 *Days to Achieve Substantial Completion and Final Payment*

A. The Work will be substantially completed within 180 days after the date when the Contract Time commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 180 days after the date when the Contract Time commence to run.

#### 4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$500 for each day



that expires after the time specified in Paragraph 4.02 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$500 for each day that expires after the time specified in Paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

**ARTICLE 5 – CONTRACT PRICE**

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A, 5.01.B, and 5.01.C below:

A. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in this paragraph 5.01.A:

As provided in Paragraph 11.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer as provided in Paragraph 9.07 of the General Conditions. Unit prices have been computed as provided in Paragraph 11.03 of the General Conditions.

BID SCHEDULE

<u>Item No.</u>	<u>Description</u>	<u>Estimated Unit Quantity</u>	<u>Unit Price</u>	<u>Total Estimated Price</u>
1.	150,000 Gallon elevated water tank and appurtenances	1	\$557,800.00	\$557,800.00
ESTIMATED TOTAL OF ALL UNIT PRICE WORK				<u>\$(557,800.00)</u> (figure)

BIDDER agrees to perform all of the Work described in the Specifications and shown on the Plans for the bid price of: five hundred and fifty seven thousand, eight hundred Dollars and \_\_\_\_\_ zero Cents (\$557,800.00). The Unit Price shall govern. The Owner will make corrections in extensions and additions to determine the Total Bid Amount for Award.

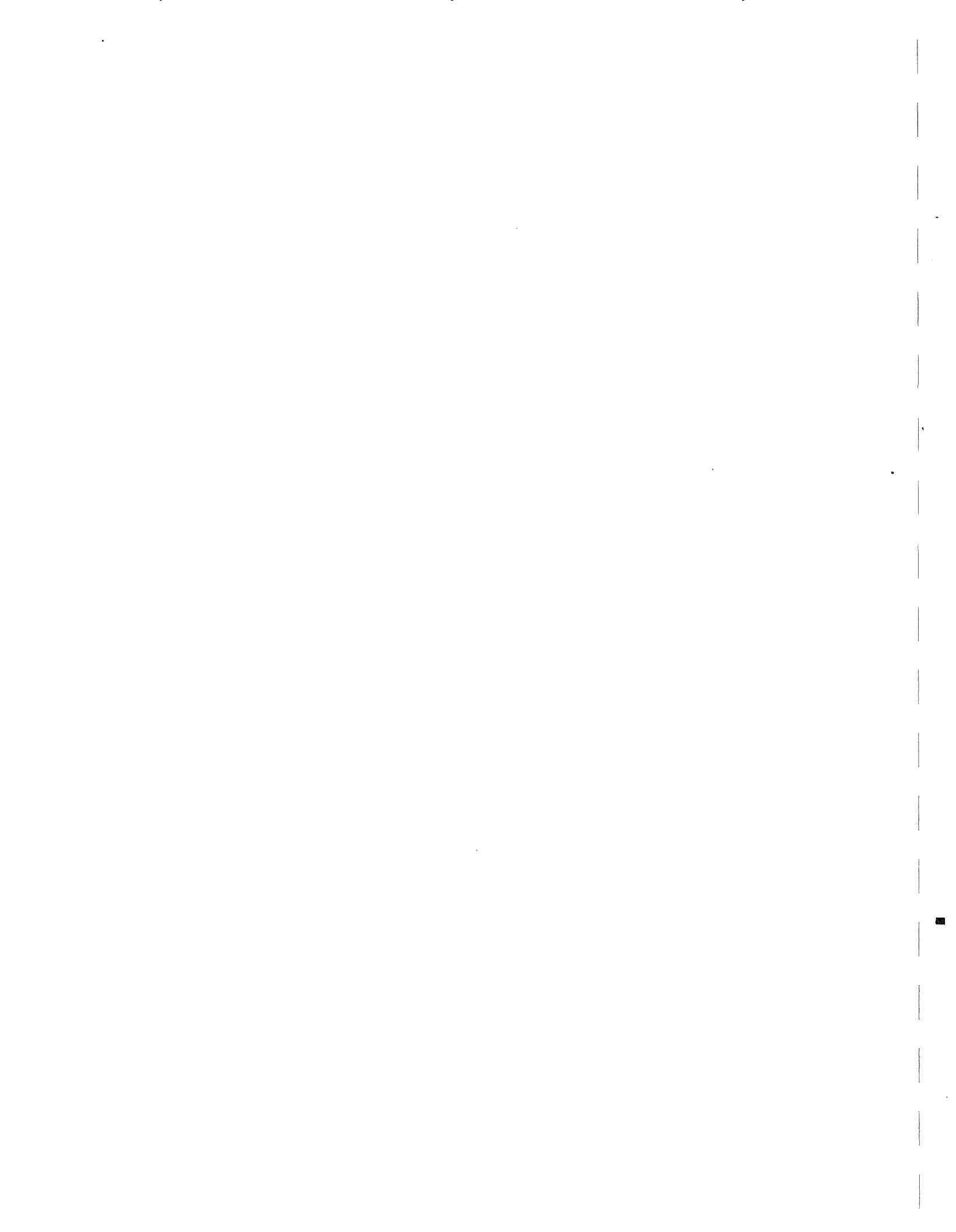
**ARTICLE 6 – PAYMENT PROCEDURES**

*6.01 Submittal and Processing of Payments*

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

*6.02 Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 20<sup>th</sup> day of each month during





performance of the Work as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements:

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions:
  - a. 95 percent of Work completed (with the balance being retainage); and
  - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions.

### *6.03 Final Payment*

A. Upon receipt of the final Application for Payment accompanied by Engineer's recommendation of payment in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay Contractor as provided in Paragraph 14.07 of the General Conditions the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages.

## **ARTICLE 7 – INTEREST**

7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the maximum legal rate.

## **ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS**

8.01 In order to induce Owner to enter into this Agreement Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.



D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in Paragraph 4.02 of the General Conditions.

E. Contractor has obtained and carefully studied (or assumes responsibility for doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto.

F. Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

I. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

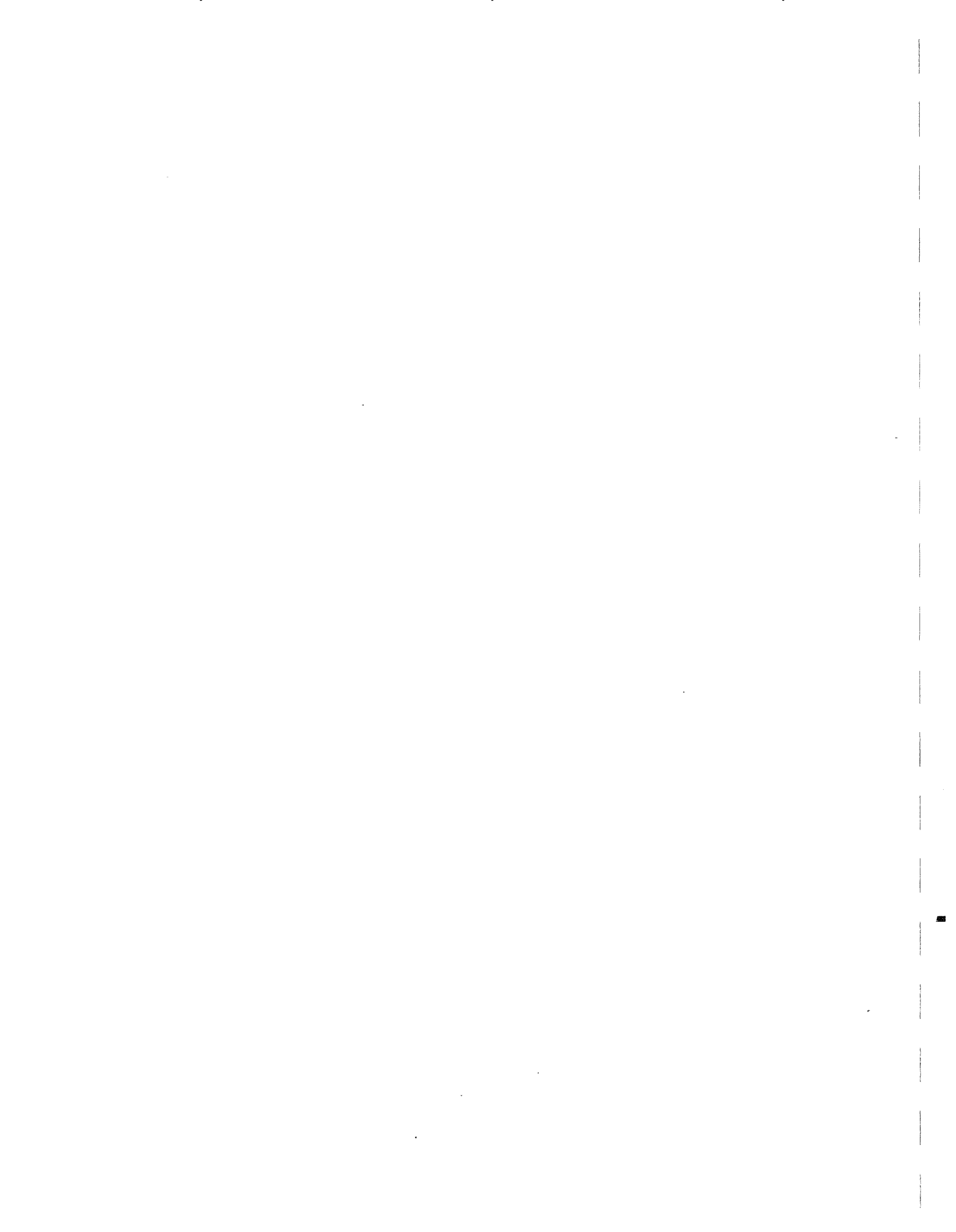
J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

