

Case No. 7007-00033

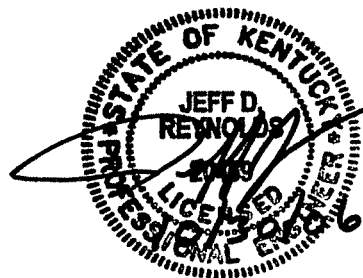
RECEIVED

JAN 23 2007

PUBLIC SERVICE
COMMISSION

CONTRACT I

PHASE IV WATER PROJECT
SOUTH WOODFORD WATER DISTRICT
WOODFORD COUNTY, KENTUCKY



October 2006

Prepared By:

HMB Professional Engineers, Inc.
3 HMB Circle, US 460
Frankfort, Kentucky 40601



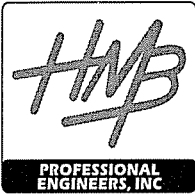
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KENTUCKY PUBLIC SERVICE COMMISSION

MAIN CASE FILE NOTES

2007-00033 - 1-23-07 - ~~PH~~. Plans are
located with maps. SK

LETTER OF TRANSMITTAL



HMB Professional Engineers, Inc.
 3 HMB Circle, US 460
 Frankfort, KY 40601
 Phone: 502/695-9800
 Fax: 502/695-9810

DATE 1/23/2007	JOB NO 4044
ATTENTION	
RE: PSC Case #2007-00033	
RECEIVED JAN 23 2007 PUBLIC SERVICE COMMISSION	
South Woodford Water District	

TO Public Service Commission

WE ARE SENDING YOU Attached Under Separate Cover Via: _____ the following items:

Shop Drawings
 Prints
 Plans
 Samples
 Specifications
 Copy of Letter
 Change Order

COPIES	DATE	NO.	DESCRIPTION
2			Water Line Plans
2			Water Line Specs
2			Tank Plans
2			Tank Specs
2			SCADA Specs (There are no plans with this Contract)

THESE ARE TRANSMITTED as checked below:

- | | | |
|--|---|---|
| <input type="checkbox"/> For Approval | <input type="checkbox"/> Approved as Submitted | <input type="checkbox"/> Approved as Submitted |
| <input type="checkbox"/> For Your Use | <input type="checkbox"/> Approved as Noted | <input type="checkbox"/> Approved as Noted |
| <input type="checkbox"/> As Requested | <input type="checkbox"/> Returned for Corrections | <input type="checkbox"/> Returned for Corrections |
| <input checked="" type="checkbox"/> For Review and Comment | <input type="checkbox"/> _____ | |
| <input type="checkbox"/> FOR BIDS DUE _____ | <input type="checkbox"/> PRINTS RETURNED AFTER LOAN TO US | |

REMARKS

Please file these plans and specs with PSC Case #2007-00033 (South Woodford Water District).

If you have any questions, please call.

COPY TO _____

SIGNED: Jeff Reynolds, P.E.

If enclosures are not as noted, kindly notify us at once

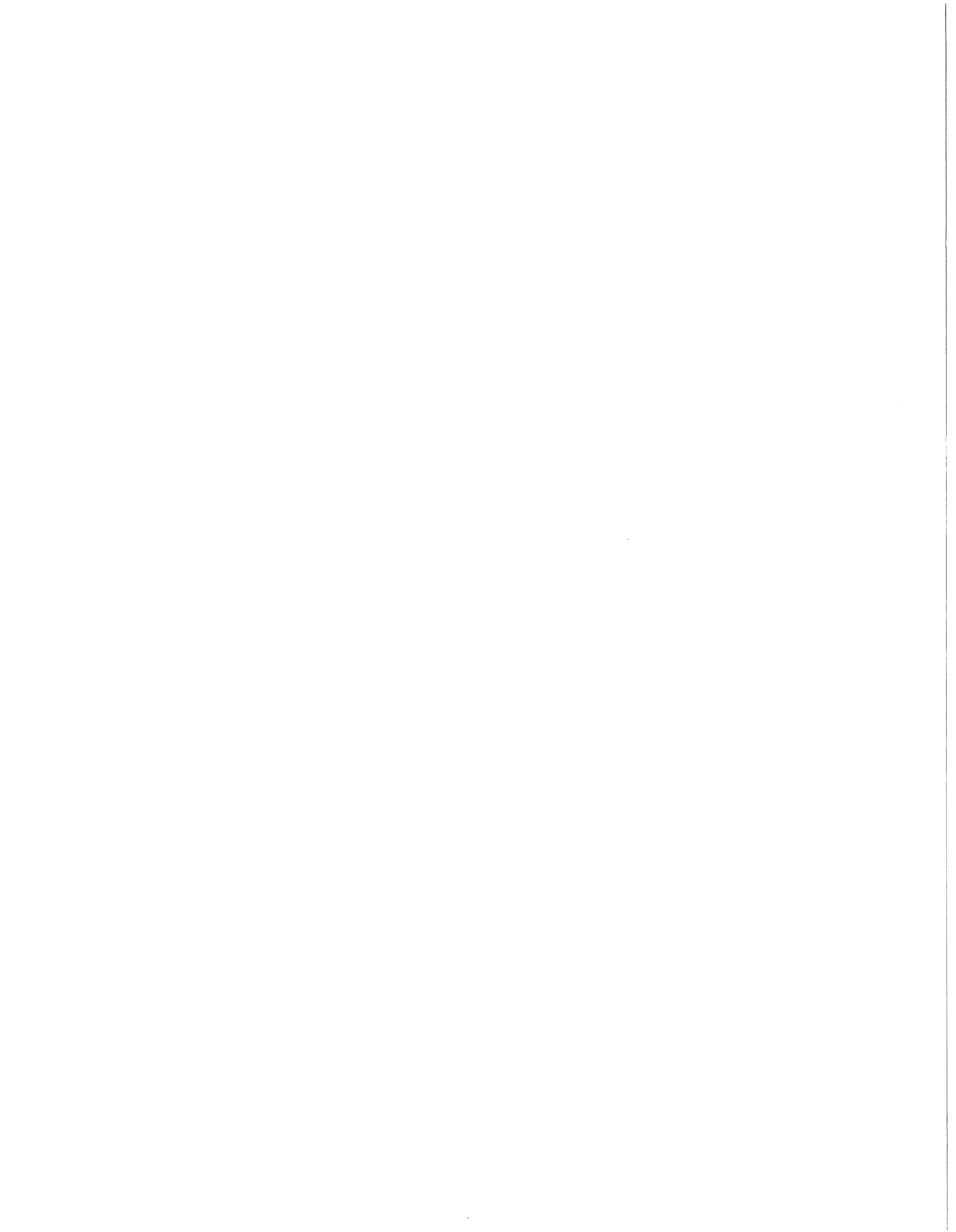


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ADVERTISEMENT FOR BIDS

CONTRACT I

PHASE IV WATER PROJECT
SOUTH WOODFORD WATER DISTRICT
WOODFORD COUNTY, KENTUCKY

OCTOBER 2006

Sealed proposals for the following work will be received by the South Woodford Water District on the 5th Floor of the United Bank & Trust, 100 United Drive, Versailles, Ky 40383, Kentucky until 2:00 pm (local time) December 12, 2006 , for furnishing labor and materials and performing all work as set forth in this Advertisement for Bids, General Conditions, Specifications and/or Drawings prepared by HMB Professional Engineers, Inc., 3 HMB Circle, US 460, Frankfort, Kentucky 40601.

Immediately following the scheduled closing time for the reception of bids, all proposals which have been submitted in accordance with the above conditions will be publicly opened and read aloud.

The work to be bid upon is described as follows:

1,200 L.F. ± 6" Water Main Appurtenances.
27,000 L.F. ± 4" Water Main Appurtenances.
225 GPM Booster Pump Station

Drawings, Specifications and Contract Documents may be examined at the following places:

South Woodford Water District
467D Wilson Ave.
Versailles, Ky 40383

HMB Professional Engineers, Inc.
3 HMB Circle, US 460
Frankfort, KY 40601

F.W. Dodge/AGC
One Paragon Centre-Suite 230
2525 Harrodsburg Road
Lexington, KY 40504

Associated General Contractors
2321 Fortune Drive, Suite 112
Lexington, KY 40505

Builder's Exchange of Louisville
2300 Meadow Drive
P.O. Box 5398
Louisville, KY 40205

F.W. Dodge/ABC Planroom
1812 Taylor Avenue
Louisville, KY 40213

Director of Minority Business
Small & Minority Business Division
Cabinet for Economic Development
Capital Plaza Tower
Frankfort, Kentucky 40601

or may be obtained from Lynn Imaging, 328 Old East Vine Street, Lexington, Kentucky 40507 upon receipt of a non-refundable payment as follows:

Contract I - Phase IV Water Project
South Woodford Water District \$150.00 per set

After award of a contract, the General Contractor will be furnished, without charge, a reasonable number of plans and specifications needed to prosecute the work. Subcontractors and manufacturers and suppliers shall obtain plans and specifications from the General Contractor.

Sealed proposals for the Contract shall be clearly marked on the outside of the container as follows:

“Sealed proposal for Contract I – Phase IV Water Project
South Woodford Water District

Not to be opened until 2:00 pm (local time), December 12, 2006.

“The following addenda have been received and considered in the enclosed proposal:”

Addendum No. _____ Addendum No. _____ Addendum No. _____

Time allowed for completion of Contract I is 120 calendar days

If forwarded by mail, the sealed envelope containing the proposal must be enclosed in another envelope and mailed to the South Woodford Water District, 467D Wilson Ave., Versailles, Ky 40383 allowing sufficient time for such mailing to reach this address prior to the scheduled closing time for the receipt of proposals.

Bids shall be accompanied by a certified check or bid bond payable to the South Woodford Water District in an amount not less than five percent (5%) of the base bid. No bidder may withdraw his bid for a period of ninety (90) days after the date bids are opened. He may, however, withdraw his bid at any time prior to the time and date scheduled for opening of same or any authorized postponement thereof. Any bid received after the time and date specified will not be considered and will be returned unopened to the bidder.

The South Woodford Water District, reserves the right to reject any and all bids and to waive formalities and any bid that is obviously unbalanced may be rejected.

Bidders must comply with the President’s Executive Order Nos. 11246 and 11375, which prohibit discrimination in employment regarding race, creed, color, sex, or national origin. Bidders must COMPLY WITH Title VI of the Civil Rights Act of 1964, the Anti-Kickback Act, Section 3 Segregated Facilities, Section 109 and the Contract Work Hours Standard Act. Minimum Federal and State wage rates are to be paid under the contract.

Bidders must certify that they do not, and will not, maintain or provide for their employees any facilities that are segregated on the basis of race, color, creed or national origin.

Federal law prohibits discrimination on the grounds of race, color, national origin, religion, age, handicap, and sex on this project. Minority firms are particularly encouraged to participate.

George Withers, Manager
South Woodford Water District



INSTRUCTION TO BIDDERS

BIDS will be received by See Advertisement (herein called the "OWNER"), at See Advertisement until See Advertisement 20 _____, and then at said office publicly opened and read aloud.

Each BID must be submitted in a sealed envelope, addressed to See Advertisement at _____. Each sealed envelope containing a BID must be plainly marked on the outside as BID for _____ and the envelope should bear on the outside the BIDDER'S name, address, and license number if applicable, and the name of the project for which the BID is submitted. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at _____ See Advertisement _____.

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

The OWNER may waive any informalities or minor defects or reject any and all BIDS. Any BID may be withdrawn prior to the above scheduled time for the opening of BIDS or authorized postponement thereof. Any BID received after the time and date specified shall not be considered. No BIDDER may withdraw a BID within 90 days after the actual date of the opening thereof. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

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

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

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

Each BID must be accompanied by a BID bond payable to the OWNER for five percent of the total amount of the BID. As soon as the BID prices have been compared, the OWNER will

return the BONDS of all except the three lowest responsible BIDDERS. When the Agreement is executed the bonds of the two remaining unsuccessful BIDDERS will be returned. The BID BOND of the successful BIDDER will be retained until the payment BOND and performance BOND have been executed and approved, after which it will be returned. A certified check may be used in lieu of a BID BOND.

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

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

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

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

The NOTICE TO PROCEED shall be issued within ten (10) days of the execution of the Agreement by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period, the time may be extended by mutual agreement between the OWNER AND CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the ten (10) day period or within the period mutually agreed upon, the CONTRACTOR may terminate the Agreement without further liability on the part of either party.

The OWNER may make such investigations as deemed necessary to determine the ability of the BIDDER to perform the WORK, and the BIDDER shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any BID if the evidence submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the Agreement and to complete the WORK contemplated therein.

A conditional or qualified BID will not be accepted.

Award will be made to the lowest responsible BIDDER.

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

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

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

The low BIDDER shall supply the names and addresses of major material SUPPLIERS and SUBCONTRACTORS when required to do so by the OWNER.

Inspection trips for prospective BIDDERS will leave from the office of the none scheduled at _____.

A mandatory PRE-BID Meeting is scheduled for ????? am, ??????, 2006. The work contained in this contract will be addressed and questions answered. The meeting will be held at the office of HMB Professional Engineers, at 3 HMB Circle, Frankfort, Kentucky at prescribed time. All prospective Bidders are required to attend.

The ENGINEER IS HMB Professional Engineers. The ENGINEER'S address is 3 HMB Circle, US 460, Frankfort, KY 40601.



GENERAL CONDITIONS

1. DEFINITIONS
2. CONTRACT AND CONTRACT DOCUMENTS
3. SCHEDULES, REPORTS AND RECORDS
4. ADDITIONAL INSTRUCTIONS AND DETAILED DRAWINGS
5. DRAWINGS AND SPECIFICATIONS
6. SHOP OR SETTING DRAWINGS
7. MATERIALS, SERVICES AND FACILITIES
8. CONTRACTOR'S TITLE TO MATERIALS
9. INSPECTION AND TESTING
10. SUBSTITUTIONS
11. PATENTS
12. SURVEYS, PERMITS, AND REGULATIONS
13. PROTECTION OF WORK, PROPERTY AND PERSONS
14. CONTRACTOR'S OBLIGATION FOR SUPERVISION
15. CHANGES IN WORK
16. CHANGES IN CONTRACT PRICE
17. TIME FOR COMPLETION AND LIQUIDATED DAMAGES
18. CORRECTION OF WORK
19. SUBSURFACE CONDITIONS
20. SUSPENSION OF WORK, TERMINATION AND DELAY
21. PAYMENTS TO CONTRACTOR
22. PAYMENTS BY CONTRACTOR
23. ACCEPTANCE OF FINAL PAYMENT AS RELEASE
24. CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE
25. CONTRACT SECURITY

26. ASSIGNMENTS
27. INDEMNIFICATION
28. SEPARATE CONTRACTS
29. SUBCONTRACTING
30. ENGINEERS AUTHORITY
31. LAND AND RIGHTS-OF-WAY
32. GUARANTEE
33. ARBITRATION
34. TAXES
35. USE OF PREMISES AND REMOVAL OF DEBRIS
36. QUANTITIES OF ESTIMATES
37. CONFLICTING CONDITIONS
38. NOTICE AND SERVICE THEREOF
39. REQUIRED PROVISIONS DEEMED INSERTED
40. SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION
41. LABOR STANDARDS
42. INTEREST OF FEDERAL, STATE OR LOCAL OFFICIALS
43. OTHER PROHIBITED INTERESTS
44. EXISTING UTILITIES
45. STANDARD SPECIFICATIONS
46. SANITARY FACILITIES
47. SUPERVISION OF INSTALLATION
48. AIR AND WATER POLLUTION CONTROL
49. USE OF CHEMICALS
50. DAMAGE TO EXISTING LANDSCAPING, PAVEMENT, STRUCTURES, SIDEWALKS, CURBS, ETC.

1. DEFINITIONS

- 1.1 The following terms used in the Contract Documents shall be applicable to both the singular and plural and be defined as follows:
- 1.2 Addenda - Instructions, either written or graphic issued prior to the execution of the Agreement or portions thereof which modify or interpret the Contract Documents, Drawings, and Specifications, by deletions, additions, clarifications or corrections.
- 1.3 Bid - The proposal or offer submitted by the Bidder on prescribed forms setting forth prices for work to be performed.
- 1.4 Bidder - A person, firm or corporation submitting a Bid for the proposed work.
- 1.5 Bonds - Instruments of Security in the form of Bid, Performance or Payment Bonds, furnished by the Contractor and surety in accordance with Contract Documents.
- 1.6 Change Order - A written order to the Contractor authorizing revisions, deletions, or additions to the work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract Time.
- 1.7 Contract Documents - The Contract and all other instruments associated with the Contract including Advertisement For Bids, Information For Bidders, Bid, Bid Bond, Agreement, Payment Bond, Performance Bond, Notice of Award, Notice To Proceed, Change Orders, Drawings, Specifications and Addenda.
- 1.8 Contract Price - The total sum of monies payable to the Contractor under the conditions and terms set forth in the Contract Documents.
- 1.9 Contract Time - The number of calendar days set forth in the Contract Documents for completion of the work.
- 1.10 Contractor - A person, firm or corporation with whom the Owner has executed a Contract or Agreement.
- 1.11 Drawings - A portion of the Contract Documents that illustrate the characteristics and scope of Work to be performed and which have been prepared and approved by the Engineer and appropriate Regulatory Agencies.