## **ARTICLE 9 – CONTRACT DOCUMENTS**

### **9.01 Contents**

A. The Contract Documents consist of the following:

1. Advertisement for Bids
2. Instructions to Bidders
3. Agreement (pages 1 to 7 inclusive).
4. Performance bond (pages 1 to 3, inclusive).
5. Payment bond (pages 1 to 3, inclusive).

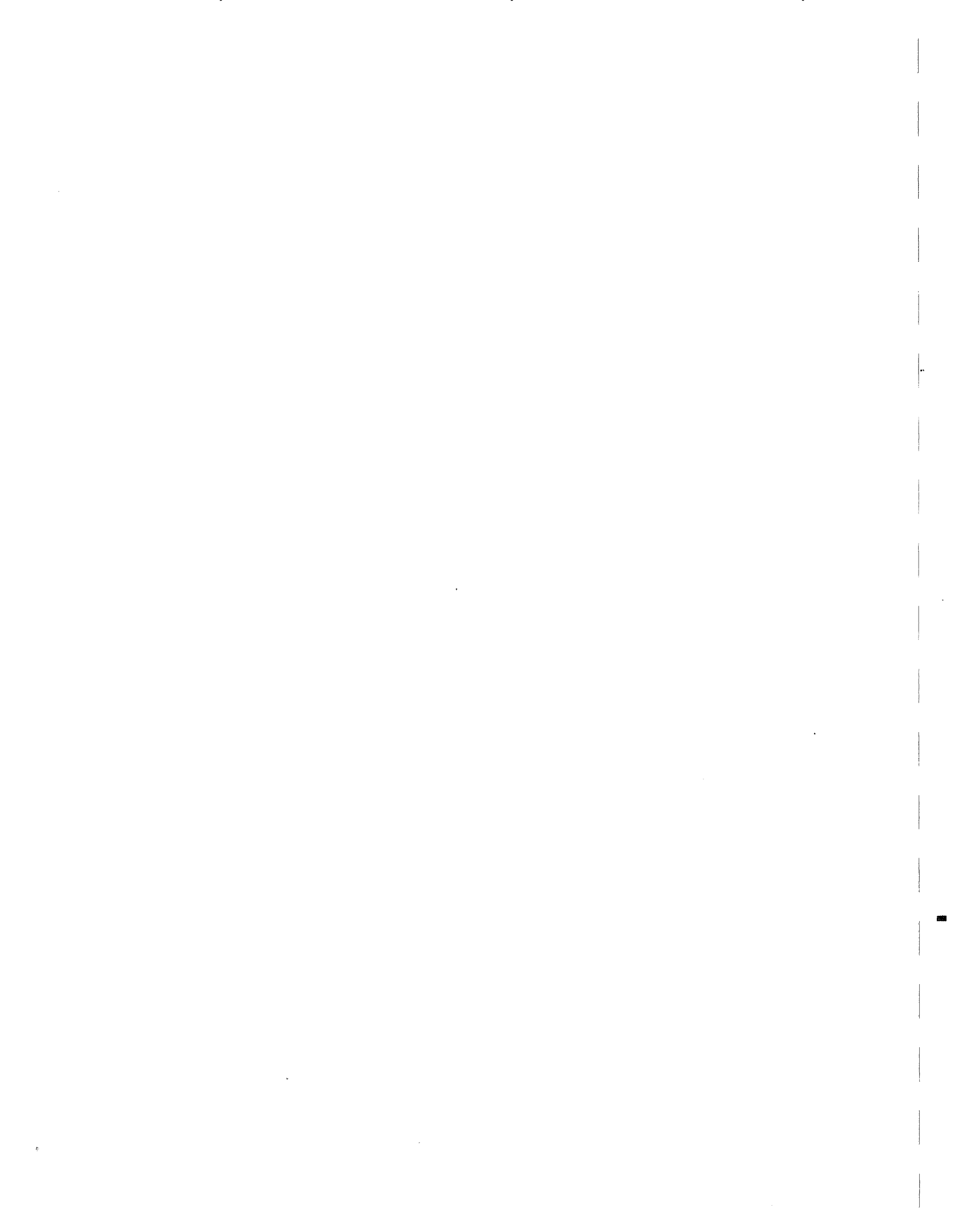


6. Bid bond with Power of Attorney (pages 1 to 2, inclusive)
7. Certificate of Insurance
8. General Conditions (pages 1 to 57, inclusive).
9. Supplementary Conditions (pages 1 to 5, inclusive).
10. Special Conditions (pages 1 to 13, inclusive).
11. Specifications as listed in the table of contents of the Project Booklet and dated November 2007.
12. Drawings consisting of 4 sheets with each sheet bearing the following general title: Contract No. 10 – 150,000 Gallon Elevated Water Tank and dated September 2008.
13. Addenda (numbers \_\_\_\_\_ to \_\_\_\_\_, inclusive).
14. Exhibits to this Agreement (enumerated as follows):
  - a. Contractor's Bid (pages 1 to 5, inclusive) with Certifications.
15. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
  - a. Notice of Award (1 page)
  - b. Notice to Proceed (1 page)
  - c. Work Change Directives.
  - d. Change Order(s).
  - e. Certificate of Substantial Completion
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

## **ARTICLE 10 – MISCELLANEOUS**

### **10.01 Terms**

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.



10.02 *Assignment of Contract*

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

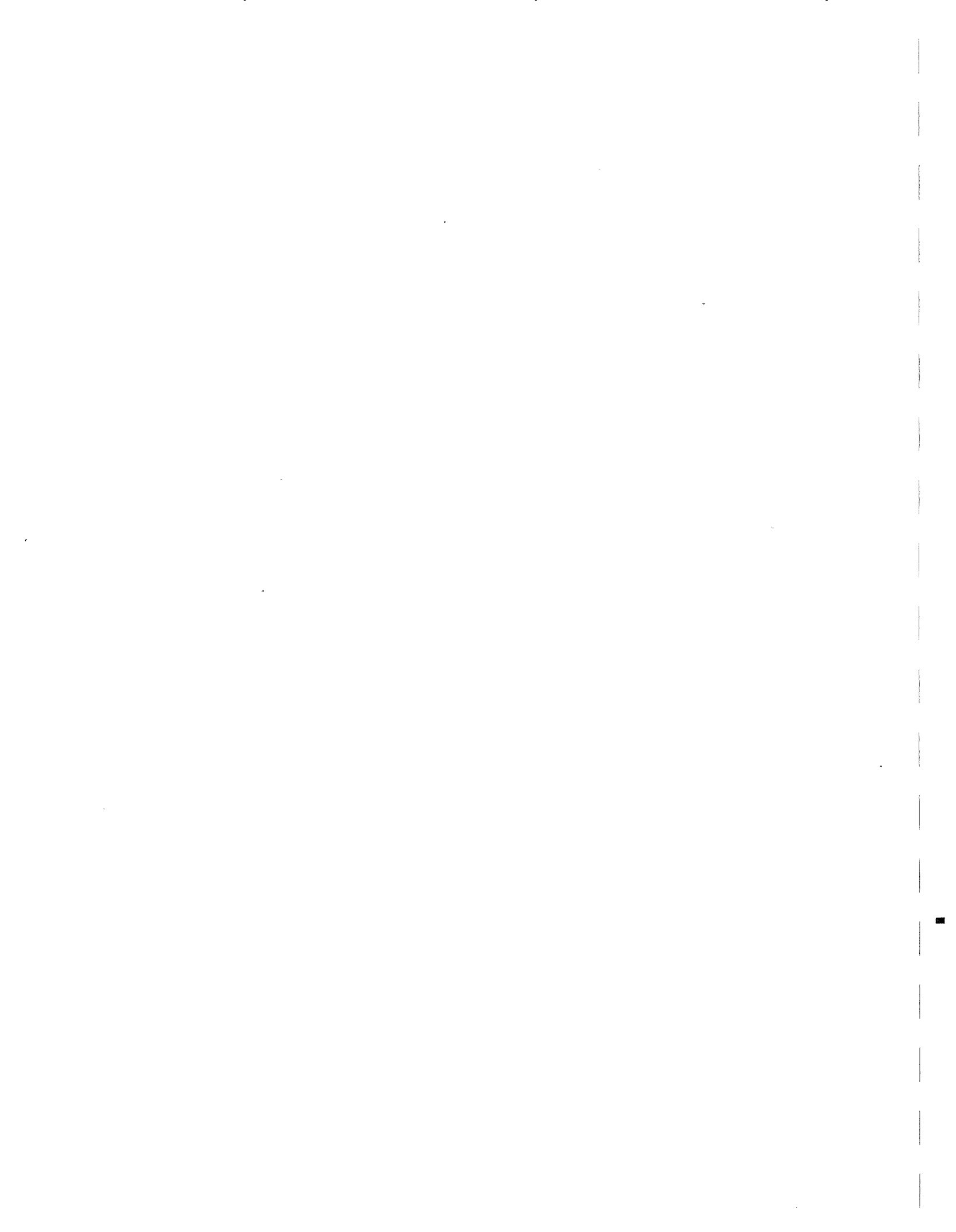
10.03 *Successors and Assigns*

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

10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Other Provisions: NONE*





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

This Agreement is dated \_\_\_\_\_. This Agreement shall not be effective unless and until Agency's designated representative concurs.

OWNER:

Nicholas County Water District

By: Mary Jo McCord *Mary Jo McCord*

Title: Chairperson

[CORPORATE SEAL]

Attest: Jerry Reynolds

By: \_\_\_\_\_

Title: \_\_\_\_\_

Address for giving notices:

1639 Old Paris Road (SR 32)

Carlisle, KY 41749

CONTRACTOR

Caldwell Tanks, Inc.

By: Barry L. Geswein

Title: Secretary *Barry Geswein*

[CORPORATE SEAL]

Attest: Kevin J. Gallagher

By: Kevin J. Gallagher, V.P. Sales

Title: \_\_\_\_\_

Address for giving notices:

4000 Tower Road

Louisville, KY 40219

Agent for service of process:

CT Corporation System  
1511 Kentucky Home Life Building  
Louisville, KY 40202

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

Agency Concurrence:

As lender or insurer of funds to defray the costs of this Contract, and without liability for any payments thereunder, the Agency hereby concurs in the form, content, and execution of this Agreement.

Agency: USDA - Rural Development

By: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_





TANK BUILDERS SINCE 1887

**C O R P O R A T E   R E S O L U T I O N**

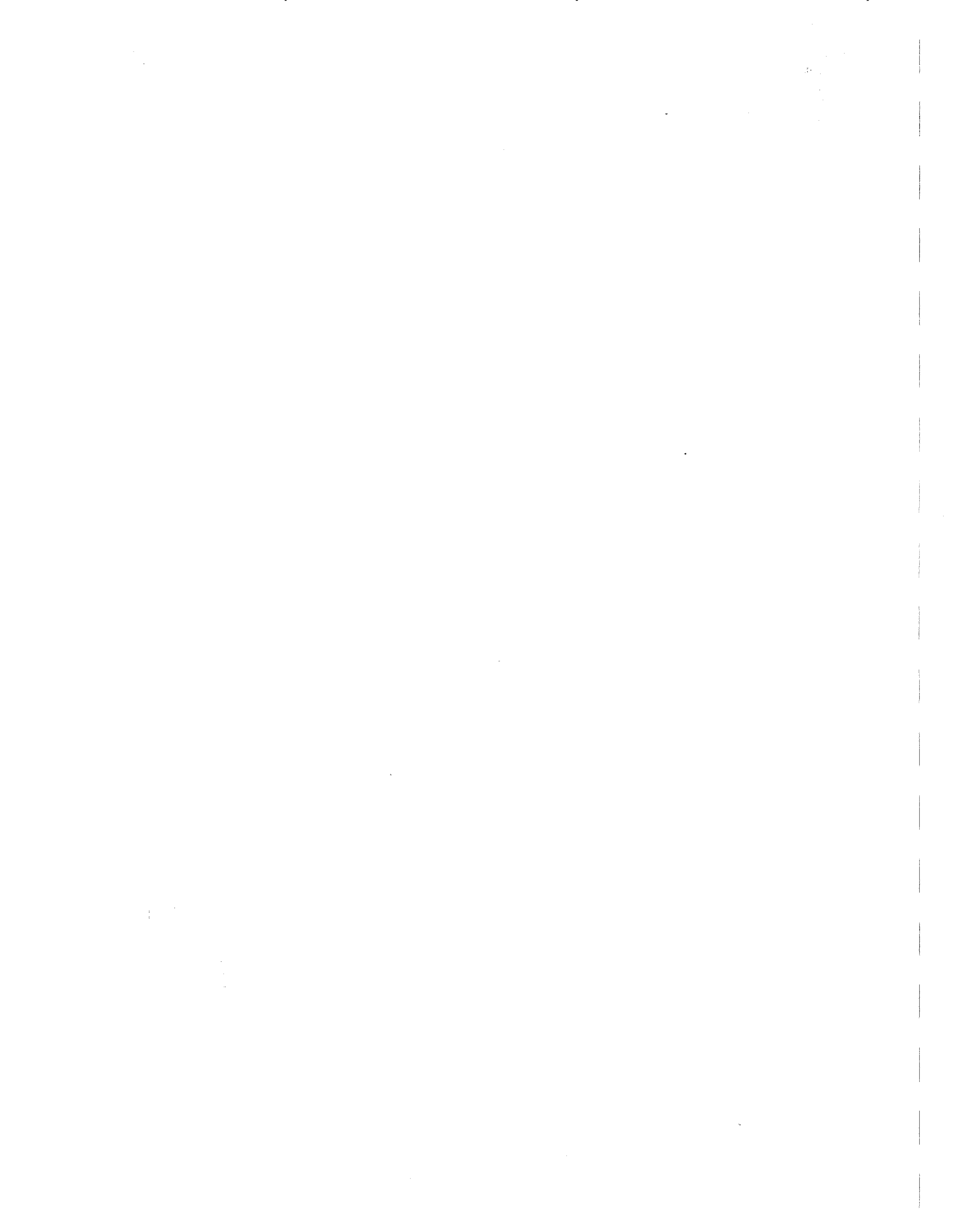
**BE IT RESOLVED** by the Board of Directors of Caldwell Tanks, Inc., in a meeting duly assembled that Barry L. Geswein, Secretary of the Corporation, be, and he is hereby authorized, empowered, and directed for and on behalf of the Corporation to negotiate for and sign any and all bid proposals and/or contract which this Corporation might enter into for the furnishing of services for Corporation under such terms, conditions, and stipulations, and for such consideration as he might deem to the best interest of the Corporation.

\* \* \* \* \*

I, Barry L. Geswein, Secretary of Caldwell Tanks, Inc., do hereby certify that the above and foregoing is a true and correct copy of a Resolution adopted at a meeting of the Board of Directors of said Corporation held on the 21<sup>st</sup> day of August, 2008, at which meeting a quorum was present and voted and that said Resolution is still in full force and effect.

**WITNESS MY SIGNATURE** this 24<sup>th</sup> of October, 2008, at Louisville, Kentucky.

\_\_\_\_\_  
Barry L. Geswein, Secretary



PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

Caldwell Tanks, Inc.  
(Name of Contractor)

4000 Tower Road, Louisville, KY 40219  
(Address of Contractor)

corporation, hereinafter called Principal,  
(Corporation, Partnership or Individual)

and

Great American Insurance Company  
(Name of Surety)

580 Walnut Street, Cincinnati, OH 45202  
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

Nicholas County Water District  
(Name of Owner)

1639 Old Paris Road, Carlisle, KY 40311  
(Address of Owner)

hereinafter called OWNER, in the total aggregate sum of Five Hundred Fifty Seven  
Thousand Eight Hundred ----- Dollars (\$ 557,800.00 )

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 \_\_\_\_\_, 2008, a copy of which is hereto attached and made a part hereof for the construction of:

Contract No. 10 – 150,000 GALLON ELEVATED WATER TANK

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 his obligation shall be void otherwise to remain in full force and effect.

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 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 financial settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied. The OWNER is the only beneficiary hereunder.





IN WITNESS WHEREOF, this instrument is executed in  six (6)   
counterparts, each (Number)

one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 2008.