- 1.12 Engineer - The person, firms or corporations named as such in the Contract Documents.
- 1.13 Field Order - A written notice or order issued by the Engineer effecting a change in the Work that does not result in an amendment in Contract Price or Contract Time.
- 1.14 Notice of Award - A written notice issued by the Owner to the Bidder accepting his Bid.
- 1.15 Notice to Proceed - A written document issued by the Owner to the Contractor authorizing initiation of the Work and firmly establishing the date of initiation of such Work.
- 1.16 Owner - The public body or authority for whom the Work is being performed.
- 1.17 Project - A task to be performed as set forth in the Contract Documents.
- 1.18 Resident Project Representative - An authorized representative of the Owner that is assigned to the Project site or any portion thereof.
- 1.19 Shop Drawings - Diagrams, brochures, schedules, drawings, and other data that have been prepared by the Contractor, Subcontractor, manufacturers, suppliers, or distributors, that illustrates installations or fabrication of specific portions of the Work.
- 1.20 Specifications - A portion of the Contract Documents that contains written descriptions concerning materials, equipment, construction methods, standards, and workmanship.
- 1.21 Subcontractor - An individual, firm or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of the Work.
- 1.22 Substantial Completion - The date certified by the Engineer that construction on the Project or any portion thereof is sufficiently complete, in accordance with Contract Documents to permit the Project or portions thereof to be utilized for the purpose intended.

- 1.23 Supplemental General Conditions - Modifications to the General Conditions that may be required by the Federal, State, or Local agencies for participation in the Project and approved in writing by the agency prior to inclusion in the Contract Documents or such requirements that may be imposed by applicable state law.
- 1.24 Supplier - Any person, firm or organization that supplies material or equipment for accomplishing the Work, including fabrication, but does not perform labor at the Work site.
- 1.25 Work - Labor, materials, and equipment necessary to satisfy the construction requirements by the Contractor in accordance with the Contract Documents.
- 1.26 Written Notice - A written communication to any party of the Agreement. Such notices will be considered delivered when posted by certified or registered mail to the last known address of the addressee or when hand delivered to addressee or his authorized representative.

2. CONTRACT AND CONTRACT DOCUMENTS

Plans, Specifications and Addenda shall form a part of the contract and the provisions thereof shall be as binding upon the parties hereto as if they were fully set forth herein. Tables of Content, Titles, and Headings contained in said documents are solely for the purpose of reference and have no limiting effect of the interpretation of the provisions to which referenced.

3. SCHEDULES, REPORTS AND RECORDS

- 3.1 The Contractor shall submit to the Owner such schedules of quantities, costs, progress reports, estimates, record and other information as may be requested by the Owner.
- 3.2 The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Owner/Engineer, prepare and submit to the Owner/Engineer for approval three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including acquiring materials, plant, and equipment). The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion by any given date during the period. If the

Contractor fails to submit a schedule within the time prescribed, the Owner/Engineer may withhold approval of progress payments until the Contractor submits the required schedule.

- 3.3 The Contractor shall enter the actual progress on the chart as directed by the Owner/Engineer, and upon doing so shall immediately deliver three copies of the annotated schedule to the Owner/Engineer. If, in the opinion of the Owner/Engineer, the Contractor falls behind the approved schedule, the Contractor shall take steps necessary to improve its progress, including those that may be required by the Owner/Engineer without additional cost to the Owner. In this circumstance, the Owner/Engineer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount to construction plant, and to submit for approval any supplementary schedule or schedules in chart form as the Owner/Engineer deems necessary to demonstrate how the approved rate of progress will be regained.
- 3.4 The Contractor shall also furnish on forms supplied by the Owner (a) a detailed estimate giving a complete breakdown of the Contract Price and (b) periodic itemized estimates of Work done for the purpose of making partial payments thereon. The cost employed in making up any of these schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the Contract Price.
- 3.5 The Contractor will also submit dates for submission of Shop Drawings, the beginning of manufacture, testing and installation of materials, equipment and supplies. The Contractor shall also submit dates that special detail drawings will be required, if any, by the Engineer.
- 3.6 Failure of the Contractor to comply with the requirements of the Owner/Engineer under this clause shall be grounds for a determination by the Owner/Engineer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the Owner/Engineer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the terms of this contract.

4. ADDITIONAL INSTRUCTIONS AND DETAILED DRAWINGS

- 4.1 The Contractor will be provided with additional instructions and detailed small letters Drawings as necessary to carry out the Work set forth in the Contract

Documents.

- 4.2 Additional drawings and instructions supplied to the Contractor will become a part of the Contract Documents. In the event of conflict between additional drawings and instructions and the Contract Documents, the Contractor shall notify the Engineer immediately in writing.

5. DRAWINGS AND SPECIFICATIONS

- 5.1 The Drawings, Specifications, and Addenda shall become a part of the Contract Documents and are provided with the intent that the Contractor shall furnish all labor, materials, tools, equipment and transportation necessary for proper execution of the Work in accordance with the Contract Documents and all other incidental work necessary to complete the project in an acceptable manner, ready for use, occupancy or operation by the Owner.
- 5.2 The Engineer, without charge, will furnish to the Contractor not more than eight (8) sets of the Plans and Specifications. If additional sets of documents are required by the Contractor for the proper handling of the Work, such documents will be furnished to the Contractor at cost.
- 5.3 Should there be conflict between Drawings and Specifications, the Specifications shall govern and detailed Drawings shall govern over general Drawings. Figure dimensions on Drawings shall govern over scale dimensions.
- 5.4 All work or materials shown on the Plans and not mentioned in the Specifications or any work specified and not shown on the Plans, shall be furnished, performed, and done by the Contractor as if the same were both mentioned in the Specifications and shown on the Plans.
- 5.5 Should the Contractor in preparing his Bid find anything necessary for the construction of the Project that is not mentioned in the Specifications or shown on the Plans, or find any other discrepancy in the Specifications, Plans or Contract Documents, he shall notify the Engineer so that such discrepancies may be corrected by addendum prior to the letting. Should the Contractor fail to notify the Engineer of such discrepancies, it will be assumed that his Bid included everything necessary for the complete construction in the spirit and intent of the designs shown.

- 5.6 In the event the Contractor should note discrepancies between the Drawings and the Specifications, and site conditions or any other inconsistencies, or ambiguities, such inconsistencies or ambiguities shall be reported immediately to the Engineer in writing. The Engineer shall promptly correct such inconsistencies or ambiguities in writing. Any Work done by the Contractor subsequent to his discovery of such inconsistencies or ambiguities shall be done at the Contractor's risk.
- 5.7 The Contractor shall, during the course of the construction, maintain an updated set of plans, marked by the Contractor, showing all deviations from the original and such notes as required to clarify the cause of such deviations and showing final locations of underground utilities such as sewer service connections and buried valves by giving offset distances to surface improvements such as building corners, curbs, manholes, etc. The purpose of these updated plans are to facilitate the completion of the record drawings by the Engineer after the completion of the Work. Nothing in this section shall be construed to relieve the Contractor from obtaining the Engineer's prior written approval for any deviation from the Plans or Specifications.

6. SHOP OR SETTING DRAWINGS

- 6.1 The Contractor shall promptly submit to the Engineer four (4) copies of each shop Drawing regarding proposed materials and equipment to be supplied for the project. Subsequent to examination of such Shop Drawings by the Engineer and the return thereof, the Contractor shall make such corrections to the Shop Drawings as have been indicated and shall furnish the Engineer with two (2) corrected copies. Regardless of corrections made on or review given to such Shop Drawings by the Engineer, any Shop Drawing which substantially deviates from the requirements of the Contract Documents shall be evidenced by a Change Order. Review of Shop Drawings by the Engineer shall in no way relieve the Contractor from responsibility for deviations from the Contract Documents unless specifically stated in writing by the Engineer.
- 6.2 Work requiring the submission of a Shop Drawing by the Contractor shall not be initiated until the Shop Drawing has been submitted to and reviewed by the Engineer. The Contractor shall certify to the Engineer that he has checked and approved the Shop Drawings and that they are in accordance with the requirements of the Contract Documents.

7. MATERIALS, SERVICES AND FACILITIES

- 7.1 Except as otherwise stated in the Contract Documents, the Contractor shall furnish any pay for all materials, labor, tools, equipment, utilities, transportation, supervision, temporary construction and all other services and facilities required in the execution, completion and delivery of the Work in accordance with the Contract Documents.
- 7.2 Storage of materials and equipment to be used in the Project shall be accomplished in a manner to insure security, preservation of quality, and suitability for incorporation in the Work.
- 7.3 Manufactured equipment and materials shall be installed, constructed and erected by the Contractor in strict accordance with the manufacturer's direction unless specifically directed otherwise in writing by the Engineer.
- 7.4 Manufactured equipment and materials to be used in the Project shall be the same as samples submitted to and approved by the Engineer. Second hand or salvaged materials will not be permitted unless specifically provided for in the Contract Documents.
- 7.5 Any Work necessary to be performed after regular hours, on Sundays or Legal Holidays, shall be performed without additional expense to the Owner.

8. CONTRACTOR'S TITLE TO MATERIALS

No manufactured equipment, materials, or supplies to be used in the Work shall be purchased by the Contractor or Subcontractor subject to any chattel mortgage, conditional sales contract or other agreement by which an interest is retained by the Seller. The Contractor and Subcontractor shall warrant that he has good title to all materials and supplies used by him in the Work, free of all liens, claims or encumbrances.

9. INSPECTION AND TESTING

- 9.1 All manufactured equipment, materials and supplies used in the construction of the Project shall be subject to inspection, testing, and observation in accordance with generally accepted standards as required and defined in the Contract Documents.

- 9.2 The cost of testing and inspection services required by the Contract Documents shall be borne by the Contractor unless otherwise specified.
- 9.3 All other inspection and testing services not required by the Contract Documents, shall be borne by the Owner.
- 9.4 In the event that Contract Documents, laws, ordinances, regulations, rules, orders or other directions of any public authority having jurisdiction over the Work requires specific inspection, testing or approval of someone other than the Contractor, the Contractor shall provide the Engineer timely notice of readiness and the Contractor shall furnish the Engineer with the required certificates of inspection, testing or approval as appropriate.
- 9.5 Neither observation by the Engineer nor inspections, tests, or approvals by others relieve the Contractor of his obligations to perform the Work as required in the Contract Documents.
- 9.6 The Engineer, Owner and their representatives shall have access to the Work at all times. In addition, representatives and agents of Federal, State and Local governments having jurisdiction of any portion of the Work shall be permitted to inspect the Work, materials, payrolls, records of personnel, invoices of materials and other relevant data and records, in accordance with Federal laws. Proper facilities shall be provided by the Contractor for such access, observation, inspection and testing of the Work.
- 9.7 Should any Work be covered contrary to the written instructions of the Engineer, such Work shall be uncovered for observation and replaced at the Contractor's expense.
- 9.8 Should any Work be covered which the Engineer has not specifically requested to observe prior to its being covered, or should the Engineer consider it necessary that such Work be inspected or tested by others, the Contractor, shall, at the Engineer's written request, uncover or otherwise expose the Work in question for observation, inspection or testing. The Contractor, shall furnish all labor, materials and equipment necessary to accomplish this purpose. If the Engineer determines that such work is defective or in conflict with the Contract Documents, the Contractor shall bear all expenses of such uncovering, exposure, observation, inspection or testing as well as satisfactory reconstruction. If such work is found not to be defective, the Contractor shall be allowed an increase in Contract Price or an extension of Contract Time or both, attributable to such uncovering, exposure, observation, and inspection.

An appropriate Change Order shall be prepared and issued by the Engineer.

10. SUBSTITUTIONS

Whenever a material, article or equipment is identified on the Drawings or in the Specifications by brand name, manufacturer's name or catalog number, it shall be understood that such reference is for defining the performance, requirements, quality, capacity and other salient features of that being specified. The Contractor may recommend substitution, by brand name or catalog number, for materials, articles, or equipment provided it is of equal substance and function to that referred to in the Contract Documents. If, in the opinion of the Engineer, recommended alternates are of equal substance, function and capacity as that specified, the Engineer may approve the substitution and use by the Contractor. Any cost differential shall be adjusted in the Contract Price and the Contract Documents shall be modified by a Change Order. The Contractor shall warrant that if substitutions are approved, no major changes in function or general design of the Project will result. Incidental changes or extra component parts required to accommodate the substitute requested by the Contractor, shall be made by the Contractor without a change in Contract Time or Contract Price.

11. PATENTS

11.1 The Contractor shall hold and save the Owner and its officers, agents and employees harmless, from liability of any type, including cost and expenses for or on account of, any type, including cost and expenses for or on account of, any patented or unpatented inventions, process, or article manufactured and used in the performance of the Work and its intended use thereafter, unless otherwise stipulated in the Contract Documents.

11.2 If the Contractor uses any device, materials or designs covered by patent, copyright or letters, he shall provide for such use by obtaining a suitable agreement with the Owner of such patented or copyrighted material, device or design. It shall be understood and agreed by the Contractor that, without exception, the Contract Price shall include all royalties or costs arising from the use of such materials, devices and designs used in the Work. The Contractor or his Sureties shall indemnify and save harmless the Owner from any and all claims for infringement by reason of use of such patented or copyrighted device, materials, or design or any trademark in connection with the Work to be performed within the scope of the Contract Documents and shall indemnify the Owner for any costs, expenses or damage which by reason of infringement may be due and payable after completion of the Work.

12. SURVEYS, PERMITS, AND REGULATIONS

- 12.1 Land surveys and/or base lines for locating principal structures associated with the Project together with a suitable number of bench marks near the Work site will be furnished by the Owner and shown in the Contract Documents. Utilizing information provided by the Owner, the Contractor shall develop all detail surveys needed for construction, unless specified otherwise in the Contract Documents, including but not limited to slope stakes, batter boards, stakes for pile location, working points, line elevations and cut sheets.
- 12.2 The Contractor shall assure preservation of bench marks, and other reference points. In the event of willful or careless destruction, he shall be charged with the resulting expense and shall be held responsible for any errors or mistakes resulting from such loss of bench marks or other reference points.
- 12.3 Permits and licenses of a temporary nature necessary for the prosecution of the Work shall be secured and paid for by the Contractor unless otherwise stated in the Supplemental General Conditions or Special Conditions. Permits, licenses and easements for permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, he shall promptly notify the Engineer in writing, and any necessary changes shall be adjusted as provided in Section 15, Changes In Work.

13. PROTECTION OF WORK, PROPERTY AND PERSONS

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

regulations and orders of any public body having jurisdiction. He will erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for safety and protection. He will notify owners of adjacent utilities when prosecution of the Work may affect them. The Contractor will remedy all damage, injury or loss to any property caused directly or indirectly in whole or in part by the Contractor, and subcontractor or anyone for whose acts any of them be liable.

- 13.3 In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer or Owner, shall act to prevent threatened damage, injury or loss. He will give the Engineer prompt Written Notice of any significant changes in the Work or deviations from the Contract Documents caused thereby, and a Change Order shall thereupon be issued covering the changes and deviations involved.

14. CONTRACTOR'S OBLIGATION FOR SUPERVISION

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

15. CHANGES IN WORK

- 15.1 The Owner may at any time, as the need arises, order changes within the scope of the Work without invalidating the Agreement. If such changes increase or decrease the amount due under the Contract Documents, or in the time required for performance of the Work, an equitable adjustment shall be authorized by Change Order.
- 15.2 The Engineer, also, may at any time, by issuing a Field Order, make changes in the details of the Work. The Contractor shall proceed with the performance of any changes in the Work so ordered by the Engineer unless the Contractor believes that such Field Order entitles him to a change in Contract Price or Time or both, in which event he shall give the Engineer written notice thereof within seven (7) days after receipt of the ordered change. Thereafter, the

Contractor shall document the basis for the change in Contract Price or Time within thirty (30) days. The Contractor shall not execute such changes pending the receipt of an executed Change Order or further instruction from the Owner.

16. CHANGES IN CONTRACT PRICE

The Contract Price may be changed only by a Change Order. The value of any Work covered by a Change Order or of any claim for increase or decrease in the Contract Price shall be negotiated and determined by one or more of the following methods in the order of precedence listed below:

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

17. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

- 17.1 The date of beginning and the time for completion of the Contract Documents and the Work embraced shall be commenced on a date specified in the Notice to Proceed.
- 17.2 The Contractor will proceed with the Work at such a rate of progress to insure full completion within the Contract Time. It is expressly understood and agreed by and between the Contractor and the Owner that the Contract Time for the completion of the Work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the Work.
- 17.3 If the Contractor shall fail to complete the Work within the Contract Time, or extension of time granted by the Owner, then the Contractor will pay to the Owner the amount for liquidated damages as specified in the Bid for each calendar day that the Contractor shall be in default after the time stipulated in the Contract Documents.
- 17.4 The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to the following and the Contractor has within seven calendar days given Written Notice of such delay to the Owner or Engineer.

17.4.1 To any preference priority or allocation order duly issued by the Owner.

17.4.2 To unforeseeable causes beyond the control and without the fault or negligence of the Contractor including but not restricted to acts of God or of the public enemy, acts of the Owner, acts of another Contractor in the performance of contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather.

17.4.3 To any delays of Subcontractors occasioned by any of the causes specified in paragraphs 17.4.1 and 17.4.2 of this article.

18. CORRECTION OF WORK

18.1 The Contractor shall promptly remove from the premises all Work rejected by the Engineer for failure to comply with the Contract Documents, whether incorporated in the construction or not, and the Contractor shall promptly replace and re-execute the Work in accordance with the Contract Documents and without expense to the Owner and shall bear the expense of making good all Work of other Contractors destroyed or damaged by such removal or replacement.