ATTEST:

Kevin J. Gallagher  
(Principal Secretary)  
(SEAL) Kevin J. Gallagher, V.P. Sales

Caldwell Tanks, Inc.  
Principal

By: Barry L. Geswein  
Barry L. Geswein, Secretary  
(Address)  
4000 Tower Road  
Louisville, KY 40219

Jamie Morgan  
Witness as to Principal  
4000 Tower Road  
(Address)

Louisville, KY 40219

ATTEST:

(SEAL)

Great American Insurance Company  
Surety

Carolyn S. Henck  
Witness as to Surety

By: Tammy L. Masterson  
(Attorney-in-Fact)  
Tammy L. Masterson  
Neace Lukens, Inc.  
(Typed Name)

4000 Tower Road  
Address

2305 River Road  
Louisville, KY 40206  
(Address)

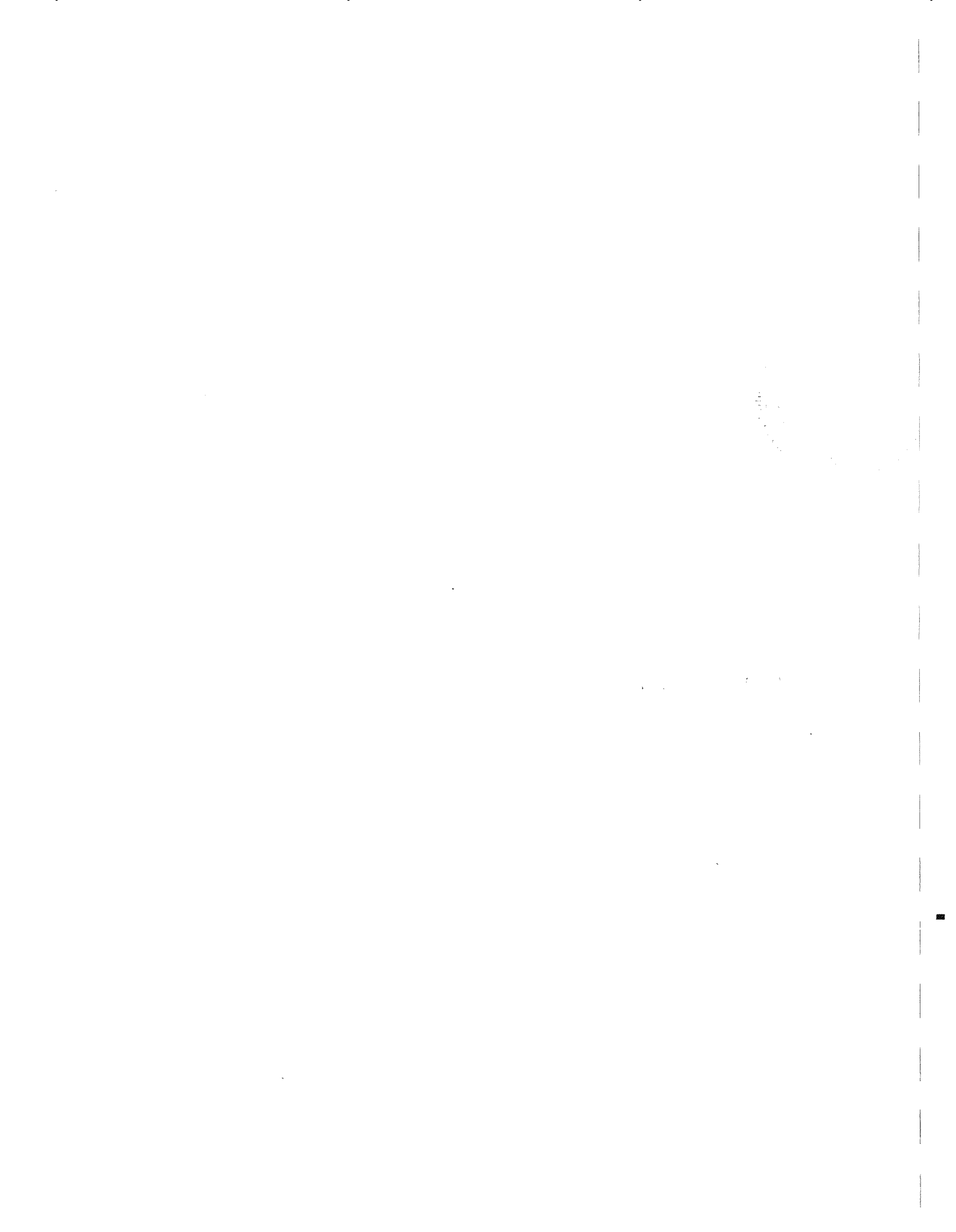
Louisville, KY 40219

502-894-2100  
(Phone)

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

If CONTRACTOR is a partnership, all partners shall 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 Kentucky.



PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

Caldwell Tanks, Inc.

(Name of Contractor)

4000 Tower Road, Louisville, KY 40219

(Address of Contractor)

a corporation, hereinafter called

Principal, (Corporation, Partnership or Individual)

and Great American Insurance Company

(Name of Surety)

580 Walnut Street, Cincinnati, OH 45202

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

Nicholas County Water District

(Name of Owner)

1639 Old Paris Road, Carlisle, KY 40311

(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 \*\*\* Dollars (\$ 557,800.00 ) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns jointly and severally, firmly by these presents.

**\*\*\*Five Hundred Fifty Seven Thousand Eight Hundred Dollars**

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the \_\_\_ day of \_\_\_\_\_, 2008, a copy of which is hereto attached and made a part hereof for the construction of:

Contract No. 11 – 150,000 GALLON ELEVATED WATER TANK

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 of 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 the contract 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 (or with the GOVERNMENT in the event the GOVERNMENT is performing the obligations of the OWNER), 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 for 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.

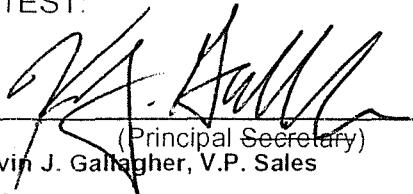
PROVIDED, FURTHER, that no financial settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.




IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts,  
(number)

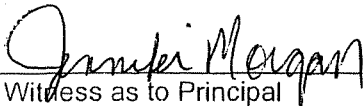
each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 2008.

ATTEST:

  
\_\_\_\_\_  
(Principal Secretary)  
Kevin J. Gallagher, V.P. Sales  
(SEAL)

Caldwell Tanks, Inc.  
Principal

By:  (s)  
Barry L. Geswein, Secretary  
4000 Tower Road

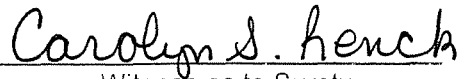
  
\_\_\_\_\_  
Witness as to Principal  
4000 Tower Road  
(Address)

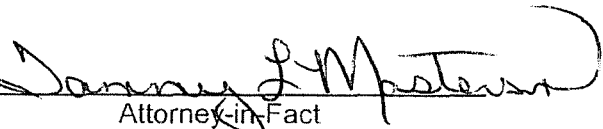
Louisville, KY 40219  
(Address)

Louisville, KY 40219

Great American Insurance Company  
Surety

ATTEST:

  
\_\_\_\_\_  
Witness as to Surety  
4000 Tower Road  
(Address)

By:   
\_\_\_\_\_  
Attorney-in-Fact  
Tammy L. Masterson  
Neace Lukens, Inc.  
(Address)  
2305 River Road  
Louisville, KY 40206

Louisville, KY 40219

NOTE: Date of BOND must not be prior to date of CONTRACT. If CONTRACTOR is a partnership, all partners shall 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 Kentucky.





**GREAT AMERICAN INSURANCE COMPANY®**

**Administrative Office: 580 WALNUT STREET • CINCINNATI, OHIO 45202 • 513-369-5000 • FAX 513-723-2740**

The number of persons authorized by this power of attorney is not more than SIX

No. 0 18279

**POWER OF ATTORNEY**

**KNOW ALL MEN BY THESE PRESENTS:** That the GREAT AMERICAN INSURANCE COMPANY, a corporation organized and existing under and by virtue of the laws of the State of Ohio, does hereby nominate, constitute and appoint the person or persons named below its true and lawful attorney-in-fact, for it and in its name, place and stead to execute in behalf of the said Company, as surety, any and all bonds, undertakings and contracts of suretyship, or other written obligations in the nature thereof; provided that the liability of the said Company on any such bond, undertaking or contract of suretyship executed under this authority shall not exceed the limit stated below.

Name	Address	Limit of Power
JOHN F. NEACE	JENNIFER K. WILLIAMS	ALL
DEBORAH S. PINKERTON	DOUGLAS A. STOUGH	\$50,000,000
TAMMY L. MASTERSON	LOUISVILLE, KENTUCKY	
JOHN A. STOUGH		

This Power of Attorney revokes all previous powers issued in behalf of the attorney(s)-in-fact named above.

IN WITNESS WHEREOF the GREAT AMERICAN INSURANCE COMPANY has caused these presents to be signed and attested by its appropriate officers and its corporate seal hereunto affixed this 7TH day of DECEMBER, 2007  
Attest GREAT AMERICAN INSURANCE COMPANY

STATE OF OHIO, COUNTY OF HAMILTON - ss:

DAVID C. KITCHIN (513-412-4602)

On this 7TH day of DECEMBER, 2007, before me personally appeared DAVID C. KITCHIN, to me known, being duly sworn, deposes and says that he resides in Cincinnati, Ohio, that he is the Divisional Senior Vice President of the Bond Division of Great American Insurance Company, the Company described in and which executed the above instrument; that he knows the seal of the said Company; that the seal affixed to the said instrument is such corporate seal; that it was so affixed by authority of his office under the By-Laws of said Company, and that he signed his name thereto by like authority.

This Power of Attorney is granted by authority of the following resolutions adopted by the Board of Directors of Great American Insurance Company by unanimous written consent dated March 1, 1993.

*RESOLVED: That the Divisional President, the Divisional Senior Vice President, the several Divisional Vice Presidents and Divisional Assistant Vice Presidents, or any one of them, be and hereby is authorized, from time to time, to appoint one or more Attorneys-in-Fact to execute on behalf of the Company, as surety, any and all bonds, undertakings and contracts of suretyship, or other written obligations in the nature thereof; to prescribe their respective duties and the respective limits of their authority; and to revoke any such appointment at any time.*

*RESOLVED FURTHER: That the Company seal and the signature of any of the aforesaid officers and any Secretary or Assistant Secretary of the Company may be affixed by facsimile to any power of attorney or certificate of either given for the execution of any bond, undertaking, contract or suretyship, or other written obligation in the nature thereof, such signature and seal when so used being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.*

**CERTIFICATION**

I, RONALD C. HAYES, Assistant Secretary of Great American Insurance Company, do hereby certify that the foregoing Power of Attorney and the Resolutions of the Board of Directors of March 1, 1993 have not been revoked and are now in full force and effect.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_



# ACORD CERTIFICATE OF LIABILITY INSURANCE

OP ID DP  
CALTA-1

DATE (MM/DD/YYYY)  
08/25/08

**PRODUCER**

Neace Lukens - Louisville  
2305 River Rd  
Louisville KY 40206  
Phone: 502-894-2100 Fax: 502-894-8602

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.

**INSURED**

Caldwell Group LLC  
Caldwell Tanks Inc.  
Attn: Carolyn Renck  
4000 Tower Road  
Louisville KY 40232

**INSURERS AFFORDING COVERAGE**

**NAIC #**

INSURER A:	New Hampshire Insurance Co.	23841
INSURER B:	National Union Fire Ins. Co.	19445
INSURER C:	North River Insurance Co.	21105
INSURER D:	American Home Assurance	
INSURER E:		

**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 ADD'L LTR	INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
A	X	GENERAL LIABILITY COMMERCIAL GENERAL LIABILITY CLAIMS MADE <input checked="" type="checkbox"/> OCCUR X X, C & U X SIR/\$500,000 GEN'L AGGREGATE LIMIT APPLIES PER: POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/>	GL4572307	01/01/08	01/01/09	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ EXCLUDED MED EXP (Any one person) \$ EXCLUDED PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
A	X	AUTOMOBILE LIABILITY ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS	CA1469923 COMPREHENSIVE/COLLISION DEDUCTIBLES: NOT APPLICABLE	01/01/08	01/01/09	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
		GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN EA ACC \$ AUTO ONLY: AGG \$
B	X	EXCESS/UMBRELLA LIABILITY OCCUR CLAIMS MADE DEDUCTIBLE X RETENTION \$10,000	BE7251512	01/01/08	01/01/09	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 P/CO Agg \$ 5,000,000 \$ \$
A		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below OTHER	WC5737942 - EXCLUDES XY DEDUCTIBLE: \$500,000	01/01/08	01/01/09	X WC STATU-TORY LIMITS : OTH-ER E L EACH ACCIDENT \$ 1,000,000 E L DISEASE - EA EMPLOYEE \$ 1,000,000 E L DISEASE - POLICY LIMIT \$ 1,000,000
C		Builders Risk Ded. \$25,000	3217410936	01/01/08	01/01/09	Per Loc \$2,500,000 Per Occ \$2,500,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS  
SEE ATTACHED NOTEPAD#1 FOR EXCESS WORKERS COMPENSATION COVERAGE DETAILS  
SEE ATTACHED HOLDER NOTE FOR ADDITIONAL WORDING PERTAINING TO THIS CERTIFICATE.

**CERTIFICATE HOLDER**

E66580  
Nicholas County Water District  
1639 Old Paris Road  
Carlisle KY 40311

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER 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

*John T. Neace*



**NOTEPAD:**

INSURED'S NAME Caldwell Group LLC

CALTA-1

PAGE 2

OP ID DP

DATE 08/25/08

NOTE PAD #1

Carrier D: American Home Assurance Company for Policy #WC5737941

Kentucky Excess Workers Compensation:

WC Part I - Statutory Limits

Employers Liability Part II - \$1M/\$1M/\$1M

with a \$500,000 SIR States: Kentucky Only; All states endorsement applies.

EMPLOYERS LIABILITY - STOP GAP: ND, OH, WA, WV, & WY

New Hampshire Insurance Group (1/1/08 - 1/1/09) #WC5737942 - EXCLUDES KY

DEDUCTIBLE: \$500,000

Stop Gap Limits: \$1M/\$1M/\$1M



**NOTEPAD:**

HOLDER CODE E66580  
INSURED'S NAME Caldwell Group LLC

CALTA-1  
OPID DP

PAGE 3  
DATE 08/25/08

Project Description: Phas IX - Water System Improvements; Contract No. 10;  
150,000 Gallon Elevated Water Tank; SME # 05001

CTI Job#: E-6658/Nicholas Co, KY

Nicholas County Water District is added as an additional insured to the  
Named Insured's General Liability, Auto Liability, Umbrella Liability and  
Builders Risk policies as respects operations performed by the Named  
Insured under contract with the Certificate Holder for the project listed.





NOTICE OF AWARD

TO: Caldwell Tanks, Inc.  
4000 Tower Road  
Louisville, KY 40219

PROJECT Description: The project includes but is not limited to, the construction of:

Contract No. 10 – 150,000 GALLON ELEVATED WATER TANK  
The OWNER has considered the BID submitted by you for the above described WORK in response to its Advertisement for Bids dated June 24, 2008, and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of \$ 557,800.00.

You are required by the Instructions 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 22 day of July, 2008.

Nicholas County Water District  
By: Mary Jo McCord  
OWNER  
Mary Jo McCord  
Title: Chairperson