18.2 All removal and replacement Work shall be done at the Contractor's expense. If the Contractor does not take action to remove such rejected Work within ten (10) days after receipt of Written Notice, the Owner may remove such Work and store the materials at the expense of the Contractor.

19. SUBSURFACE CONDITIONS

19.1 The Contractor shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the Owner by Written Notice of:

19.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents: or

19.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Contract Documents.

19.2 The Owner shall promptly investigate the conditions, and if he finds that such

conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the Work, and equitable adjustment shall be made and the Contract Documents shall be modified by a Change Order. Any claim of the Contractor for adjustment hereunder shall not be allowed unless he has given the required Written Notice; provided that the Owner may, if he determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

19.3 Information such as rock soundings or soil borings shown on the plans depicting subsurface conditions are thought to be representative but cannot be guaranteed accurate. It is the Contractor's responsibility to make any additional investigations necessary to ascertain or verify subsurface conditions. If subsurface conditions different from those indicated on the plans are encountered during construction, there will be no increase in Contract Price unless provided by unit prices listed on the Bid Form or by Change Order.

20. SUSPENSION OF WORK, TERMINATION AND DELAY

20.1 The Owner may suspend the Work or any portion thereof for a period of not more than ninety (90) days or such further time as agreed upon by the Contractor, by Written Notice to the Contractor and the Engineer. Such Written Notice shall fix the date on which Work shall be resumed. The Contractor will resume that Work on the date so fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension.

20.2 If the Contractor is adjudged as bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the Contractor or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to subcontractors or for labor, materials, equipment, or if he disregards laws, ordinances, rules, regulations, or orders of any public body having jurisdiction of the Work or if he disregards the authority of the Engineer, or if he otherwise violates any provision of the Contract Documents, then the Owner may, without prejudice to any other right or remedy and after giving the Contractor and his Surety a minimum of ten (10) days from delivery of a Written Notice, terminate the services of the Contractor and take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor, and finish the

Work by whatever method he may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Project, including compensation for additional professional services, such excess shall be paid to the Contractor. If such costs exceed such unpaid balance, the Contractor will pay the difference to the Owner. Such cost incurred by the Owner will be determined by the Engineer and incorporated in a Change Order.

- 20.3 Where the Contractor's services have been so terminated by the Owner, said termination shall not affect any right of the Owner against the Contractor then existing or which may thereafter accrue. Any retention or payment of monies by the Owner due the Contractor will not release the Contractor from compliance with the Contract Documents.
- 20.4 After ten (10) days from delivery of a Written Notice to the Contractor and the Engineer, the Owner may without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the Contract. In such case, the Contractor shall be paid for all work executed and any expense sustained plus reasonable profit.
- 20.5 If through no act or fault of the Contractor, the Work is suspended for a period of more than ninety (90) days by the Owner or under an order of court or other public authority, or the Engineer fails to act on any request for payment within thirty (30) days of its approval and presentation, then the Contractor may, after ten (10) days from delivery of a Written Notice to the Owner and the Engineer, terminate the Contract and recover from the Owner payment for all Work executed and all expenses sustained. In addition and in lieu of terminating the Contract, if the Engineer has failed to act on a request for payment or if the Owner has failed to make any payment as aforesaid, the Contractor may upon ten (10) days Written Notice to the Owner and the Engineer, stop the Work until he has been paid all amounts then due, in which event and upon resumption of the Work, Change Orders shall be issued for adjusting the Contract Price or extending the Contract Time or both to compensate for the costs and delays attributable to the stoppage of the Work.
- 20.6 In the event that the Owner or Engineer determine that the Work is not being done in accordance with the Contract Documents, including, but not limited to, the fact that the Contractor does not have adequate supervision on site in accordance with Section 14 (Contractor's Obligation For Supervision) of these General Conditions, the Contractor may be ordered to stop work until he is in compliance with the Contract Documents without an increase in contract

amount or time for completion.

21. PAYMENTS TO CONTRACTOR

- 21.1 At least ten (10) days before each progress payment falls due (but not more often than once a month), the Contractor will submit to the Engineer a partial payment estimate filled out and signed by the Contractor covering the Work performed during the period covered by the partial payment estimate and supported by such data as the Engineer may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the Owner, as will establish the Owner's title to the material and equipment and protect his interest therein, including applicable insurance. The Engineer will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the Owner, or return the partial payment estimate to the Contractor indicating in writing his reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate. The Owner will, within ten (10) days of presentation to him of an approved partial payment estimate, or at an earlier date if the Owner has received federal reimbursement funds to cover the payment estimate, pay the Contractor a progress payment on the basis of the approved partial payment estimate. The Owner shall retain ten (10) percent of the amount of each payment until 50% of the work is completed at which time the retainage may be reduced to 5% if satisfactory progress is being made. When the Work is substantially complete (operational or beneficial occupancy), the retained amount may be further reduced below five (5) percent to only that amount necessary to assure completion. On completion and acceptance of a part of the Work on which the price is stated separately in the Contract Documents, payment may be made in full, including retained percentages, less authorized deductions.
- 21.2 The request for payment may also include all allowance for the cost of such major materials and equipment which are suitably stored either at or near the site.
- 21.3 Prior to Substantial Completion, the Owner with the approval of the Engineer and with the concurrence of the Contractor, may use any completed or substantially completed portions of the Work.
- 21.4 Performance of related work on the premises by the Owner or use of partially completed portions of the Work by the Owner shall in no way be construed as relieving the Contractor of the sole responsibility for completing all Work in

accordance with the Contract Documents, for care and protection of the Work, and for restoration of any damaged Work except such as may be caused by agents or employees of the Owner.

21.5 Upon completion and acceptance of the Work, the Engineer shall issue a certificate attached to the final payment request that the Work has been accepted by him under the conditions of the Contract Documents, the entire balance found to be due the Contractor, including the retained percentages, but except such sums as may be lawfully retained by the Owner, shall be paid to the Contractor within thirty (30) days of completion and acceptance of the Work.

21.6 The Contractor will indemnify and save the Owner or the Owner's agents harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, furnishers of materials and machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the Work. The Contractor shall, at the request of the Owner, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the Contractor fails to do so the Owner may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of the Contract Documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor, his Surety, or any third party. In paying any unpaid bills of the Contractor, any payment so made by the Owner shall be considered as a payment made under the Contract Documents by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.

22. PAYMENTS BY CONTRACTOR

The Contractor shall pay: (a) for all transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered, (b) for all materials, tools, and other expendable equipment to the extent of 90% of the cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at the site of the Project, and the balance of the cost thereof not later than the 30th day following the completion of that part of the Work in or on which such materials, tools and equipment are incorporated or used, and (c) to each of his Subcontractors, not later than the 15th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the Work performed by his Subcontractors to the extent of each

Subcontractor's interest therein.

23. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

The acceptance by the Contractor of final payment shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor other than claims in stated amounts as may be specifically excepted by the Contractor for all things done or furnished in connection with this Work and for every act and neglect of the Owner and others relating to or arising out of this Work. Any payment, however, final or otherwise, shall not release the Contractor or his sureties from any obligations under the Contract Documents of the Performance Bond and Payment Bonds.

24. CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE

24.1 The Contractor shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the Contractor's execution of the Work, whether such execution be by himself or by an Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

24.1.1 Claims under workmen's compensations, disability benefit and other similar employee benefit acts;

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

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

24.1.4 Claims for damages insured by usual 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 the Contractor, or (b) by any other person; and

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

24.2 All insurance to be procured and maintained by Contractor pursuant to this Contract shall be with Best A-rated companies acceptable to Owner, and certificates evidencing such insurance acceptable to Owner shall be filed with the Owner prior to commencement of the work. These certificates shall contain a provision that coverages afforded under the policies shall not be canceled unless at least fifteen (15) days prior written notice has been given to Owner. Owner shall be named as an additional insured on all said policies

of insurance.

24.3 The Contractor shall procure and maintain, at his own expense during the Contract Time, liability insurance as hereinafter specified.

24.3.1 Contractor's General Public Liability and Property Damage Insurance including vehicle coverage issued to the Contractor and protecting him from all claims for destruction of or damage to property arising out of or in connection with any operations under the Contract Documents, whether such operations be by himself or by any Subcontractor under him, or anyone directly or indirectly employed by the Contractor or by a Subcontractor under him. Insurance shall be written with a limit of liability of not less than \$1,000,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than \$1,000,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$3,000,000 aggregate for any damages arising out of bodily injury, including death at any time resulting therefrom sustained by two or more persons in any one accident.

24.3.2 The Contractor shall acquire and maintain, Fire and Extended Coverage Insurance upon the Project to the full insurable value thereof for the benefits of the Owner, the Contractor, and the Subcontractors as their interest may appear. This provision shall in no way release the Contractor or Contractor's Surety from obligations under the Contract Documents to fully complete the Project.

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

24.5 The Contractor shall secure, "All Risk" type Builder's Risk Insurance of Work to be performed. Unless specifically authorized by the Owner, the amount of

such insurance shall not be less than the Contract Price totaled in the Bid. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the Contract Time, and until the Work is accepted by the Owner. The policy shall name as the insured the Contractor, the Engineer, and the Owner. If the Builder's Risk Insurance excludes flood damage, the Contractor shall be required to secure the maximum amount of Federal Flood Insurance available for the Contract.

25. CONTRACT SECURITY

The Contractor shall within ten (10) days after receipt of the Notice of Award furnish the Owner with a Performance Bond and a Payment Bond in penal sums equal to the amount of the Contract Price conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions, and agreements of the Contract Documents, and upon the prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the Work provided by the Contract Documents. Such Bonds shall be executed by the Contractor and all corporate bonding company licensed to transact such business in the State where the Work is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these bonds shall be borne by the Contractor. If at any time a surety on any such Bond is declared bankrupt or loses its right to do business in the State in which the Work is to be performed or is removed from the list of Surety Companies accepted on Federal Bonds, Contractor shall within ten (10) days after notice from the Owner to do so, substitute an acceptable Bond, (or Bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums on such Bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable Bond to the Owner.

26. ASSIGNMENTS

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

27. INDEMNIFICATION

27.1 The Contractor will indemnify and hold harmless the Owner and the Engineer and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the

performance of the Work, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury or to destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the Contractor, and Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

27.2 In any and all claims against the Owner or the Engineer, or any of their agents or employees, by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under Workmen's Compensation Acts, disability benefit acts or other employee benefits acts.

27.3 The obligation of the Contractor under this paragraph shall not extend to the liability of the Engineer, his agents or employees arising out of the preparation or approval of maps, Drawings, opinions, reports, surveys, Change Orders, designs or Specifications.

28. SEPARATE CONTRACTS

28.1 The Owner reserves the right to let other contracts in connection with this Project. The Contractor shall afford the Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their Work, and shall properly connect and coordinate his Work with theirs. If the proper execution or results of any part of the Contractor's Work depends upon the Work of any other Contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such Work that render it unsuitable for such proper execution and results.

28.2 The Owner may perform additional Work related to the Project by himself, or he may let other contracts containing provisions similar to these. The Contractor will afford the other Contractors who are parties to such Contracts (or the Owner, if he is performing the additional Work himself) reasonable opportunity for the introduction and storage of materials and equipment and the execution of Work, and shall properly connect and coordinate his work with theirs.

28.3 If the performance of additional Work by other Contractors or the Owner is not noted in the Contract Documents prior to the execution of the Contract, written

notice thereof shall be given to the Contractor prior to starting any such additional Work. If the Contractor believes that the performance of such additional Work by the Owner or others involves him in additional expense or entitles him to an extension of the Contract Time, he may make a claim therefor as provided in Sections 16 and 17.

29. SUBCONTRACTING

- 29.1 The Contractor may utilize the services of specialty Subcontractors on those parts of the Work which, under normal contracting practices, are performed by specialty Subcontractors.
- 29.2 The Contractor shall not award any Work to any Subcontractor without prior written approval of the Owner, which approval will not be given until the Contractor submits to the Owner a written statement concerning the proposed award to the Subcontractor, which statement will contain such information as the Owner may require.
- 29.3 The Contractor shall be fully responsible to the Owner for the acts and omissions of his Subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of person directly or indirectly employed by him.
- 29.4 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind Subcontractors to the Contractor by the terms of the General Conditions and other Contract Documents in so far as applicable to the Work of Subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provision of the Contract Documents.
- 29.5 Nothing contained in this contract shall create any contractual relation between any Subcontractor and the Owner.
- 29.6 The Contractor will insert in any subcontracts the clauses contained in 29 CFR 5.5 (a) (1) through (5) and (7) and such other clauses and appropriate instructions as the Environmental Protection Agency may require, and also a clause requiring the Subcontractors to include these clauses in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

30. ENGINEER'S AUTHORITY

- 30.1 The Engineer shall act as the Owner's representative during the construction period. He shall decide questions which may arise as to quality and acceptability of materials furnished and Work performed. He shall interpret the intent of the Contract Documents in a fair and unbiased manner. The Engineer will make visits to the site and determine if the work is proceeding in accordance with the Contract Documents.
- 30.2 The Contractor will be held strictly to the intent of the Contract Documents in regard to the quality of material, workmanship and execution of the Work. Inspections may be made at the factory or fabrication plant of the source of material supply.
- 30.3 The Engineer will not be responsible for the construction means, control, techniques, sequences, procedures, or construction safety.
- 30.4 The Engineer shall promptly make decisions relative to interpretation of the Contract Documents.

31. LAND AND RIGHTS-OF-WAY

- 31.1 Prior to issuance of the Notice to Proceed, the Owner shall obtain all land and rights-of-way necessary for carrying out and for the completion of the Work to be performed pursuant to the Contract Documents, unless otherwise mutually agreed.
- 31.2 The Owner shall provide to the Contractor information which delineates and describes the lands owned and rights-of-way acquired.
- 31.3 The Contractor shall provide at his own expense without liability to the Owner any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials.

32. GUARANTEE

The Contractor shall guarantee all materials and equipment and work performed for a period of one (1) year after final acceptance by the Owner of all work at both plants. The Contractor warrants and guarantees during the guarantee period that the completed system is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system

resulting from such defects. The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments, or other Work that may be necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

33. ARBITRATION

33.1 All claims, disputes and other matters in question arising out of, or relating to, the Contract Documents or the breach thereof, except for claims which have been waived by the making and acceptance of final payment as provided by Section 23, (Acceptance of Final Payment As Release), shall be decided by arbitration, if all parties mutually agree, in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association. This agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. Any arbitration based on settlements or awards shall include the following information: (a) finding of fact, (b) allocation of award to each issue, (c) conclusion of law, (d) basis of award and rationale. The award rendered by the arbitrators shall be final, and judgement may be entered upon it in any court having jurisdiction thereof.

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

33.3 The Contractor shall carry on the Work and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

34. TAXES

The Contractor shall pay all sales, consumer, use and other similar taxes required by laws of the State where the Work is performed, unless proper forms are acquired and submitted exempting the Contractor from such taxes.

35. USE OF PREMISES AND REMOVAL OF DEBRIS

35.1 The Contractor expressly undertakes at his own expense:

35.1.1 To take every precaution against injuries to persons or damage to

property;

- 35.1.2 To store his apparatus, materials, supplies, and equipment in such orderly fashion at the site of the Work as will not unduly interfere with the progress of his Work or the Work of any other Contractors;
- 35.1.3 To place upon the Work or any part thereof only such loads as are consistent with the safety of that portion of the Work;
- 35.1.4 To clean up frequently all refuse, rubbish, scrap materials, and debris caused by his operations, to the end that at all times the site of the Work shall present a neat, orderly and workmanlike appearance;
- 35.1.5 Before final payment, to remove all surplus material, falsework, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in a neat, orderly condition;
- 35.1.6 To effect all cutting, fitting or patching of his Work required to make the same to conform to the plans and specifications and, except with the consent of the Engineer, not to cut or otherwise alter the Work of any other Contractor.

36. QUANTITIES OF ESTIMATES

Whenever the estimated quantities of Work to be done and materials to be furnished on a unit price basis under this contract are shown in any of the documents including the proposal, they are given for use in comparing bids, and the right is expressly 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 in no way vitiate this contract, nor shall any such increase or diminution give cause for claims or liability for damages.

37. CONFLICTING CONDITIONS

Any provision in any of the Contract Documents which may be in conflict or inconsistent with any of the paragraphs in these General Conditions shall be void to the extent of such conflict or inconsistency.

38. NOTICE AND SERVICE THEREOF

Any notice of any Contractor from the Owner relative to any part of this contract shall be in writing and considered delivered and the service thereof completed, when said notice is posted by certified or registered mail, to the said Contractor at his last given address, or delivered in person to said Contractor or his authorized representative on the Work.

39. REQUIRED PROVISIONS DEEMED INSERTED

39.1 Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon application of either party, the contract shall forthwith be physically amended to make such insertion or correction.

39.2 The Contractor agrees to abide by all local and state laws or ordinances to the extent that such requirements do not conflict with Federal Laws or regulations.

40. SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

In order to protect the lives and health of his employees under the contract, the Contractor shall comply with all pertinent provisions of the Contract Work Hours and Safety Standards Act as amended, and the Occupational Safety and Health Act of 1970 as amended, 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 of 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. He shall provide safety controls for protection of life and health of employees. The Contractor shall comply with all safety regulations of the State Department of Labor.

41. LABOR STANDARDS

The Contractor shall comply with the appropriate prevailing wage rates applicable to this project; they are contained in the Wage Rate Section of these Specifications.

42. INTEREST OF FEDERAL, STATE OR LOCAL OFFICIALS

No federal, state or local official 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.

43. OTHER PROHIBITED INTEREST

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

44. EXISTING UTILITIES

44.1 Special precautions shall be taken by the Contractor to avoid damage to existing overhead and underground utilities owned and operated by the Owner or by public or private utility companies.

44.2 With particular respect to existing underground utilities, the available information concerning their location has been 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.

44.3 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 plans, 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 plans. 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 for locating and avoiding or repairing damage to said existing utilities.

- 44.4 When the Contractor encounters any utilities not shown on the plans or in different location than shown on the plans and in conflict with the Work, he shall immediately notify the Engineer.
- 44.5 It is suggested that the Contractor locate all unknown metallic hazards, namely buried pipe, metals, etc by using a pipe locator. The pipe locator shall immediately precede the trench ditching and all hazard located and marked in such manner as to notify the machine operator of such hazard.
- 44.6 Where existing utilities or appurtenant structures, either underground or aboveground, are encountered, they shall not be displaced or molested unless necessary, and in such case shall be replaced in as good or better condition than found as quickly as possible. The Contractor will make all necessary utility relocations unless otherwise noted. Where new water lines, gas lines, or sewers are being installed to replace existing lines, the Contractor shall maintain the existing lines in service until new lines are in service or shall provide temporary utility service to affected customers at his expense.
- 44.7 It is expected that the Contractor will be diligent in his efforts and use every possible means to locate existing utilities. Any claims for unavoidable damage, based on improper or unknown locations, will be thoroughly examined in the light of the Contractor's efforts to locate the said utilities or obstructions prior to beginning construction.

45. STANDARD SPECIFICATIONS

Where standard specifications, such as those of the American Society for Testing Materials, the American Standards Association, the American Association of State Highway Officials, the Federal Aviation Agency, etc are referred to in the specifications and Contract Documents and on the plans, said references shall be construed to mean the latest amended and/or revised versions of the said standard or tentative specifications.

46. SANITARY FACILITIES

The Contractor shall furnish, install and maintain ample sanitary facilities for the workmen. As the needs arise, enclosed temporary toilets, in sufficient number, shall be placed as directed by the Engineer. Permanent toilets installed under this Contract

shall not be used during construction. Drinking water shall be provided from an approved safe source, so piped or transported as to be kept clean and fresh, and served from single service containers of satisfactory types.

47. SUPERVISION OF INSTALLATION

All major equipment and control systems shall be installed under the supervision of a qualified installation Engineer and/or representative furnished by the manufacturer of such equipment or control system.

48. AIR AND WATER POLLUTION CONTROL

The Contractor shall provide all materials, equipment, devices and work required to comply with air and water standards and to accomplish construction of the Project in a manner which will protect, enhance, and retrieve a favorable environment. The Contractor, at all times, shall observe and comply with all federal, state, possession, and local laws, codes, ordinances, and regulations governing air and water pollution control and the Contractor and his surety shall indemnify and save harmless the Owner and all his officers, agents, and servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decrees, whether by himself or his employees. The Contractor shall bear all expense of meeting and maintaining air and water standards, and any accessory features incidental to compliance without additional or direct compensation, except as otherwise specified. The Contractor shall take appropriate actions to minimize situation and soil erosion, control noise and limit odors during construction. No bypassing of wastewater will occur in conjunction with this contract without prior approval of the State Water Pollution Control Agency, and the United States Environmental Protection Agency.

49. USE OF CHEMICALS

All chemicals used during project construction or furnished for project operations, whether herbicide, pesticide, disinfectant, polymer, reactant, or of such classification, must show approval of either EPA or USDA. Use of all such chemicals shall be in conformance with instructions.

50. DAMAGE TO EXISTING LANDSCAPING, PAVEMENTS, STRUCTURES, SIDEWALKS, CURBS, ETC

The Contractor shall be responsible for replacing all lawns, trees, shrubs, fences, sidewalks, driveways, curbs, ditches, drainage structures, or other improvements both public and private which are damaged in carrying out the Work. Reasonable care shall be taken during construction to avoid damage to vegetation. Ornamental

shrubby 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 appearance of the tree. Tree trunks receiving damage from equipment shall be treated with a tree dressing. Trees removed shall be replaced with trees of a like kind, 5'-6' in height as directed by the Engineer.

SUPPLEMENTAL GENERAL CONDITIONS

FOR

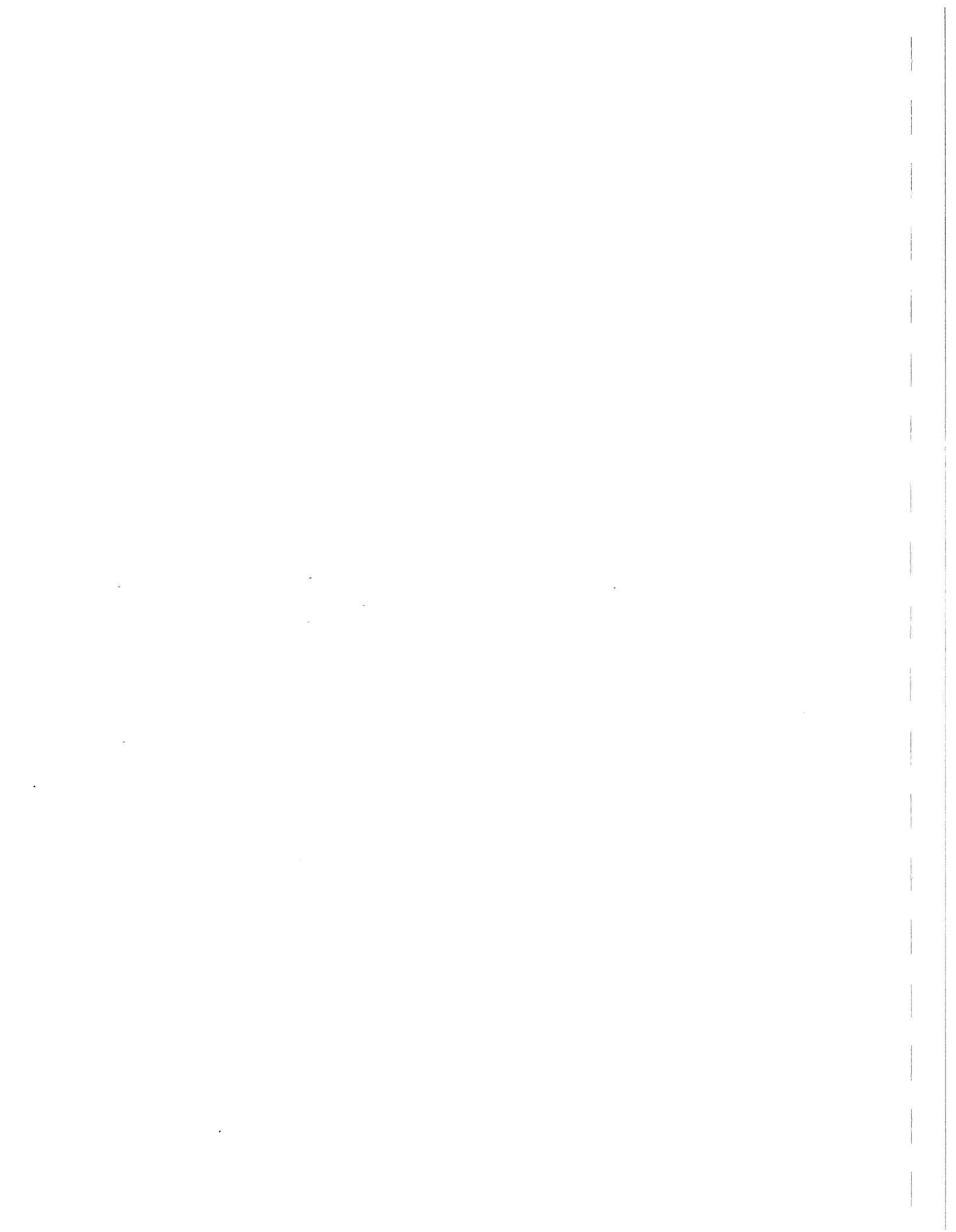
CLEAN WATER STATE REVOLVING FUND

DRINKING WATER STATE REVOLVING FUND

EPA SPECIAL APPROPRIATION GRANTS
(Drinking Water and Wastewater)

Project Name: _____

Project Number: _____



The attached instructions and regulations as listed below shall be incorporated into the Specifications and comprise Special Conditions.

	<u>Attachment No.</u>
SRF/EPA Special Provisions	1
Requirements for Sub-agreements Awarded by Prime Contractors	2
40 CFR 31.36 (Procurement)-grants only	3A
KRS Chapter 45A-Kentucky Model Procurement Code-loans only	3B
Equal Employment Opportunity (EEO) Documents:	
Notice of Requirement for Affirmative Action	4
Contract Specifications (Executive Order 11246)	5
EEO Goals for Region 4 Economic Areas	6
Special Notice #1 - Check List of EEO Documentation	7
Employer Information Report EEO-1 (SF 100)	8
Labor Standards Provisions for Federally Assisted Construction, EPA Form 5720-4	9
Certifications	
Debarment, Suspension and Other Responsibility Matters	10
Anti-lobbying	11
Utilization of Small, Minority and Women's Businesses	12
Region 4 Disadvantaged Business Enterprise (DBE) Negotiated Rates	13
Bonds and Insurance	14
Outlay Management Schedule	15
Storm Water General Permit	16
Wage Rates	17

These special conditions shall supersede any conflicting provisions of this contract.
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EPA SPECIAL PROVISIONS

- a) The construction of the project shall conform to the applicable requirements for state, territorial and local laws and ordinances to the extent that such requirements do not conflict with Federal laws.
- b) The EPA shall have access to the site and the project.
- c) Any contract(s) awarded under this invitation for Bids are expected to be funded in part by a grant from the U.S. Environmental Protection Agency. Neither the United States nor any of its departments, agencies or employees are or will be a part to this Invitation for Bids or any resulting contract.
- d) The Method of Award is to the lowest responsible responsive bidder.
- e) A statement that the bidder must make positive efforts to use small and minority owned business and women business enterprises.

SRF SPECIAL PROVISIONS

- (a) Sewer line crossing of all roads and streets shall be done in accordance with the Kentucky Transportation Cabinet requirements as may be set forth in the Special Conditions.
- (b) Construction is to be carried out so as to prevent by-passing of flows during construction unless a schedule has been approved by the State or EPA, whichever is applicable.
- (c) Siltation and soil erosion must be minimized during construction. All construction projects with surface disturbance of more than 5 acres during the period of construction must have a KPDES Storm Water General Permit. To apply, the contractor must submit the "Notice of Intent" form at least 48 hours prior to start of construction. See Attachment 16 for the "Notice of Intent" form.
- (d) Restore disturbed areas to original or better condition.
- (e) Use of Chemicals: All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in conformance with instructions on the manufacturer's label.
- (f) The construction of the project, including the letting of contracts in connection therewith, shall conform to the applicable requirements of state, territorial, and local laws and ordinances to the extent that such requirements do not conflict with Federal laws and this subchapter.
- (g) The owner shall provide and maintain competent and adequate supervision and inspection.
- (h) The Kentucky Infrastructure Authority and Kentucky Division of Water shall have access to the site and the project work at all times.
- (i) In the event Archaeological materials (arrowheads, stone tools, stone axes, prehistoric and historic pottery, bottles, foundations, Civil War artifacts, and other types of artifacts) are uncovered during the construction of this project, work is to immediately cease at the location and the Kentucky Heritage Council shall be contacted. The telephone number is (502) 564-7005. Construction shall commence at this location until a written release is received from the Kentucky Heritage Council. Failure to report a find could result in legal action.



GRANT REQUIREMENTS FOR SUB-AGREEMENTS
AWARDED BY A PRIME CONTRACTOR

A contractor must comply with the following provisions in its award of sub-agreements. (This section does not apply to a supplier's procurement of materials to produce equipment, materials and catalog, off-the-shelf, or manufactured items.)

- (a) 40 CFR Part 32 (Debarment and Suspension Under EPA Assistance Programs);
- (b) The limitations and sub-agreement award in 40 CFR 31.35, and 31.36(i) (3,4,6,10,12) ;
- (c) The requirement for small, small rural, minority, women's and labor surplus area business in 40 CFR 31.36(e);
- (d) The specifications requirements of 40 CFR 31.36(c) (1);
- (e) The Federal cost principles in 40 CFR 31.22 and 31.36(f)(3);
- (f) The prohibited types of sub-agreements in 40 CFR 31.36(f)(4);
- (g) 40 CFR Part 34 (Anti-Lobbying under EPA Assistance Programs).

**TITLE 40--PROTECTION OF ENVIRONMENT
CHAPTER I--ENVIRONMENTAL PROTECTION AGENCY**

**PART 31--UNIFORM ADMINISTRATIVE REQUIREMENTS FOR GRANTS AND
COOPERATIVE AGREEMENTS TO STATE AND LOCAL GOVERNMENTS**

Subpart C--Post-Award Requirements

Sec. 31.36 Procurement.

(a) States. When procuring property and services under a grant, a State will follow the same policies and procedures it uses for procurements from its non-Federal funds. The State will ensure that every purchase order or other contract includes any clauses required by Federal statutes and executive orders and their implementing regulations. Other grantees and sub-grantees will follow paragraphs (b) through (i) in this section.

(b) Procurement standards. (1) Grantees and sub-grantees will use their own procurement procedures which reflect applicable State and local laws and regulations, provided that the procurements conform to applicable federal law, the standards identified in this section, and if applicable, Sec. 31.38.

(2) Grantees and sub-grantees will maintain a contract administration system which ensures that contractors perform in accordance with the terms, conditions, and specifications of their contracts or purchase orders.

(3) Grantees and sub-grantees will maintain a written code of standards of conduct governing the performance of their employees engaged in the award and administration of contracts. No employee, officer or agent of the grantee or sub-grantee shall participate in selection, or in the award or administration of a contract supported by Federal funds 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 his immediate family,

(iii) His or her partner, or

(iv) An organization which employs, or is about to employ, any of the above, has a financial or other interest in the firm selected for award. The grantee's or sub-grantee's officers, employees or agents will neither solicit nor accept gratuities, favors or anything of monetary value from contractors, potential contractors, or parties to sub-agreements. Grantee and sub-grantees may set minimum rules where the financial interest is not substantial or the gift is an unsolicited item of nominal intrinsic value. To the extent permitted by State or local law or regulations, such standards or conduct will provide for penalties, sanctions, or other disciplinary actions for violations of such standards by the grantee's and sub-grantee's officers, employees, or agents, or by contractors or their agents. The awarding agency may in regulation provide additional prohibitions relative to real, apparent, or potential conflicts of interest.

(4) Grantee and sub-grantee procedures will provide for a review of proposed procurements to avoid purchase of unnecessary or duplicative items. Consideration should be given to consolidating or breaking out procurements to obtain a more economical purchase. Where appropriate, an analysis will be made of lease versus purchase alternatives, and any other appropriate analysis to determine the most economical approach.

(5) To foster greater economy and efficiency, grantees and sub-grantees are encouraged to enter into State and local intergovernmental agreements for procurement or use of common goods and services.

(6) Grantees and sub-grantees are encouraged to use Federal excess and surplus property in lieu of purchasing new equipment and property whenever such use is feasible and reduces project costs.

(7) Grantees and sub-grantees are encouraged to use value engineering clauses in contracts for construction projects of sufficient size to offer reasonable opportunities for cost reductions.

Value engineering is a systematic and creative analysis of each contract item or task to ensure that its essential function is provided at the overall lower cost.

(8) Grantees and sub-grantees will make awards only to responsible contractors possessing the ability to perform successfully under the terms and conditions of a proposed procurement. Consideration will be given to such matters as contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

(9) Grantees and sub-grantees will maintain records sufficient to detail the significant history of a procurement. These records will include, but are not necessarily limited to the following: rationale for the method of procurement, selection of contract type, contractor selection or rejection, and the basis for the contract price.

(10) Grantees and sub-grantees will use time and material type contracts only--

(i) After a determination that no other contract is suitable, and

(ii) If the contract includes a ceiling price that the contractor exceeds at its own risk.

(11) Grantees and sub-grantees alone will be responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements. These issues include, but are not limited to source evaluation, protests, disputes, and claims. These standards do not relieve the grantee or sub-grantee of any contractual responsibilities under its contracts. Federal agencies will not substitute their judgment for that of the grantee or sub-grantee unless the matter is primarily a

Federal concern. Violations of law will be referred to the local, State, or Federal authority having proper jurisdiction.

(12) Grantees and sub-grantees will have protest procedures to handle and resolve disputes relating to their procurements and shall in all instances disclose information regarding the protest to the awarding agency. A protestor must exhaust all administrative remedies with the grantee and sub-grantee before pursuing a protest with the Federal agency. Reviews of protests by the Federal agency will be limited to:

(i) Violations of Federal law or regulations and the standards of this section (violations of State or local law will be under the jurisdiction of State or local authorities) and

(ii) Violations of the grantee's or sub-grantee's protest procedures for failure to review a complaint or protest. Protests received by the Federal agency other than those specified above will be referred to the grantee or sub-grantee.

(c) Competition. (1) All procurement transactions will be conducted in a manner providing full and open competition consistent with the standards of Sec. 31.36. Some of the situations considered to be restrictive of competition include but are not limited to:

(i) Placing unreasonable requirements on firms in order for them to qualify to do business,

(ii) Requiring unnecessary experience and excessive bonding,

(iii) Noncompetitive pricing practices between firms or between affiliated companies,

(iv) Noncompetitive awards to consultants that are on retainer contracts,

(v) Organizational conflicts of interest,

(vi) Specifying only a "brand name" product instead of allowing "an equal" product to be offered and describing the performance of other relevant requirements of the procurement, and

(vii) Any arbitrary action in the procurement process.