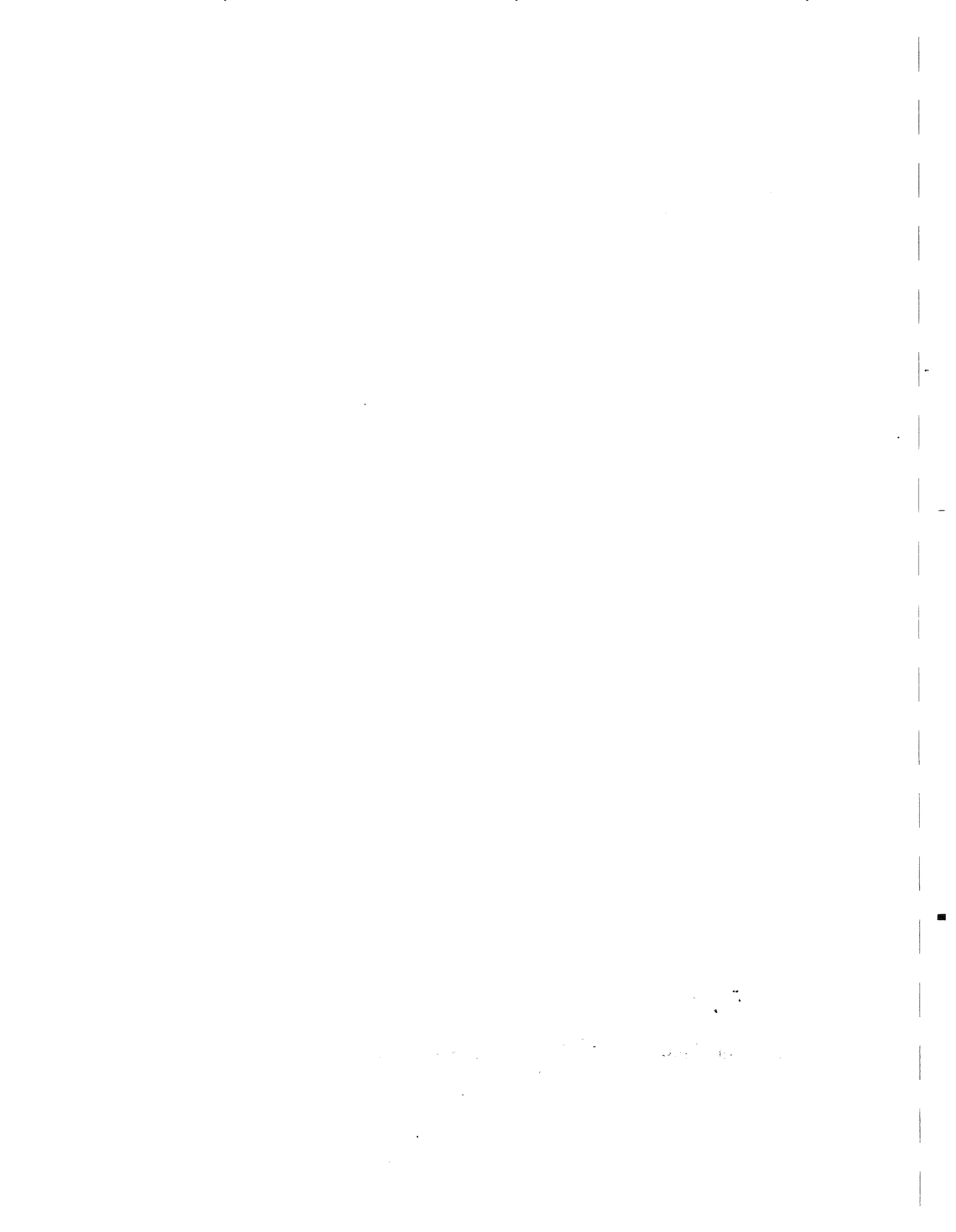
ACCEPTANCE OF NOTICE  
Receipt of the above NOTICE OF AWARD is hereby acknowledged

By Caldwell Tanks, Inc.

this the 2nd day of September, 2008.

By: Barry L. Geswein

Title: Barry L. Geswein, Secretary



NOTICE TO PROCEED

TO: Caldwell Tanks, Inc.  
(Contractor)

DATE: October 21, 2008

ADDRESS:

4000 Tower Road  
Louisville, KY 40219

OWNER'S PROJECT NO.: 05001  
PROJECT: 150,000 GALLON ELEVATED WATER TANK  
OWNER'S CONTRACT NO.: 10

You are hereby notified to commence WORK in accordance with the Agreement dated October 21, 2008, on or before November 3, 2008, and you are to complete the WORK within 180 consecutive calendar days thereafter. The date of completion of all WORK is therefore May 1, 2009.

Nicholas County Water District  
Owner

By: Mary Jo McCord

Name: Mary Jo McCord

Title: Chairperson

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

Caldwell Tanks, Inc.

this the 24<sup>th</sup> day of October, 2008

By: Travis Mahan

Title: Travis Mahan, Project Manager



CHANGE ORDER

Order No. \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Agreement Date: \_\_\_\_\_

NAME OF PROJECT: Contract No. 10 – 150,000 Gallon Elevated Water Tank  
 OWNER: Nicholas County Water District  
 CONTRACTOR: \_\_\_\_\_

The following changes are hereby made to the CONTRACT DOCUMENTS:

Description of Changes (Supplemental Plans and Specifications Attached)	DECREASE In Contract Price	INCREASE In Contract Price
TOTALS  NET CHANGE IN CONTRACT PRICE		

**Justification:**

Change to CONTRACT PRICE:

Original CONTRACT PRICE \$ \_\_\_\_\_

Current CONTRACT PRICE adjusted by previous CHANGE ORDER \$ \_\_\_\_\_

The CONTRACT PRICE due to this CHANGE ORDER will be increased by: \$ \_\_\_\_\_

The new CONTRACT PRICE including this CHANGE ORDER will be \$ \_\_\_\_\_

Change to CONTRACT TIME:

The CONTRACT TIME will be increased by \_\_\_\_\_ calendar days.

The date for completion of all work will be \_\_\_\_\_ [Date].

This document will become a supplement to the contract and all provisions will apply hereto.

Approvals Required:

To be effective this Order must be approved by the Funding agency if it changes the scope or objective of the PROJECT, or as may otherwise be required by the SUPPLEMENTAL GENERAL CONDITIONS.

Requested by: \_\_\_\_\_  
(Contractor) Date

Recommended by: \_\_\_\_\_  
Sisler-Maggard Engineering, PLLC. Date

Ordered by: \_\_\_\_\_  
Nicholas County Water District Date

Approved by: \_\_\_\_\_  
Rural Development Date



PAY REQUEST FORM  
WILL BE FURNISHED ON DISC  
BY THE ENGINEER  
AT PRE-CONSTRUCTION CONFERENCE





CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER's Project No: \_\_\_\_\_ ENGINEER's Project No.: 05001  
Project Contract No. 10

CONTRACTOR  
Contract For 150,000 Gallon Elevated Water Tank

This Certificate of Substantial completion applies to all Work under the Contract Documents or to the following specified parts thereof:

To \_\_\_\_\_ Nicholas County Water District  
OWNER

And To \_\_\_\_\_  
CONTRACTOR

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on

\_\_\_\_\_  
DATE OF SUBSTANTIAL COMPLETION

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within \_\_\_\_\_ days of the above date of Substantial Completion.



The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance, and warranties shall be as follows:

RESPONSIBILITIES:

OWNER:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CONTRACTOR:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

---

The following documents are attached to and made a part of this Certificate:

---

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

---

Executed by ENGINEER on

2008

Sisler-Maggard Engineering, PLLC.

ENGINEER

By:

Joseph F. Sisler, P.E., P.L.S.

CONTRACTOR accepts this Certificate of Substantial Completion

2008

on

CONTRACTOR

By:

OWNER accepts this Certificate of Substantial Completion on

2008

Nicholas County Water District

OWNER

By:



FORM OF WAIVER AND RELEASE OF LIEN  
(General Contractor)

TO WHOM IT MAY CONCERN:

WHEREAS, the undersigned has performed or furnished, is performing, or furnishing, or will perform or furnish labor or material, fuel, equipment, tools, etc., in connection with the construction of \* \_\_\_\_\_ for\*\* \_\_\_\_\_  
\_\_\_\_\_ at\*\* \_\_\_\_\_  
\_\_\_\_\_.

NOW, THEREFORE, THESE PRESENTS WITNESS, that the undersigned, for a good and valuable consideration to the undersigned well and truly paid at or before the signing and delivery hereof, the receipt whereof is hereby acknowledged, does hereby waive, release and relinquish any and all claims, liens and rights and claims of liens which the undersigned now has, or may hereafter have, on or against the said premises and the building, plant, equipment and machinery of their Owner, \*\*\* \_\_\_\_\_  
\*\*\* \_\_\_\_\_, or on or against\*\*\* \_\_\_\_\_  
\_\_\_\_\_, on account of labor performed or to be performed or material, fuel, equipment, tools, etc., furnished or to be furnished by the undersigned for use in or in connection with the construction and erection of said project; so that\*\*\* \_\_\_\_\_  
\_\_\_\_\_, its successors and assigns, shall and my have, hold and enjoy the same freed and discharged now has or might or could have if these presents had not been made.

IN WITNESS WEREOF, the undersigned has hereunto set his hand and seal this \_\_\_\_\_  
\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Name of General Contractor

By \_\_\_\_\_  
Signature of Officer or Partner

\_\_\_\_\_  
Title or Officer

WITNESS:

\_\_\_\_\_  
\*Insert name of building or project  
\*\*Insert address of building project  
\*\*\*Insert name of Owner



FORM OF WAIVER AND RELEASE OF LIEN  
(Sub-Contractor)

TO WHOM IT MAY CONCERN:

WHEREAS, the undersigned has performed or furnished, is performing, or furnishing or will perform or furnish labor or material, fuel, equipment, tools, etc., in connection with the construction

of \* \_\_\_\_\_ for\*\* \_\_\_\_\_  
\_\_\_\_\_ at\*\* \_\_\_\_\_

NOW, THEREFORE, THESE PRESENTS WITNESS, that the undersigned, for a good and valuable consideration to the undersigned well and truly paid at or before the signing and delivery hereof, the receipt whereof is hereby acknowledged, does hereby waive, release and relinquish any and all claims, liens and rights and claims of liens which the undersigned now has, or may hereafter have, on or against the said premises and the building, plant, equipment and machinery of their Owner, \*\*\* \_\_\_\_\_

\*\*\* \_\_\_\_\_, or on or against\*\*\* \_\_\_\_\_  
\_\_\_\_\_, its successors and assigns, or on or against the General Contractor\*\*\* \_\_\_\_\_, his or its heirs, executors, administrators, successors and assigns, under the laws of the Commonwealth of Kentucky, on account of labor performed or to be performed, or material, fuel, equipment, tools, etc., furnished or to be furnished by the undersigned for use in or in connection with the construction and erection of said building; so that the said\*\*\* \_\_\_\_\_, its successors and assigns, shall may have, hold and enjoy same freed and discharged from all liens, claims and demands whatsoever which the undersigned now has or might or could have if these presents had not been made.