(2) Grantees and sub-grantees will conduct procurements in a manner that prohibits the use of statutorily or administratively imposed in-State or local geographical preferences in the evaluation of bids or proposals, except in those cases where applicable Federal statutes expressly mandate or encourage geographic preference. Nothing in this section preempts State licensing laws. When contracting for architectural and engineering (A/E) services, geographic location may be a selection criteria provided its application leaves an appropriate number of qualified firms, given the nature and size of the project, to compete for the contract.

(3) Grantees will have written selection procedures for procurement transactions. These procedures will ensure that all solicitations:

(i) Incorporate a clear and accurate description of the technical requirements for the material, product, or service to be procured. Such description shall not, in competitive procurements, contain features, which unduly restrict competition. The description may include a statement of the qualitative nature of the material, product or service to be procured, and when necessary, shall set forth those minimum essential characteristics and standards to which it must conform if it is to satisfy its intended use. Detailed product specifications should be avoided if at all possible. When it is impractical or uneconomical to make a clear and accurate description of the technical requirements, a "brand name or equal" description may be used

as a means to define the performance or other salient requirements of a procurement. The specific features of the named brand which must be met by offerers shall be clearly stated; and

(ii) Identify all requirements which the offerers must fulfill and all other factors to be used in evaluating bids or proposals.

(4) Grantees and sub-grantees will ensure that all pre-qualified lists of persons, firms, or products which are used in acquiring goods and services are current and include enough qualified sources to ensure maximum open and free competition. Also, grantees and sub-grantees will not preclude potential bidders from qualifying during the solicitation period.

(5) Construction grants awarded under Title II of the Clean Water Act are subject to the following "Buy American" requirements in paragraphs (c)(5) (i)-(iii) of this section. Section 215 of the Clean Water Act requires that contractors give preference to the use of domestic material in the construction of EPA-funded treatment works.

(i) Contractors must use domestic construction materials in preference to nondomestic material if it is priced no more than 6 percent higher than the bid or offered price of the nondomestic material, including all costs of delivery to the construction site and any applicable duty, whether or not assessed. The grantee will normally base the computations on prices and costs in effect on the date of opening bids or proposals.

(ii) The award official may waive the Buy American provision based on factors the award official considers relevant, including:

(A) Such use is not in the public interest;

(B) The cost is unreasonable;

(C) The Agency's available resources are not sufficient to implement the provision, subject to the Deputy Administrator's concurrence;

(D) The articles, materials or supplies of the class or kind to be used or the articles, materials or supplies from which they are manufactured are not mined, produced or manufactured in the United States in sufficient and reasonably available commercial quantities or satisfactory quality for the particular project;

or

(E) Application of this provision is contrary to multilateral government procurement agreements, subject to the Deputy Administrator's concurrence.

(iii) All bidding documents, sub-agreements, and, if appropriate, requests for proposals must contain the following "Buy American" provision: In accordance with section 215 of the Clean Water Act (33 U.S.C. 1251 et seq.) and implementing EPA regulations, the contractor agrees that preference will be given to domestic construction materials by the contractor, subcontractors, materialmen and suppliers in the performance of this sub-agreement.

(d) Methods of procurement to be followed--(1) Procurement by small purchase procedures. Small purchase procedures are those relatively simple and informal procurement methods for securing services, supplies, or other properties that do not cost more than the simplified acquisition threshold fixed at 41 U.S.C. 403(11) (currently set at \$100,000). If small purchase procedures are used, price or rate quotations shall be obtained from an adequate number of qualified sources.

(2) Procurement by sealed bids (formal advertising). Bids are publicly solicited and a firm-fixed-price contract (lump sum or unit price) is awarded to the responsible bidder whose bid, conforming with all the material terms and conditions of the invitation for bids, is the lowest in price. The sealed bid method is the preferred method for procuring construction, if the conditions in 31.36(d)(2)(i) apply.

(i) In order for sealed bidding to be feasible, the following conditions should be present:

(A) A complete, adequate, and realistic specification or purchase description is available;

(B) Two or more responsible bidders are willing and able to compete effectively and for the business; and

(C) The procurement lends itself to a firm fixed price contract and the selection of the successful bidder can be made principally on the basis of price.

(ii) If sealed bids are used, the following requirements apply:

(A) The invitation for bids will be publicly advertised and bids shall be solicited from an adequate number of known suppliers, providing them sufficient time prior to the date set for opening the bids;

(B) The invitation for bids, which will include any specifications and pertinent attachments, shall define the items or services in order for the bidder to properly respond;

(C) All bids will be publicly opened at the time and place prescribed in the invitation for bids;

(D) A firm fixed-price contract award will be made in writing to the lowest responsive and responsible bidder. Where specified in bidding documents, factors such as discounts, transportation cost, and life

cycle costs shall be considered in determining which bid is lowest. Payment discounts will only be used to determine the low bid when prior experience indicates that such discounts are usually taken advantage of; and

(E) Any or all bids may be rejected if there is a sound documented reason.

(3) Procurement by competitive proposals. The technique of competitive proposals is normally conducted with more than one source submitting an offer, and either a fixed-price or cost-reimbursement type contract is awarded. It is generally used when conditions are not appropriate for the use of sealed bids. If this method is used, the following requirements apply:

(i) Requests for proposals will be publicized and identify all evaluation factors and their relative importance. Any response to publicized requests for proposals shall be honored to the maximum extent practical;

(ii) Proposals will be solicited from an adequate number of qualified sources;

(iii) Grantees and sub-grantees will have a method for conducting technical evaluations of the proposals received and for selecting awardees;

(iv) Awards will be made to the responsible firm whose proposal is most advantageous to the program, with price and other factors considered; and

(v) Grantees and sub-grantees may use competitive proposal procedures for qualifications-based procurement of architectural/engineering (A/E) professional services whereby competitors' qualifications are evaluated and the most qualified competitor is selected, subject to negotiation of fair and reasonable compensation. The method, where price is not used as a selection factor, can only be used in procurement of A/E professional services. It cannot be used to purchase other types of services though A/E firms are a potential source to perform the proposed effort.

(4) Procurement by noncompetitive proposals is procurement through solicitation of a proposal from only one source, or after solicitation of a number of sources, competition is determined inadequate.

(i) Procurement by noncompetitive proposals may be used only when the award of a contract is infeasible under small purchase procedures, sealed bids or competitive proposals and one of the following circumstances applies:

(A) The item is available only from a single source;

(B) The public exigency or emergency for the requirement will not permit a delay resulting from competitive solicitation;

(C) The awarding agency authorizes noncompetitive proposals; or

(D) After solicitation of a number of sources, competition is determined inadequate.

(ii) Cost analysis, i.e., verifying the proposed cost data, the projections of the data, and the evaluation of the specific elements of costs and profits, is required.

(iii) Grantees and sub-grantees may be required to submit the proposed procurement to the awarding agency for pre-award review in accordance with paragraph (g) of this section.

(e) Contracting with small and minority firms, women's business enterprise and labor surplus area firms.

(1) The grantee and sub-grantee will take all necessary affirmative steps to assure that minority firms, women's business enterprises, and labor surplus area firms are used when possible.

(2) Affirmative steps shall include:

(i) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(ii) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

(iii) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises;

(iv) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises;

(v) Using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the Department of Commerce; and

(vi) Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (e)(2) (i) through (v) of this section.

(f) Contract cost and price.

(1) Grantees and sub-grantees must perform a cost or price analysis in connection with every procurement action including contract modifications. The method and degree of analysis is dependent on the facts surrounding the particular procurement situation, but as a starting point, grantees must make independent

estimates before receiving bids or proposals. A cost analysis must be performed when the offerer is required to submit the elements of his estimated cost, e.g., under professional, consulting, and architectural engineering services contracts. A cost analysis will be necessary when adequate price competition is lacking, and for sole source procurements, including contract modifications or change orders, unless price reasonableness can be established on the basis of a catalog or market price of a commercial product sold in substantial quantities to the general public or based on prices set by law or regulation. A price analysis will be used in all other instances to determine the reasonableness of the proposed contract price.

(2) Grantees and sub-grantees will negotiate profit as a separate element of the price for each contract in which there is no price competition and in all cases where cost analysis is performed.

To establish a fair and reasonable profit, consideration will be given to the complexity of the work to be performed, the risk borne by the contractor, the contractor's investment, the amount of subcontracting, the quality of its record of past performance, and industry profit rates in the surrounding geographical area for similar work.

(3) Costs or prices based on estimated costs for contracts under grants will be allowable only to the extent that costs incurred or cost estimates included in negotiated prices are consistent with Federal cost principles (see Sec. 31.22). Grantees may reference their own cost principles that comply with the applicable Federal cost principles.

(4) The cost plus a percentage of cost and percentage of construction cost methods of contracting shall not be used.

(g) Awarding agency review.

(1) Grantees and sub-grantees must make available, upon request of the awarding agency, technical specifications on proposed procurements where the awarding agency believes such review is needed to ensure that the item and/or service specified is the one being proposed for purchase. This review generally will take place prior to the time the specification is incorporated into a solicitation document. However, if the grantee or sub-grantee desires to have the review accomplished after a solicitation has been developed, the awarding agency may still review the specifications, with such review usually limited to the technical aspects of the proposed purchase.

(2) Grantees and sub-grantees must on request make available for awarding agency pre-award review procurement documents, such as requests for proposals or invitations for bids, independent cost estimates, etc. when:

(i) A grantee's or sub-grantee's procurement procedures or operation fails to comply with the procurement standards in this section; or

(ii) The procurement is expected to exceed the simplified acquisition threshold and is to be awarded without competition or only one bid or offer is received in response to a solicitation; or

(iii) The procurement, which is expected to exceed the simplified acquisition threshold, specifies a "brand name" product; or

(iv) The proposed award is more than the simplified acquisition threshold and is to be awarded to other than the apparent low bidder under a sealed bid procurement; or

(v) A proposed contract modification changes the scope of a contract or increases the contract amount by more than the simplified acquisition threshold.

(3) A grantee or sub-grantee will be exempt from the pre-award review in paragraph (g)(2) of this section if the awarding agency determines that its procurement systems comply with the standards of this section.

(i) A grantee or sub-grantee may request that its procurement system be reviewed by the awarding agency to determine whether its system meets these standards in order for its system to be certified. Generally, these reviews shall occur where there is a continuous high-dollar funding, and third-party contracts are awarded on a regular basis.

(ii) A grantee or sub-grantee may self-certify its procurement system. Such self-certification shall not limit the awarding agency's right to survey the system. Under a self-certification procedure, awarding agencies may wish to rely on written assurances from the grantee or sub-grantee that it is complying with these standards. A grantee or sub-grantee will cite specific procedures, regulations, standards, etc., as being in compliance with these requirements and have its system available for review.

(h) Bonding requirements. For construction or facility improvement contracts or subcontracts exceeding the simplified acquisition threshold, the awarding agency may accept the bonding policy and requirements of the grantee or sub-grantee provided the awarding agency has made a determination that

the awarding agency's interest is adequately protected. If such a determination has not been made, the minimum requirements shall be as follows:

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

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

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

(i) Contract provisions. A grantee's and sub-grantee's contracts must contain provisions in paragraph (i) of this section. Federal agencies are permitted to require changes, remedies, changed conditions, access and records retention, suspension of work, and other clauses approved by the Office of Federal Procurement Policy.

(1) Administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as may be appropriate.

(Contracts more than the simplified acquisition threshold)

(2) Termination for cause and for convenience by the grantee or sub-grantee including the manner by which it will be effected and the basis for settlement. (All contracts in excess of \$10,000)

(3) Compliance with Executive Order 11246 of September 24, 1965, entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR chapter 60). (All construction contracts awarded in excess of \$10,000 by grantees and their contractors or sub-grantees)

(4) Compliance with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR part 3). (All contracts and sub-grants for construction or repair)

(5) Compliance with the Davis-Bacon Act (40 U.S.C. 276a to 276a-7) as supplemented by Department of Labor regulations (29 CFR part 5). (Construction contracts in excess of \$2000 awarded by grantees and sub-grantees when required by Federal grant program legislation)

(6) Compliance with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330) as supplemented by Department of Labor regulations (29 CFR part 5).

(Construction contracts awarded by grantees and sub-grantees in excess of \$2000, and in excess of \$2500 for other contracts which involve the employment of mechanics or laborers)

(7) Notice of awarding agency requirements and regulations pertaining to reporting.

(8) Notice of awarding agency requirements and regulations pertaining to patent rights with respect to any discovery or invention which arises or is developed in the course of or under such contract.

(9) Awarding agency requirements and regulations pertaining to copyrights and rights in data.

(10) Access by the grantee, the sub-grantee, the Federal grantor agency, the Comptroller General of the United States, or any of their duly authorized representatives to any books, documents, papers, and records of the contractor which are directly pertinent to that specific contract for the purpose of making audit, examination, excerpts, and transcriptions.

(11) Retention of all required records for three years after grantees or sub-grantees make final payments and all other pending matters are closed.

(12) Compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C.

1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR part 15).

(Contracts, subcontracts, and sub-grants of amounts in excess of \$100,000)

(13) Mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94-163, 89 Stat. 871).

(j) Payment to consultants.

(1) EPA will limit its participation in the salary rate (excluding overhead) paid to individual consultants retained by grantees or by a grantee's contractors or subcontractors to the maximum daily rate for a GS-18. (Grantees may, however, pay consultants more than this amount). This limitation applies to

consultation services of designated individuals with specialized skills who are paid at a daily or hourly rate. This rate does not include transportation and subsistence costs for travel performed; grantees will pay these in accordance with their normal travel reimbursement practices. (Pub. L. 99-591).

(2) Sub-agreements with firms for services which are awarded using the procurement requirements in this part are not affected by this limitation.

(k) Use of the same architect or engineer during construction.

(1) If the grantee is satisfied with the qualifications and performance of the architect or engineer who provided any or all of the facilities planning or design services for a waste-water treatment works project and wishes to retain that firm or individual during construction of the project, it may do so without further public notice and evaluation of qualifications, provided:

(i) The grantee received a facilities planning (Step 1) or design grant (Step 2), and selected the architect or engineer in accordance with EPA's procurement regulations in effect when EPA awarded the grant; or

(ii) The award official approves noncompetitive procurement under Sec. 31.36(d)(4) for reasons other than simply using the same individual or firm that provided facilities planning or design services for the project; or

(iii) The grantee attests that:

(A) The initial request for proposals clearly stated the possibility that the firm or individual selected could be awarded a sub-agreement for services during construction; and

(B) The firm or individual was selected for facilities planning or design services in accordance with procedures specified in this section.

(C) No employee, officer or agent of the grantee, any member of their immediate families, or their partners have financial or other interest in the firm selected for award; and

(D) None of the grantee's officers, employees or agents solicited or accepted gratuities, favors or anything of monetary value from contractors or other parties to sub-agreements.

(2) However, if the grantee uses the procedures in paragraph (k)(1) of this section to retain an architect or engineer, any Step 3 sub-agreements between the architect or engineer and the grantee must meet all of the other procurement provisions in Sec. 31.36.

[53 FR 8068 and 8087, Mar. 11, 1988, and amended at 53 FR 8075, Mar. 11, 1988; 60 FR 19639, 19644, Apr. 19, 1995; 66 FR 3794, Jan. 16, 2001]



KRS Chapter 45A
Kentucky Model Procurement Code

45A.075 Methods of awarding state contracts.

Except as otherwise authorized by law, all state contracts shall be awarded by:

- (1) Competitive sealed bidding, pursuant to KRS 45A.080; or
- (2) Competitive negotiation, pursuant to KRS 45A.085 and 45A.090 or 45A.180; or
- (3) Noncompetitive negotiation, pursuant to KRS 45A.095; or
- (4) Small purchase procedures, pursuant to KRS 45A.100.

Effective: June 24, 2003

History: Amended 2003 Ky. Acts ch. 98, sec. 4, effective June 24, 2003. -- Created 1978 Ky. Acts ch. 110, sec. 16, effective January 1, 1979.

45A.080 Competitive sealed bidding.

- (1) Contracts exceeding the amount provided by KRS 45A.100 shall be awarded by competitive sealed bidding unless it is determined in writing that this method is not practicable. Factors to be considered in determining whether competitive sealed bidding is not practicable shall include:
 - (a) Whether specifications can be prepared that permit award on the basis of best value; and
 - (b) The available sources, the time and place of performance, and other relevant circumstances as are appropriate for the use of competitive sealed bidding.
- (2) The invitation for bids shall state that awards shall be made on the basis of best value. In any contract which is awarded under an invitation to bid which requires delivery by a specified date and imposes a penalty for late delivery, if the delivery is late, the contractor shall be given the opportunity to present evidence that the cause of the delay was beyond his control. If it is the opinion of the purchasing officer that there is sufficient justification for delayed delivery, the purchasing officer may adjust or waive any penalty that is provided for in the contract.
- (3) Adequate public notice of the invitation for bids shall be given a sufficient time prior to the date set forth for the opening of bids. The notice may include posting on the Internet or publication in a newspaper or newspapers of general circulation in the state as determined by the secretary of the Finance and Administration Cabinet not less than seven (7) days before the date set for the opening of the bids. The provisions of this subsection shall also apply to price contracts and purchase contracts of state institutions of higher education.
- (4) Bids shall be opened publicly at the time and place designated in the invitation for bids. At the time the bids are opened, the purchasing agency shall announce the agency's engineer's estimate, if applicable, and make it a part of the agency records pertaining to the letting of any contract for which bids were received. Each bid, together with the name of the bidder and the agency's engineer's estimate, shall be recorded and be open to public inspection. Electronic bid opening and posting of the required information for public viewing shall satisfy the requirements of this subsection.
- (5) The contract shall be awarded by written notice to the responsive and responsible bidder whose bid offers the best value.
- (6) Correction or withdrawal of bids shall be allowed only to the extent permitted by regulations issued by the secretary.

Effective: July 14, 2000

History: Amended 2000 Ky. Acts ch. 509, sec. 1, effective July 14, 2000. -- Amended 1998 Ky. Acts ch. 120, sec. 10, effective July 15, 1998. -- Amended 1997 (1st Extra. Sess.) Ky. Acts ch. 4, sec. 27, effective May 30, 1997. -- Amended 1996 Ky. Acts ch. 60, sec. 2, effective July 15, 1996. -- Amended 1994 Ky. Acts ch. 278, sec. 1, effective July 15, 1994. -- Amended 1982 Ky. Acts ch. 282, sec. 1, effective July 15, 1982. -- Amended 1979 (1st Extra. Sess.) Ky. Acts ch. 9, sec. 1, effective February 10, 1979. -- Created 1978 Ky. Acts ch. 110, sec. 17, effective January 1, 1979.

45A.085 Competitive negotiation.

(1) When, under administrative regulations promulgated by the secretary or under KRS 45A.180, the purchasing officer determines in writing that the use of competitive sealed bidding is not practicable, and except as provided in KRS 45A.095 and 45A.100, a contract may be awarded by competitive negotiation.

(2) Adequate public notice of the request for proposals shall be given in the same manner and circumstances as provided in KRS 45A.080(3).

(3) Contracts other than contracts for projects utilizing an alternative project delivery method under KRS 45A.180 may be competitively negotiated when it is determined in writing by the purchasing officer that the bids received by competitive sealed bidding either are unreasonable as to all or part of the requirements, or were not independently reached in open competition, and for which each competitive bidder has been notified of the intention to negotiate and is given reasonable opportunity to negotiate.

(4) Contracts for projects utilizing an alternative project delivery method shall be processed in accordance with KRS 45A.180.

(5) The request for proposals shall indicate the relative importance of price and other evaluation factors.

(6) Award shall be made to the responsible offerer whose proposal is determined in writing to be the most advantageous to the Commonwealth, taking into consideration price and the evaluation factors set forth in the request for proposals.

(7) Written or oral discussions shall be conducted with all responsible offerers who submit proposals determined in writing to be reasonably susceptible of being selected for award. Discussions shall not disclose any information derived from proposals submitted by competing offerers. Discussions need not be conducted:

(a) With respect to prices, where the prices are fixed by law or administrative regulation, except that consideration shall be given to competitive terms and conditions;

(b) Where time of delivery or performance will not permit discussions; or

(c) Where it can be clearly demonstrated and documented from the existence of adequate competition or prior experience with the particular supply, service, or construction item, that acceptance of an initial offer without discussion would result in fair and reasonable best value procurement, and the request for proposals notifies all offerers of the possibility that award may be made on the basis of the initial offers.

Effective: June 24, 2003

History: Amended 2003 Ky. Acts ch. 98, sec. 5, effective June 24, 2003. – Amended 1997 (1st Extra. Sess.) Ky. Acts ch. 4, sec. 28, effective May 30, 1997. – Amended 1979 (1st Extra. Sess.) Ky. Acts ch. 9, sec. 2, effective February 10, 1979. -- Created 1978 Ky. Acts ch. 110, sec. 18, effective January 1, 1979.

45A.090 Negotiation after competitive sealed bidding when all bids exceed available funds.

(1) In the event that all bids submitted pursuant to competitive sealed bidding under KRS 45A.080 result in bid prices in excess of the funds available for the purchase, and the chief purchasing officer determines in writing:

(a) That there are no additional funds available from any source so as to permit an award to the responsive and responsible bidder whose bid offers the best value; and

(b) The best interest of the state will not permit the delay attendant to a resolicitation under revised specifications, or for revised quantities, under competitive sealed bidding as provided in KRS 45A.080, then a negotiated award may be made as set forth in subsections (2) or (3) of this section.

(2) Where there is more than one (1) bidder, competitive negotiations pursuant to KRS 45A.085(3) shall be conducted with the three (3) (two (2) if there are only two (2)) bidders determined in writing to be the most responsive and responsible bidders, based on criteria contained in the bid invitation. Such competitive negotiations shall be conducted under the following restrictions:

(a) If discussions pertaining to the revision of the specifications or quantities are held with any potential offerer, all other potential offerers shall be afforded an opportunity to take part in such discussions; and

(b) A request for proposals, based upon revised specifications or quantities, shall be issued as promptly as possible, shall provide for an expeditious response to the revised requirements, and shall be awarded upon the basis of best value.

(3) Where, after competitive sealed bidding, it is determined in writing that there is only one (1) responsive and responsible bidder, a noncompetitive negotiated award may be made with such bidder in accordance with KRS 45A.095.

Effective: June 24, 2003

History: Amended 2003 Ky. Acts ch. 98, sec. 6, effective June 24, 2003. – Amended 1997 (1st Extra. Sess.) Ky. Acts ch. 4, sec. 29, effective May 30, 1997. – Created 1978 Ky. Acts ch. 110, sec. 19, effective January 1, 1979.

45A.095 Noncompetitive negotiation.

(1) A contract may be made by noncompetitive negotiation only for sole source purchases, or when competition is not feasible, as determined by the purchasing officer in writing prior to award, under administrative regulations promulgated by the secretary of the Finance and Administration Cabinet or the governing boards of universities operating under KRS Chapter 164A, or when emergency conditions exist. Sole source is a situation in which there is only one (1) known capable supplier of a commodity or service, occasioned by the unique nature of the requirement, the supplier, or market conditions. Insofar as it is practical, no less than three (3) suppliers shall be solicited to submit written or oral quotations whenever it is determined that competitive sealed bidding is not feasible. Award shall be made to the supplier offering the best value. The names of the suppliers submitting quotations and the date and amount of each quotation shall be placed in the procurement file and maintained as a public record. Competitive bids may not be required:

(a) For contractual services where no competition exists, such as telephone service, electrical energy, and other public utility services;

(b) Where rates are fixed by law or ordinance;

(c) For library books;

(d) For commercial items that are purchased for resale;

(e) For interests in real property;

(f) For visiting speakers, professors, expert witnesses, and performing artists;

(g) For personal service contracts executed pursuant to KRS 45A.690 to 45A.725; and

(h) For agricultural products in accordance with KRS 45A.645.

(2) The chief procurement officer, the head of a using agency, or a person authorized in writing as the designee of either officer may make or authorize others to make emergency procurements when an emergency condition exists.

(3) An emergency condition is a situation which creates a threat or impending threat to public health, welfare, or safety such as may arise by reason of fires, floods, tornadoes, other natural or man-caused disasters, epidemics, riots, enemy attack, sabotage, explosion, power failure, energy shortages, transportation emergencies, equipment failures, state or federal legislative mandates, or similar events. The existence of the emergency condition creates an immediate and serious need for services, construction, or items of tangible personal property that cannot be met through normal procurement methods and the lack of which would seriously threaten the functioning of government, the preservation or protection of property, or the health or safety of any person.

(4) The Finance and Administration Cabinet may negotiate directly for the purchase of contractual services, supplies, materials, or equipment in bona fide emergencies regardless of estimated costs. The existence of the emergency shall be fully explained, in writing, by the head of the agency for which the purchase is to be made. The explanation shall be approved by the

secretary of the Finance and Administration Cabinet and shall include the name of the vendor receiving the contract along with any other price quotations and a written determination for selection of the vendor receiving the contract. This information shall be filed with the record of all such purchases and made available to the public. Where practical, standard specifications shall be followed in making emergency purchases. In any event, every effort should be made to effect a competitively established price for purchases made by the state.

Effective: July 15, 2002

History: Amended 2002 Ky. Acts ch. 344, sec. 9, effective July 15, 2002. -- Amended 1997 (1st Extra. Sess.) Ky. Acts ch. 4, sec. 30, effective May 30, 1997. -- Amended 1990 Ky. Acts ch. 496, sec. 4, effective July 13, 1990. -- Created 1978 Ky. Acts ch. 110, sec. 20, effective January 1, 1979.

45A.100 Small purchases.

(1) Procurements may be made in accordance with small purchase administrative regulations promulgated by the secretary of the Finance and Administration Cabinet, pursuant to KRS Chapter 13A, as follows:

(a) Up to ten thousand dollars (\$10,000) per project for construction and one thousand dollars (\$1,000) for purchases by any state governmental body, except for those state administrative bodies specified in paragraph (b) of this subsection; and

(b) Up to forty thousand dollars (\$40,000) per project for construction or purchases by the Finance and Administration Cabinet, state institutions of higher education, and the legislative branch of government.

(2) Procurement requirements shall not be artificially divided so as to constitute a small purchase under this section. At least every two (2) years, the secretary shall review the prevailing costs of labor and materials and may make recommendations to the next regular session of the General Assembly for the revision of the then current maximum small purchase amount as justified by intervening changes in the cost of labor and materials.

(3) The secretary of the Finance and Administration Cabinet may grant to any state agency with a justifiable need a delegation of small purchasing authority, which exceeds the agency's small purchase limit, provided in subsection (1) of this section.

Delegations of small purchasing authority shall be granted or revoked by the secretary of the Finance and Administration Cabinet, in accordance with administrative regulations promulgated by the cabinet pursuant to KRS Chapter 13A. These administrative regulations shall establish, at a minimum, the criteria for granting and revoking delegations of small purchasing authority, including the requesting agency's past compliance with purchasing regulations, the level of training of the agency's purchasing staff, and the extent to which the agency utilizes the Kentucky Automated Purchasing System. The administrative regulations may permit the secretary of the Finance and Administration Cabinet to delegate small purchase procurements up to the maximum amount specified in subsection (1)(b) of this section.

Effective: July 15, 2002

History: Amended 2002 Ky. Acts ch. 320, sec. 2, effective July 15, 2002. -- Amended 2000 Ky. Acts ch. 225, sec. 1, effective July 14, 2000. -- Amended 1996 Ky. Acts ch. 60, sec. 1, effective July 15, 1996. -- Amended 1994 Ky. Acts ch. 323, sec. 1, effective July 15, 1994. -- Amended 1990 Ky. Acts ch. 496, sec. 5, effective July 13, 1990. -- Amended 1986 Ky. Acts ch. 384, sec. 1, effective July 15, 1986. -- Amended 1984 Ky. Acts ch. 384, sec. 1, effective July 13, 1984. -- Amended 1982 Ky. Acts ch. 282, sec. 2, effective July 15, 1982. -- Amended 1980 Ky. Acts ch. 242, sec. 1, effective July 15, 1980; and ch. 250, sec. 19, effective April 9, 1980. -- Created 1978 Ky. Acts ch. 110, sec. 21, effective January 1, 1979.

**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE
EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)**

The following excerpts are from 45 FR 65984 (October 3, 1980):

The minority and female goals apply to Federal and federally assisted construction contractors and subcontractors which have covered contracts. The goals are expressed as a percentage of the total hours worked by such a covered or subcontractor's entire onsite construction workforce, which is working on any construction site within a relevant area. The goal applies to each construction craft and trade in the contractor's entire workforce in the relevant area including those employees working on private non-federally involved projects.

Until further notice, the following goals for minority utilization in each construction craft and trade shall be included in all Federal or federally assisted construction contracts and subcontracts in excess of \$10,000 to be performed in the respective geographic area. The goals are applicable to each nonexempt contractor's total onsite construction workforce, regardless of whether or not part of that workforce is performing work on a Federal, federally assisted or non-federally related project, contract or subcontract.

Construction contractors which are participating in an approved Hometown Plan (see 41 CFR 60-4.5) are required to comply with the goals of the Hometown Plan with regard to construction work they perform in the area covered by the Hometown Plan. With regard to all their other covered construction work, such contractors are required to comply as follows:

Goals for female participation in each trade.....6.9%
Goals for minority participation in each trade.....Insert goals for each year
(see Attachment Number 6)

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or Federally assisted) performed in the covered area.

The following excerpts are from 45 FR 65977 (October 3, 1980):

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

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

4. As used in this Notice, and in the contract resulting from this solicitation, the covered area is (insert description of the geographical areas where the contract is to be performed giving the state, country, and city, if any).



**STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION
CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)**

EEO Specifications

Following is the standard language, which must be incorporated into all solicitations for offers and bids on all Federal and Federally assisted construction contracts or subcontracts in excess of \$10,000 to be performed in designated geographical areas:

1. As used in these specifications:

- (a) Covered Area means the geographical area described in the solicitation from which this contract resulted.
- (b) Director means Director, Office of Federal Contract Compliance Program, United States Department of Labor, or any person to whom the Director delegates authority;
- (c) Employer identification number means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
- (d) Minority includes:
 - (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

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

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take a good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7-a through p of these specifications. The goals set forth in the solicitation from which this contract resulted

are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

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

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

7. The Contractor shall take specific affirmative action to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative actions steps at least as extensively as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations responses.

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

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

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7-b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with

all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

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

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

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

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

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

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

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

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

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

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative actions obligations (7 a through p). The efforts of a contractor association, joint contractor-union, contractor-community, of other similar group of which the contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under 7 a through p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access

to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example: even though the Contractor has achieved its goal for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

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

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

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

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation, if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

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

Attachment Number 6

EEO Goals for Economic Areas in Region 4
 Source: Appendix B-80 in 45 FR 65984 (October 3, 1980)

Alabama:

047 Mobile, AL	
SMSA Counties:	
5160 Mobile, AL	26.9
AL Baldwin; AL Mobile.	
6026 Pascagoula - Moss, Point MS	16.9
MS Jackson.	
Non-SMSA Counties	26.4
AL Choctaw; AL Clarke; AL Conecuh; AL Escambia; AL Monroe; AL Washington; AL Wilcox;	
MS George; MS Greene.	
048 Montgomery, AL:	
SMSA Counties	
5240 Montgomery, AL	29.9
AL Autauga; AL Elmore; AL Montgomery.	
Non-SMSA Counties	29.9
AL Barbour; AL Bullock; AL Butler; AL Coffee; AL Coosa; AL Covington;	
AL Crenshaw; AL Dale; AL Dallas; AL Geneva; AL Henry; AL Houston.;	
AL Lowndes; AL Macon; AL Perry; AL Pike; AL Tallapoosa.	
049 Birmingham, AL:	
SMSA Counties:	
0450 Anniston, AL	14.3
AL Calhoun	
1000 Birmingham, AL	24.9
AL Jefferson, AL St- Clair; AL Shelby; AL Walker; AL Etowah	
8600 Tuscaloosa, AL	20.6
AL Tuscaloosa.	
Non-SMSA Counties	20.7
AL Bibb; AL Blount; AL Cherokee; AL Chilton; AL Clay; AL Cleburne; AL Cullman;	
AL Fayette; AL Greene; AL Hale; AL Lamar; AL Marion; AL Pickens; AL Randolph;	
AL Sumter; AL Talladega; AL Winston.	
050 Huntsville - Florence, AL:	
SMSA Counties:	
2650 Florence, AL	11.9
AL Colbert; AL Lauderdale.	
3440 Huntsville, AL	12.0
AL Limestone; AL Madison; AL Marshall.	
Non-SMSA Counties	11.2
AL Franklin; AL Lawrence; AL Morgan; TN Lincoln.	
Georgia:	
035 Augusta, GA:	
SMSA Counties:	
0600 Augusta, GA – SC	27.2
GA Columbia; GA Richmond; SC Aiken	
Non-SMSA Counties	32.8
GA Burke; GA Emanuel; GA Glascock; GA Jefferson; GA Jenkins; GA Lincoln; GA	
McDuffie; GA Taliaferro; GA Warren; GA Wilkes; SC Allendale, SC Bamberg;	
SC Barnwell; SC Edgefield; SC McCormick	
036 Atlanta, GA	
SMSA Counties	
0520 Atlanta	21.2
GA Butts; GA Cherokee; GA Clayton; GA Cobb; GA DeKalb; GA Douglas; GA Fayette;	
GA Forsyth; GA Fulton; GA Gwinnett; GA Henry; GA Newton; GA Paulding; GA Rockdale;	
GA Walton	

Non-SMSA Counties	19.5
GA Banks; GA Barrow; GA Bartow; GA Carroll; GA Clarke; GA Coweta; GA Dawson; GA Elbert; GA Fannin; GA Floyd; GA Franklin; GA Gilmer; GA Gordon; GA Greene; GA Habersham; GA Hall; GA Haralson; GA Hart; GA Heard; GA Jackson; GA Jasper; GA Lamar; GA Lumpkin; GA Madison; GA Morgan; GA Oconee; GA Oglethorpe; GA Pickens; GA Pike; GA Polk; GA Rabun; GA Spalding; GA Stephens; GA Towns; GA Union; GA Upson; GA White.	
037 Columbus, GA:	
SMSA Counties	
1800 Columbus	29.6
AL Russell; GA Chattahoochee; GA Columbus.	
Non-SMSA Counties	31.6
AL Chambers; AL Lee; GA Harris; GA Marion; GA Meriwether; GA Quitman; GA Schley; GA Stewart; GA Sumter; GA Talbot; GA Troup; GA Webster.	
038 Macon, GA:	
SMSA Counties	
4660 Macon, GA	27.5
GA Bibb; GA Houston; GA Jones; GA Twiggs.	
Non-SMSA Counties	31.7
GA Baldwin; GA Bleckley; GA Crawford; GA Crisp; GA Dodge; GA Dooly; GA Hancock; GA Johnson; GA Laurens; GA Macon; GA Monroe; GA Peach; GA Pulaski; GA Putnam; GA Taylor; GA Telfair; GA Treutlen; GA Washington; GA Wheeler; GA Wilcox; GA Wilkinson.	
039 Savannah, GA:	
SMSA Counties:	
7520 Savannah, GA	30.6
GA Bryan; GA Chatham; GA Effingham	
Non-SMSA Counties	29.8
GA Appling; GA Atkinson; GA Bacon; GA Bullock; GA Candler; GA Coffee; GA Evans; GA Jeff Davis; GA Liberty; GA Long; GA McIntosh; GA Montgomery; GA Screven; GA Tattinall; GA Toombs; GA Wayne; SC Beaufort; SC Hampton; SC Jasper.	
040 Albany, GA	
SMSA Counties	
0120 Albany, GA	32.1
GA Dougherty; GA Lee.	
Non-SMSA Counties	31.1
GA Baker; GA Ben Hill; GA Berrien; GA Brooks; GA Calhoun; GA Clay; GA Clinch; GA Colquitt; GA Cook; GA Decatur; GA Early; GA Echols; GA Grady; GA Irwin; GA Lanier; GA Lowndes; GA Miller; GA Mitchell; GA Randolph; GA Seminole; GA Terrell; GA Thomas; GA Tift; GA Turner; GA Worth	
Florida:	
041 Jacksonville, FL:	
SMSA Counties	
2900 Gainesville, FL	20.6
FL Alachua	
3600 Jacksonville, FL	21.8
FL Baker; FL Clay; FL Duval; FL Nassau; FL St. Johns.	
Non-SMSA Counties	22.2
FL Bradford; FL Columbia; FL Dade; FL Gilchrist; FL Hamilton; FL LaFayette; FL Levy; FL Marion; FL Putnam; FL Suwannee; FL Union; GA Brantley; GA Camden; GA Charlton; GA Glynn; GA Pierce; GA Ware.	
042 Orlando - Melbourne - Daytona Beach, FL.	
SMSA Counties:	
2020 Daytona Beach, FL	15.7
FL Volusia.	
4900 Melbourne - Titusville - Cocoa, FL	10.7
FL Brevard.	
5960 Orlando, FL	15.5

FL Orange; FL Osceola; FL Seminole.