IN WITNESS WEREOF, the undersigned has hereunto set his hand and seal this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

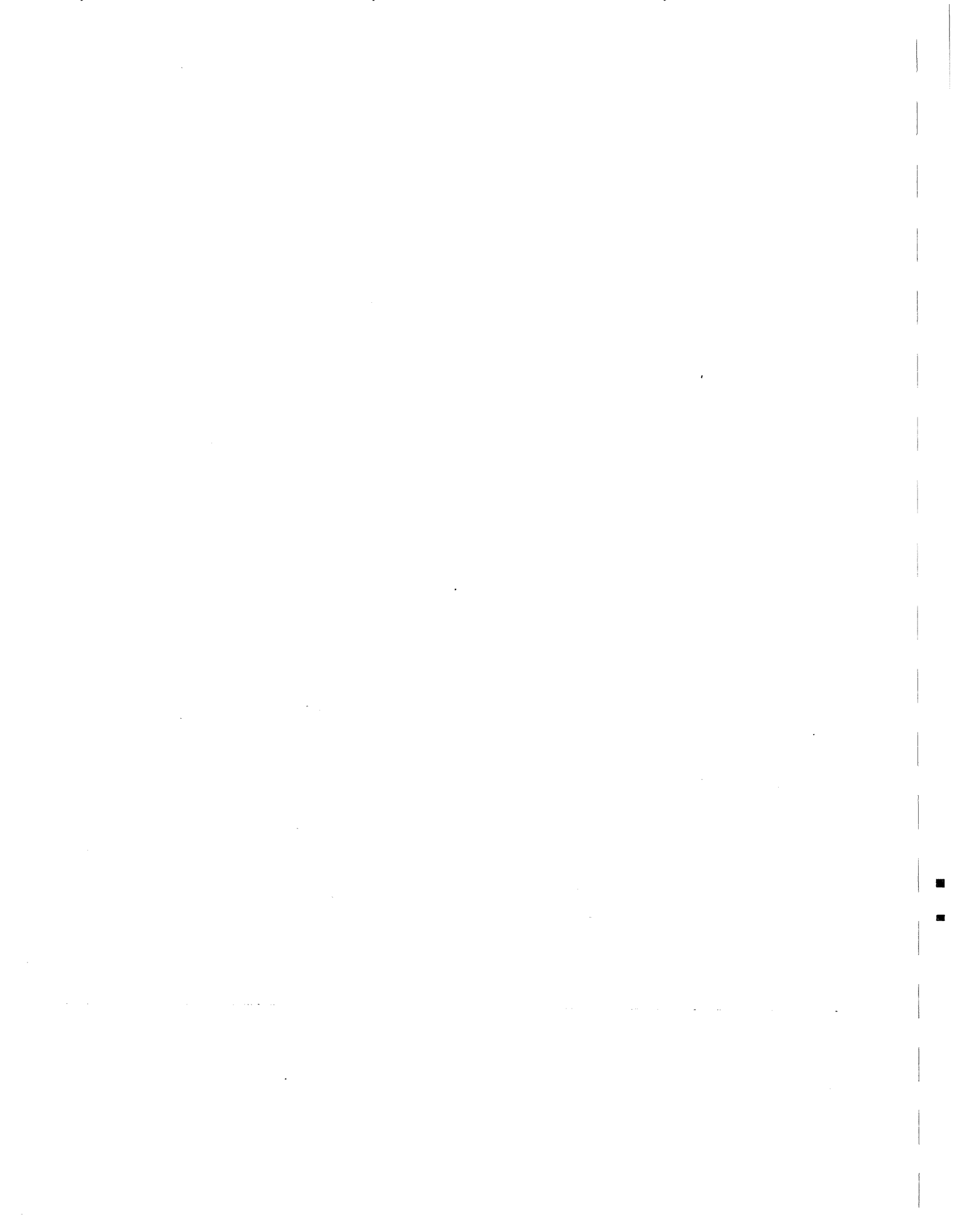
\_\_\_\_\_  
Name of Sub-Contractor

By \_\_\_\_\_  
Signature of Officer or Partner

\_\_\_\_\_  
Title or Officer

WITNESS:

- \_\_\_\_\_
- \*Insert name of building or project
- \*\*Insert address of building project
- \*\*\*Insert name of Owner
- \*\*\*\*Insert name of General Contractor





**SECTION 8  
CONTRACT No. 150  
WATER TANK  
BID FORMS AND BID BONDS**

**BID FORMS INCLUDING  
SUBCONTRACTORS & MANUFACTURERS LIST**

**BID BOND WITH POWER OF ATTORNEY**

**COMPLIANCE STATEMENT (RD Form 400-6)**

**CERTIFICATE FOR CONTRACTS, GRANTS AND LOANS**

**CERTIFICATION OF BIDDER REGARDING EQUAL EMPLOYMENT  
OPPORTUNITY**

**CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER  
RESPONSIBILITY MATTERS**

**BIDDER'S QUALIFICATIONS STATEMENT**

**Forms presented in this Section 8 must be used. No Substitutes will be allowed.  
An extra set of the above forms will be furnished to each plan holder for preparation of bids.**

**All of the above forms must be submitted with bids on each contract.**



**BID FORM**  
**Nicholas County Water District**  
**Contract No. 10 – 150,000 Gallon Elevated Water Tank**

**ARTICLE 1 – BID RECIPIENT**

1.01 This Bid is submitted to:

Nicholas County Water District  
 1639 Old Paris Road (SR 32)  
 Carlisle, Kentucky 41749

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

**ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS**

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

**ARTICLE 3 – BIDDER'S REPRESENTATIONS**

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

<u>Addendum No.</u>	<u>Addendum Date</u>
1	6/18/2008

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in SC-4.02, and (2) reports and drawings of Hazardous Environmental Conditions that have been identified in SC-4.06.

E. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.



F. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.

I. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

#### ARTICLE 4 – FURTHER REPRESENTATIONS

4.01 Bidder further represents that:

A. this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

#### ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

ITEM NO.	ITEM DESCRIPTION	UNIT QUANTITY	UNIT COST	TOTAL COST
1.	150,000 gallon elevated water tank & appurtenances	1 LS	557,800 <sup>00</sup>	557,800 <sup>00</sup>
<b>TOTAL OF ALL BID PRICES</b>				<b>557,800<sup>00</sup></b>

BIDDER agrees to perform all of the Work described in the Specifications and shown on the Plans for the bid price of: Five hundred fifty seven thousand eight hundred dollars and zero cents (\$ 557,800<sup>00</sup>). The Unit Price shall govern. The Owner will make corrections in extensions and additions to determine the Total Bid Amount for Award.



Unit Prices have been computed in accordance with Paragraph 11.03B of the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

**ARTICLE 6 – TIME OF COMPLETION**

- 6.01 Bidder agrees that the Work will be substantially complete within 180 calendar days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 14.07.B of the General Conditions within 180 calendar days after the date when the Contract Times commence to run
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the Contract Times. Bidder further agrees to pay as liquidated damages, the sum of \$500 each consecutive calendar day thereafter as provided.

**ARTICLE 7 – ATTACHMENTS TO THIS BID**

- 7.01 The following documents are attached to and made a condition of this Bid:
- A. Required Bid security in the form of Bid Bond or Certified Check equal to 5% of Bid
  - B. List of Proposed Subcontractors
  - C. List of Proposed Suppliers
  - D. List of Project References
  - E. Required Bidder Qualification Statement with Supporting Data
  - F. Affidavit of Non-Collusion
  - G. Compliance Statement (Form FmHA 400-6)  
Certificate of Bidder Regarding Equal Employment Opportunity  
Certificate of Bidder concerning labor standards and prevailing wage requirements  
Certificate regarding debarment, suspension, and other responsibilities

**ARTICLE 8 – DEFINED TERMS**

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.





**ARTICLE 9 - BID SUBMITTAL**

BIDDER: Caldwell Tanks, Inc.