Non-SMSA Counties	14.9
FL Flagler; FL Lake; FL Sumter.	
043 Miami - Fort Lauderdale, FL:	
SMSA Counties:	
2680 Fort Lauderdale - Hollywood, FL	15.5
FL. Broward.	
5000 Miami, FL	39.5
FL Dade.	
8960 West Palm Beach - Boca Raton, FL	22.4
FL Palm Beach.	
Non-SMSA Counties	30.4
FL Glades; FL Hendry; FL Indian River, FL Martin; FL Monroe:	
FL Okeechobee; FL St. Lucie.	
044 Tampa - St Petersburg, FL	
SMSA Counties:	
1140 Bradenton, FL	15.9
FL Manatee.	
2700 Fort Myers, FL	
15.3	
FL Lee.	
3980 Lakeland - Winter Haven, FL	18.0
FL Polk	
7510 Sarasota, FL	10.5
FL Sarasota.	
8280 Tampa - St. Petersburg, FL	17.9
FL Hillsborough, FL Pasco; FL Pinellas	
Non-SMSA Counties	17.1
FL Charlotte; FL Citrus; FL Collier, FL Desoto; FL Hardee; FL Hernando; FL Highlands.	
045 Tallahassee. FL:	
SMSA Counties:	
8240 Tallahassee, FL	24.3
FL Leon; FL Wakulla.	
Non-SMSA Counties:	29.5
FL Calhoun; FL Franklin; FL Gadsden; FL Jack son; FL Jefferson: FL Liberty;	
FIL Madison; FL Taylor.	
046 Pensacola - Panama City, FL	
SMSA Counties:	
8615 Panama City, FL	14.1
FIL Bay.	
6080 Pensacola, FL	18.3
FL Escambia; FL Santa Rosa.	
Non-SMSA Counties	15.4
FL Gulf, FIL Holmes; FIL Okaloosa; FL Walton; FL Washington.	
Kentucky:	
056 Paducah, KY:	
Non-SMSA Counties	5.2
IL Hardin; IL Massac; IL Pope; KY Ballard; KY Caldwell; KY Calloway. KY Carlisle;	
KY Crittenden; KY Fulton; KY Graves; KY Hickman; KY Livingston; KY Lyon. KY	
McCracken; KY Marshall.	
057 Louisville, KY:	
SMSA Counties:	
4520 Louisville, KY-IN	11.2
IN Clark; IN Floyd; KY Bullitt; KY Jefferson; KY Oldham.	
Non-SMSA Counties	9.6
IN Crawford; IN Harrison; IN Jefferson; IN Orange; IN Scott; IN Washington;	
KY Breckinridge; KY Grayson; KY Hardin; KY Hart; KY Henry; KY Larue; KY Marion;	
KY Meade; KY Nelson; KY Shelby; KY Spencer; KY Trimble; KY Washington.	
058 Lexington, KY	
SMSA Counties	

4280 Lexington-Fayette, KY
 KY Bourbon; KY Clark; KY Fayette; KY Jessamine; KY Scott; KY Woodford.
 Non-SMSA Counties

7.0

KY Adair KY Anderson; KY Bath; KY Boyle; KY Breathitt; KY Casey; KY Clay;
 KY Estill; KY Franklin- KY Garrard; KY Green; KY Harrison- KY Jackson; KY Knott;
 KY Lee; KY Leslie; KY Letcher; KY Lincoln; KY Madison; KY Magoffin; KY Menifee;
 KY Mercer; KY Montgomery; KY Morgan. KY Nicholas; KY Owsley; KY Perry;
 KY Powell; KY Pulaski; KY Rockcastle; KY Russell; KY Taylor; KY Wolfe.

Mississippi:

112 Jackson, MS:

SMSA Counties;
 3560 Jackson, MS

30.3

MS Hinds; MS Rankin.

Non-SMSA Counties

32.0

MS Attala; MS Choctaw; MS Choctaw; MS Clarke; MS Copiah;
 MS Covington; MS Franklin; MS Holmes; MS Humphreys; MS Issaquena;
 MS Jasper; MS Jefferson; MS Jefferson Davis; MS Jones; MS Kemper;
 MS Lauderdale; MS Lawrence; MS Leake; MS Lincoln; MS Lowndes;
 MS Madison; MS Neshoba; MS Newton; MS Noxubee,- MS Oktibbeha;
 MS Scott; MS Sharkey; MS Simpson; MS Smith; MS Warren; MS Wayne;
 MS Winston; MS Yazoo.

North Carolina:

024 Rocky Mount - Wilson - Greenville NC:

Non-SMSA Counties

31.7

NC Beaufort; NC Carteret; NC Craven,- NC Dare; NC Edgecombe; NC Greene; NC
 Halifax; NC Hyde; NC Jones; NC Lenoir', NC Martin; NC Nash; NC Northampton; NC
 Pamlico; NC Pitt; NC Tyrrell; NC Washington; NC Wayne; NC Wilson

025 Wilmington, NC:

SMSA Counties:
 9200 Wilmington, NC

20.7

NC Brunswick; NC New Hanover.

Non-SMSA counties

3.5

NC Columbus; NC Duplin; NC Onslow; NC Pender.

026 Fayetteville, NC:

SMSA Counties:
 2560 Fayetteville, NC

26.2

NC Cumberland.

Non-SMSA Counties

33.5

NC Bladen; NC Hoke; NC Richmond; NC Robeson; NC Sampson; NC Scotland.

027 Raleigh - Durham, NC.

SMSA Counties:

6640 Raleigh - Durham

22.8

NG Durham; NC Orange; NC Wake.

Non-SMSA Counties

24.7

NC Chatham; NC Franklin; NC Granville; NC Harnett; NC Johnston; NC Lee; NC Person;
 NC Vance; NC Warren.

028 Greensboro - Winston Sale m - High Point, NC:

SMSA Counties:

1300 Burlington, NC	
16.2	
NC Alamance.	
3120 Greensboro - Winston Salem - High Point NC	
16.4	
NC Davidson; NC Forsyth; NC Guilford,- NC Randolph; NC Stokes; NC Yadkin.	
Non-SMSA Counties	
15.5	
NC Alleghany; NG Ashe; NC Caswell; NC Davie; NC Montgomery; NC Moore; NC Rockingham; NC Surry; NC Watauga; NC Wilkes.	
029 Charlotte, NC:	
SMSA Counties:	
1520 Charlotte - Gastonia, NC	
18.5	
NC Gaston; NC Mecklenburg; NC Union.	
Non-SMSA Counties	
15.7	
NC Alexander; NC Anson; NC Burke; NG Cabarrus; NC Caldwell; NC Catawba; NC Cleveland; NC Ire dell; NC Lincoln; NC Rowan; NC Rutherford; NC Stanley; SC Chester; SC Lancaster SC York.	
030 Asheville, NC	
Non-SMSA Counties:	
0480 Asheville, NC	8.5
NC Buncombe; NC Madison.	
Non-SMSA Counties	6.3
NC Avery,- NC Cherokee; NC Clay; NC Graham; HC Heywood, NC Henderson; NC Jackson; NC McDowell; NC Macon; NC Mitchell; NC Swain; NC Transylvania; NC Yancey.	
South Carolina:	
031 Greenville -Spartanburg, SC:	
SMSA Counties:	
316b Greenville -Spartanburg, SC	16.0
SC Greenville; SC Pickens; SC Spartanburg.	
Non-SMSA Counties	17.8
SC Polk; SC Abbeville; SC Anderson; SC Cherokee', SC Greenwood; SC Laurens; SC Oconee; SC Union.	
032 Columbia, SC	
SMSA Counties:	
1760 Columbia, SC	23.4
SC Lexington; SC Richland.	
Non-SMSA Counties	32.0
SC Calhoun SC Clarendon; SC Fairfield; SC Kershaw; SC Lee; SC Newberry; SC Orangeburg; SC Saluda; SC Sumter	
033 Florence, SC	
Non-SMSA Counties	33.0
SC Chesterfield; SC Darlington; SC Dillon; SC Florence; SC Georgetown; SC Horry; SC Marion; SC Marlboro; SC Williamsburg.	
034 Charleston - North Charleston, SC	
SMSA Counties	30.0
1440 Charleston - North Charleston, SC	
SC Berkeley; SC Charleston; SC Dorchester.	
Non-SMSA Counties	30.7
SC Collection	
Tennessee:	
051 Chattanooga, TN:	
SMSA Counties	
1560 Chattanooga, TN - GA	12.6
GA Catoosa; GA Dade; GA Walker; TN Hamilton; TN Marion; TN Sequatchie.	
Non-SMSA Counties	8.6

AL De Kalb; AL Jackson; GA Chattooga; GA Murray; GA Whitfield;
 TN Bledsoe; TN Bradley; TN Grundy; TN McMinn; TN Meigs; TN Monroe;
 TN Polk; TN Rhea.

052 Johnson City - Kingsport - Bristol, TN-VA:
 SMSA Counties' 2.6
 3660 Johnson City - Kingsport - Bristol, TN - VA
 TN Carter; TN Hawkins- TN Sullivan; TN Unicoi; TN Washington; VA Scott;
 VA Washington; VA Bristol. 3.2

Non-SMSA Counties
 TN Greene; TN Hancock; TN Johnson; VA Buchanan; VA Dickenson; VA Lee;
 VA Russell; VA Smyth; VA Tazewell; VA Wise; VA Norton; WV McDowell, WV Mercer.

053 Knoxville, TN
 SMSA Counties:
 3840 Knoxville, TN 6.6
 TN Anderson; TN Blount; TN Knox; TN Union.

Non-SMSA Counties 4.5
 KY Bell; KY Harlan; KY Knox; KY Laurel; KY McCreary; KY Wayne; KY Whitley; TN
 Campbell; TN Claiborne; TN Cooke; TN Cumberland; TN Fentress; TN Grainger,
 TN Hamblen; TN Jefferson; TN Loudon; TN Morgan; TN Roane; TN Scott;
 TN Sevier.

054 Nashville, TN:
 SMSA Counties:
 1660 Clarksville - Hopkinsville, TN - KY 18.2
 KY Christian; TN Montgomery.
 5360 Nashville - Davidson, TN 15.8
 TN Cheatham, TN Davidson; TN Dickson; TN Robertson; TN Rutherford; TN Sumner;
 TN Williamson; TN Wilson.

Non-SMSA Counties 12.0
 KY Allen; KY Barren; KY Butler; KY Clinton; KY Cumberland; KY Edmonson;
 KY Logan; KY Metcalfe; KY Monroe; KY Simpson; KY Todd; KY Trigg; KY Warren;
 TN Bedford; TN Cannon; TN Clay; TN Coffee; TN DeKalb; TN Franklin; TN Giles;
 TN Hickman; TN Houston; TN Humphreys; TN Jackson; TN Lawrence; TN Lewis;
 TN Macon; TN Marshall; TN Maury; TN Moore; TN Overton; TN Perry; TN Pickett;
 TN Putnam; TN Smith,, TN Stewart; TN Trouslale; TN Van Buren; TN Warren;
 TN Wayne; TN White.

055 Memphis, TN:
 SMSA Counties:
 4920 Memphis, TN-AR-MS 32.3
 AR Critteriden; MS Do Soto; TN Shelby; TN Tipton.

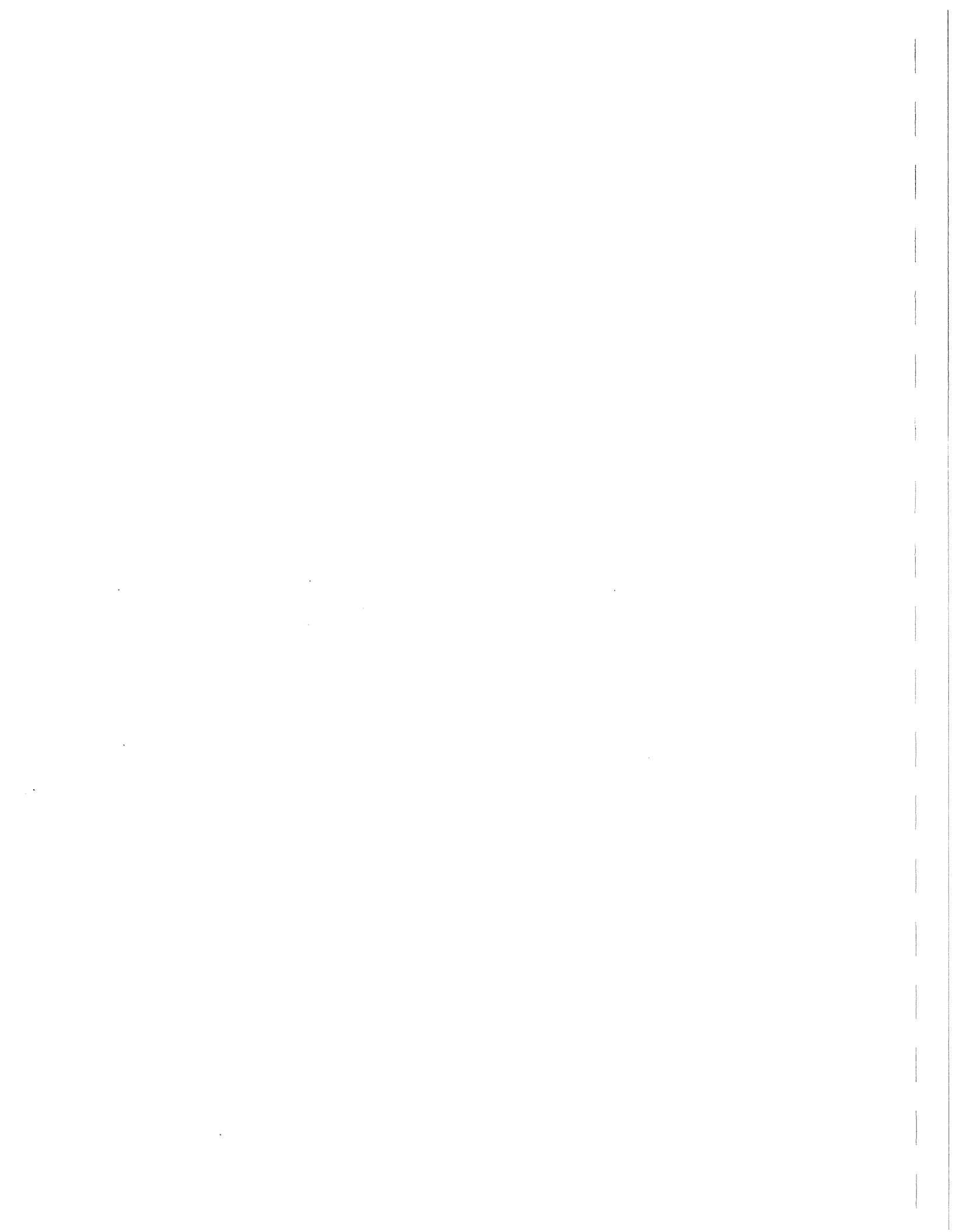
Non-SMSA Counties 26.5
 AR Clay; AR Craighead; AR Cross; AR Greene; AR Lawrence; AR Lee;
 AR Mississippi; AR Phillips- AR. Poinsett; AR Randolph; AR St. Francis; MS Alcorn,
 MS Benton; MS Bolivar; MS Calhoun; MS Carroll; MS Chickasaw, MS Clay;
 MS Coahoma; MS Grenada; MS Itawamba; MS Lafayette; MS Lee; MS Leflore;
 MS Marshall; MS Monroe; MS Montgomery; MS Panola; MS Pontotoc; MS Prentiss;
 MS Quitman; MS Sunflower; MS Tallahatchie; MS Tate; MS Tippah; MS Tishomingo;
 MS Union; MS Washington; MS Webster. MS Yalobusha; MO Dunklin;
 MO New Madrid; MO Perniscot; TN Benton; TN Carroll; TN Chester; TN Crockett;
 TN Decatur; TN Dyer; TN Fayette; TN Gibson; TN Hardeman; TN Hardin;
 TN Haywood; TN Henderson- TN Henry; TN Lake; TN Lauderdale; TN McNairy;
 TN Madison; TN Obion; TN Weakley.