BY: Keith M. Eaton

TYPED NAME: Keith M. Eaton, PE

TITLE: Sales Engineer

(Seal - If bid is by a corporation)

ADDRESS: 4000 Tower Road, Louisville, KY 40219

DATE SIGNED: June 24, 2008

PHONE NO.: (502) 964-3361

FAX NO.: (502) 966-8732



**POWER OF ATTORNEY**

**KNOW ALL MEN BY THESE PRESENTS**, that **CALDWELL TANKS, INC.**, Louisville, Kentucky, a Kentucky Corporation, has constituted and appointed, and does constitute and appoint the persons named below as its true and lawful Attorneys-in-Fact, to execute proposals for the sale of materials or the construction of work, to make contracts for same, and execute Surety Bonds to be used in connection therewith:

- JOHN R. BICKEL
- DAVID L. DUES
- KEITH M. EATON
- TROY E. FRAEBEL
- KEVIN J. GALLAGHER
- JOHN E. SKRYPEK
- PATRICK A. SMITH
- TERRY CURENS
- JASON ST. CLAIR
- CONRAD R. SPANGLER, III

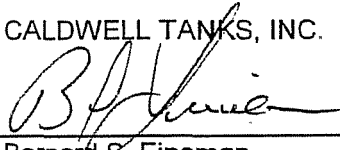
This appointment is made in accordance with Article V, Section 1 of the By-Laws of the Corporation as amended January 16, 1986, and still in full force and effect.

**IN WITNESS WHEREOF**, **CALDWELL TANKS, INC.** has caused these presents to be signed by its President, and its corporate seal to be thereunto affixed and duly attested by its Secretary this 7<sup>TH</sup> day of September, 2006.

ATTEST:

CALDWELL TANKS, INC.

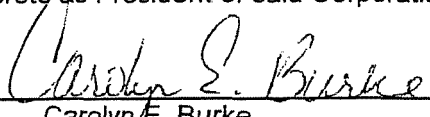
(SEAL) \_\_\_\_\_

BY:   
Bernard S. Fineman  
President

STATE OF KENTUCKY    )  
                                  ) SS:  
COUNTY OF JEFFERSON )

On this 7<sup>th</sup> day of September, 2006, before me personally appeared Bernard S. Fineman, President of CALDWELL TANKS, INC., who being duly sworn, said he resides in the state of Kentucky; that he is President of CALDWELL TANKS, INC., the Corporation described in and which executed the foregoing instrument; that he knows the Corporate seal; that it was so affixed by order of the Board of Directors of said Corporation; and that he signed his name thereto as President of said Corporation by like authority.

(SEAL) \_\_\_\_\_


BY:   
Carolyn E. Burke  
Notary Public, State at Large  
MY COMMISSION EXPIRES 9/25/2011

STATE OF KENTUCKY    )  
                                  ) SS:  
COUNTY OF JEFFERSON )

I, Tod Trueblood, Secretary of CALDWELL TANKS, INC. do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by CALDWELL TANKS, INC., which is still in full force and effect.

IN WITNESS WHEREOF, I have signed this certificate at Louisville, Kentucky, this 24<sup>th</sup> day of June, 2008

(SEAL) \_\_\_\_\_

BY:   
Tod Trueblood, Secretary  
Caldwell Tanks, Inc.



BID BOND

**KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned** \_\_\_\_\_  
Caldwell Tanks, Inc., 4000 Tower Road, Louisville, KY 40219

**as Principal, and** \_\_\_\_\_ Great American Insurance Company, 580 Walnut Street, Cincinnati, OH 45202

**as Surety, are hereby held and firmly bound unto** \_\_\_\_\_ Nicholas County Water District,  
1639 Old Paris Road (SR 32), Carlisle, KY 40311

**as OWNER in the penal sum of** five percent of the amount bid (\$ 5% of bid ) for  
**the payment of which, well and truly to be made, we hereby jointly and severally bind**  
**ourselves, successors and assigns. Signed, this** 24th **day of,** June, 2008.  
**The Condition of the above obligation is such that whereas the Principal has submitted to**  
**a certain BID, attached hereto and hereby made a part hereof to enter into a contract in**  
**writing for the** contract No. 10 - 150,000 gallon elevated water tank.

**NOW THEREFORE,**

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



COMPLIANCE STATEMENT

This statement relates to a proposed contract with \_\_\_\_\_

Nicholas County Water District

*(Name of borrower or grantee)*

who expects to finance the contract with assistance from either the Rural Housing Service (RHS), Rural Business-Cooperative Service (RBS), or the Rural Utilities Service (RUS) or their successor agencies, United States Department of Agriculture (whether by a loan, grant, loan insurance, guarantee, or other form of financial assistance). I am the undersigned bidder or prospective contractor, I represent that:

1.  I have,  have not, participated in a previous contract or subcontract subject to Executive 11246 (regarding equal employment opportunity) or a preceding similar Executive Order.
2. If I have participated in such a contract or subcontract,  I have,  have not, filed all compliance reports that have been required to file in connection with the contract or subcontract.

If the proposed contract is for \$50,000 or more and I have 50 or more employees, I also represent that:

3.  I have,  have not previously had contracts subject to the written affirmative action programs requirements of the Secretary of Labor.
4. If I have participated in such a contract or subcontract,  I have,  have not developed and placed on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor.

I understand that if I have failed to file any compliance reports that have been required of me, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to either the RHS, RBS or RUS, or to the office where the reports are required to be filed.

I also certify that I do not maintain or provide for my employees any segregated facilities at any of my establishments, and that I do not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I certify further that I will not maintain or provide for my employees any segregated facilities at any of my establishments, and that I will not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I agree that a breach of this certification is a violation of the Equal Opportunity clause in my contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. I further agree that (except where I have obtained identical certifications for proposed subcontractors for specific time periods) I will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause; that I will retain such certifications in my files; and that I will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods): (See Reverse).

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*According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays the valid OMB control number. The valid OMB control number for this information collection is 0575-0018. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.*

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**NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS FOR  
CERTIFICATIONS OF NON-SEGREGATED FACILITIES**

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R. 7439, may 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding \$ 10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Date June 24, 2008

Caldwell Tanks, Inc.  
4000 Tower Road  
Louisville, KY 40219



*(Signature of Bidder or Prospective Contractor)*  
Keith M. Eaton, PE, Sales Engineer

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*Address (including Zip Code)*



CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, to the best of his or her knowledge and belief, that:

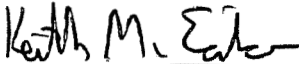
1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or Federal loan, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant or loan.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant or loan, the undersigned shall complete and submit Standard Form - LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Caldwell Tanks, Inc.



\_\_\_\_\_  
(name)

June 24, 2008

\_\_\_\_\_  
(date)

Keith M. Eaton, PE, Sales Engineer

\_\_\_\_\_  
(title)

oOo



**EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION**  
**FOR**  
**NICHOLAS COUNTY WATER DISTRICT**  
**CARLISLE, KENTUCKY**  
**CONTRACT No. 10**  
**150,000 GALLON ELEVATED WATER TANK PHASE IX**  
**PROJECT NO. 05001**

I, Keith M. Eaton, PE, Sales Engineer,  
(print name) (title)

of Caldwell Tanks, Inc.,  
(firm)

hereby certify that my firm is an equal opportunity employer and is in compliance with all applicable local, state, and federal Equal Employment Opportunity laws.

Respectfully submitted,

By: Keith M. Eaton  
(Signature required)

Keith M. Eaton, PE  
(Name printed or typed)

Title: Sales Engineer

Date: June 24, 2008

STATE OF Kentucky ]  
                                  ]   SS  
COUNTY OF ] Jefferson

I, the undersigned notary public within and for the state and county aforesaid, do hereby certify that the foregoing instrument of writing was this day produced to me in said state, and county by Keith M. Eaton, PE, and was acknowledged and delivered by him/~~her~~ to be his/~~her~~ act and deed.

WITNESS by my hand this 24th day of June, 2008.

My Commission expires September 25, 2011.

Carolyn E. Burke  
Notary Public (signature)

Carolyn E. Burke, State At Large, KY  
Notary Public (Name typed or printed)



U.S. DEPARTMENT OF AGRICULTURE

**Certification Regarding Debarment, Suspension, and Other  
Responsibility Matters - Primary Covered Transactions**

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017, Section 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989 Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency offering the proposed covered transaction.


**(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)**

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
  - (b) have not within a three-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
  - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
  - (d) have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Caldwell Tanks, Inc.  
Organization Name

Contract No. 10 - 150M Elevated Water Tank  
PR/Award Number or Project Name

Keith M. Eaton, PE, Sales Engineer  
Name(s) and Title(s) of Authorized Representative(s)

  
Signature(s)

June 24, 2008

Date