**CHECK LIST OF EEO DOCUMENTATION FOR BIDDERS
ON GRANT/LOAN CONSTRUCTION
(Required by Executive Order 11246 as amended)**

The low, responsive responsible bidder must forward the following items, in duplicate, to the owner no later than ten (10) days after bid opening. The owner shall have one (1) copy available for inspection by the Office of Federal Contracts Compliance within 14 days after the bid opening. The web site for the OFCC is http://www.dol.gov/esa/ofcp_org.htm.

1. Project Number. Project Location. Type of Construction.
2. Proof of registration with the Joint Reporting Commission. (See Attachment Number 8.)
3. Copy of Affirmative Action Plan of contractor. Indicate company official responsible for EEO.
4. List of current construction contracts, with dollar amount. List contracting Federal Agency, if applicable.
5. Statistics concerning company percent workforce, permanent and temporary, by sex, race, trade, handicapped, and age. 40 CFR Part 7.
6. List of employment sources for project in question. If union sources are utilized, indicate percentage of minority membership within the union crafts.
7. Anticipated employment needs for this project, by sex, race and trade, with estimate of minority participation in specific trades.
8. List of subcontractors (name, address and telephone) with dollar amount and duration of subcontract. Subcontractor contracts over \$10,000 must submit items 1- 8. *
9. List of any subcontract work yet to be committed with estimate of dollar amount and duration of contract.
10. Contract Price. Duration of prime contract.
11. DBE Documents - See special instructions regarding use of Minority, and Women Owned, and Small Businesses.

* Should we say something here about what all supplier contractors should submit?



Employer Information Report EEO-1

Under the direction of the US Equal Employment Opportunity Commission, the Joint Reporting Committee is responsible for the full-length, multi-phase processing of employment statistics collected on the Employer Information Report EEO-1. This report, also termed Standard Form 100, details the sex and race/ ethnic composition of an employer's work force by job category.

The Employer Information EEO-1 survey is conducted annually under the authority of Public Law 88-352, Title VII of the Civil Rights Act of 1964, as amended by the Equal Employment Opportunity Act of 1972. All employers with 15 or more employees are covered by Public Law 88-352 and are required to keep employment records as specified by Commission regulations. Based on the number of employees and federal contract activities, certain large employers are required to file an EEO-1 Report on an annual basis.

The EEO-1 Report must be filed by:

(A) All private employers who are: (1) subject to Title VII of the Civil Rights Act of 1964 (as amended by the Equal Employment Opportunity Act of 1972) with 100 or more employees EXCLUDING State and local governments, primary and secondary school systems, institutions of higher education, Indian tribes and tax-exempt private memberships clubs other than labor organizations; OR (2) subject to Title VII who have fewer than 100 employees if the company is owned or affiliated with another company, or there is centralized ownership, control or management (such as central control of personnel policies and labor relations) so that the group legally constitutes a single enterprise and the entire enterprise employs a total of 100 or more employees.

(B) All federal contractors (private employers), who: (1) are not exempt as provided for by 41 CFR 60-1.5, (2) have 50 or more employees, and (a) are prime contractors or first-tier subcontractors, and have a contract, subcontract, or purchase order amounting to \$50,000 or more; or (b) serve as depository of Government funds in any amount, or (c) is a financial institution which is an issuing an paying agent for U.S. Savings Bonds and Notes.

Only those establishments located in the District of Columbia and the 50 states are required to submit the EEO-1 Report. No Reports should be filed for establishments in Puerto Rico, the Virgin Islands or other American Protectorates.

When filing for the EEO-1 Report for the first time, go to the web site at: <http://www.mimdms.com/jrc.html> and select "Filing for the first time" from the box labeled INFORMATION. File out the electronic questionnaire to enter your company into Joint Reporting Committee (JRC) system. Once you have completed the registration process, you will be contacted on how to proceed with the EEO-1 Report. If you have previously registered with the JRC, follow their instructions to update your information.



Labor Standards Provisions For Federally Assisted Construction

Labor standards provisions applicable to contracts covering federally financed and assisted construction (29 CFR 5.5, Contract Provisions and Related Matters) that apply to EPA Special Appropriations Projects grants are:

(a)(4)(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

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

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

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

(b) Contractor Work Hours and Safety Standards Act. The Administrator, EPA shall cause or require the contracting officer to insert the following clauses set forth in paragraph (b)(1),(2),(3), and (4) of this section in full in any contract subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by *Section 5.5(a) of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

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

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

(3) Withholding for unpaid wages and liquidated damages. The U.S. Environmental Protection Agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally- assisted contract subject to the Contract Work Hours and Safety

Standards Act, which is held by the same prime contractor, such liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b) (2) of this section.

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

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in section 5.1, the Administrator of EPA shall cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly worked, deductions made, and actual wages paid. Further, the Administrator of EPA shall cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the U.S. Environmental Protection Agency and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job. (Approved by the Office of Management and Budget under OMB control numbers 1215-0140 and 1215-0017.)

CERTIFICATIONS

Debarred Firms

All prime Construction Contractors shall certify that Subcontractors have not and will not be awarded to any firm that is currently on the EPA Master List of Debarred, Suspended and Voluntarily Excluded Persons in accordance with the provisions of 40 CFR 32.500(c). Debarment action is taken against a firm for noncompliance with Federal Law.

All bidders shall complete the attached certification (Attachment Number 10) and submit to the owner with the bid proposal.

Anti-lobbying Certification

All prime Construction Contractors must certify (Attachment Number 11) that no appropriated funds were or will be expended for the purpose of lobbying the Executive or Legislative Branches of the Federal Government or Federal Agency concerning this contract (contract in excess of \$100,000). If the Contractor has made or agreed to make payment to influence any member of Congress in regard to award of this contract, a Disclosure Form must be completed and submitted to the owner with the bid proposal.

All prime Contractors must require all Subcontractors to submit the certification, which must also be submitted to the owner.



**CERTIFICATION REGARDING DEBARMENT,
SUSPENSION AND OTHER RESPONSIBILITY MATTERS**

The prospective 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 judgment 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 government 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.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.

Typed Name & Title of Authorized Representative

Signature of Authorized Representative

Date

_____ I am unable to certify to the above statements. My explanation is attached.



CERTIFICATION REGARDING LOBBYING
Certification for Contracts, Grants,
Loans, and Cooperative Agreements

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 an 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, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(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, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

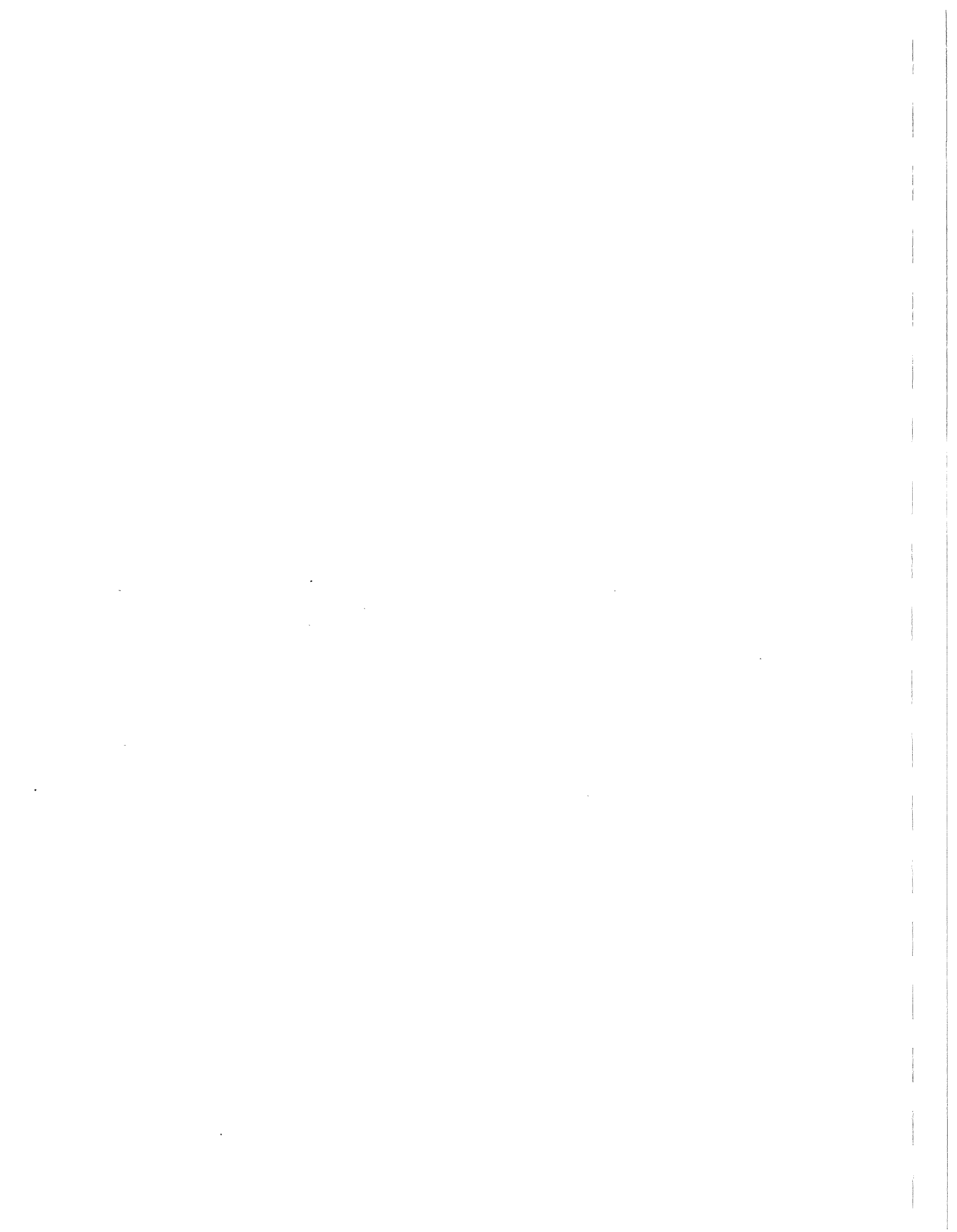
(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

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.

TYPED NAME & TITLE OF AUTHORIZED REPRESENTATIVE

SIGNATURE OF AUTHORIZED REPRESENTATIVE DATE

_____ I am unable to certify to the above statements. My explanation is attached.



UTILIZATION OF SMALL, MINORITY AND WOMEN'S BUSINESSES

The provisions of PL 102-389 and EPA's implementing regulation 40 CFR 31.36(e) require recipients of Federal assistance to award a fair share of sub-agreements to small, small rural, minority and women's businesses on contracts and sub-agreement performed under EPA Assistance Agreements.

The following procedures are to be followed for procurement under EPA Assistance Agreements.

The successful bidder must submit to the grantee within 10 days after bid opening, evidence of the positive steps taken to utilize small, minority and women's businesses. Information should include the following:

EPA Project Number. Project Location. Type of Construction.

List of current construction contracts, with dollar amount. List contracting Federal Agency, if applicable.

List of subcontractors (name, address and telephone) with dollar amount and duration of subcontract.

List of any subcontract work yet to be committed with estimate of dollar amount and duration of contract.

Contract Price. Duration of prime contract.

Such positive efforts shall include:

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises;

(4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises;

(5) Using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the Department of Commerce; and

(6) Requiring each party to a sub-agreement to take the affirmative steps listed in paragraphs 1 through 5 of this section.

For purposes of clarification:

" This requirement applies to any EPA Financially assisted procurement.

" This requirement mandates three responsibilities. Separate solicitations must be made of small, small rural, minority and women's businesses enterprises.

" A minority business is a business, at least 51 percent of which is owned and controlled by minority group members (Black; Hispanic; Asian American; American Indian; and any other designations approved by the Office of Management and Budget that are U.S. citizens. Any specific clarification concerning the ownership and/or control issues will be provided by the EPA Regional Office.

" A women's business is a business, at least 51 percent of which is owned and controlled by one or more women who are U.S. citizens.

" The control determination will revolve around the minority or women owner's involvement in the day-to-day management of the business enterprise.

" Solicitation should allow adequate time for price analysis; EPA recommends that contact be made no later than 15 days before bid opening.

" Efforts taken to comply with this requirement must be documented in detail; maintain records of firms contacted, including any negotiation efforts to reach competitive price levels, and awards to the designated firms.

" Any proposed changes from the approved Minority/Women/Small business participation after EEO/MBE approval shall be reported to EPA prior to initiation of the action, with the reason for the proposed deviation.

" The EPA recommends that the grantee as well as the prime contractor utilize the services of the following agencies to find information on certified Minority/Women/Small business. Use of these services does not absolve the prime contractors from pursuing additional efforts to comply with this requirement.

Minority Business Development Service Centers These Centers are funded by the U.S. Department of Commerce to provide technical, financial and contracting assistance to minority, women's and small rural business enterprises. The locations of the Centers are available by selecting the appropriate Minority Business Development Agency regional office from: <http://www.mbda.gov/>.

U.S. Small Business Administration Central Contractor Registration (procurement marketing and access network) at <http://www.ccr.gov/>.

U.S. Small Business Administration (SBA) Online Women's Business Center. For the Women's Business Center nearest you, go to: <http://www.onlinewbc.gov/> and select Women's Business Centers.

For additional information on listings of certified MBE/WBE contractors and subcontractors in the States of Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee, contact Rafael Santamaria in EPA Region 4 at 404 562-8312.

MINORITY AND WOMEN'S BUSINESS ENTERPRISE PARTICIPATION POLICY

MBE/WBE DATA SHEET I

PROJECT NAME: _____ **BID DATE:** _____

1. Name, address and telephone number of contact person on all MBE, WBE matters.

Contractor's Name: _____

Address: _____

Telephone Number: _____

2. Has the bidder met at least the minimum 3% and 5% goals?

Yes (submit MBE/WBE DATA SHEET II, including certifications and subcontracts (or letters of intent signed by both parties, identifying the type of work and the dollar amount) within 21 days)

No (submit MBE/WBE DATA SHEET III, including all documentation to support a good faith effort within 21 days)

If no, please provide an explanation of the bidders inability to achieve the required goals and list any uncommitted areas of work.



**MINORITY AND WOMEN'S BUSINESS ENTERPRISE PARTICIPATION POLICY
MBE/WBE DATA SHEET II**

PROJECT NAME: _____ **BID DATE:** _____

1. Contractor's Name/Address:

2. Contact Person Name & Phone Number:

3. Total contract amount:

4. Total dollar amount/percent of contract of MBE participation:

5. Total dollar amount/percent of contract of WBE participation:

6. Certifications or self-certification* for each subcontractor enclosed: Yes No
7. Subcontracts or letters of intent signed by both parties enclosed: Yes No

8. **List of MBE Subcontractors:**
Name: _____
Address: _____
Phone: _____
Contact Person: _____
Type of Contract: _____
Work to be Done: _____
Amount: _____

Name: _____
Address: _____
Phone: _____
Contact Person: _____
Type of Contract: _____
Work to be Done: _____
Amount: _____

9. **List of WBE Subcontractors:**
Name: _____
Address: _____
Phone: _____
Contact Person: _____
Type of Contract: _____
Work to be Done: _____
Amount: _____

Name: _____
Address: _____
Phone: _____
Contact Person: _____
Type of Contract: _____
Work to be Done: _____
Amount: _____

Attach Additional Sheets, If Necessary
*Self-certification: The subcontractor's attorney certifies on his/her letterhead that the subcontractor is a MBE, WBE or both. Call our office at (502) 564-2225, extension 562 if there are any questions.



MINORITY AND WOMEN'S BUSINESS ENTERPRISE PARTICIPATION POLICY

MBE/WBE DATA SHEET III

PROJECT NAME: _____ BID DATE: _____

1. Information concerning the efforts for obtaining subcontractor(s)

Name: _____
Address: _____
Phone: _____
Contact Person: _____
Contract Amount: _____
Amount of subcontract work: _____
Type of work to be subcontracted: _____

2. Information to be submitted by the bidder concerning good fair efforts taken

a. Announcement: List each publication in which an announcement or notification was placed and attach the tear sheet of each announcement from each publication

Name of publication: _____

Address: _____

Dates of announcement: _____

Specific subcontract areas announced: _____

b. List all Minority and Women Business Associations and/or offices contacted for assistance (i.e.: Minority Affairs Office, Louisville Minority Business Development Center).

(Attach a copy of each notification letter)

c. Minority and Women's Business: List each Minority and Women's Business construction firm or supplier to which a letter of solicitation was sent or with whom negotiations were held.

Company name and phone number: _____

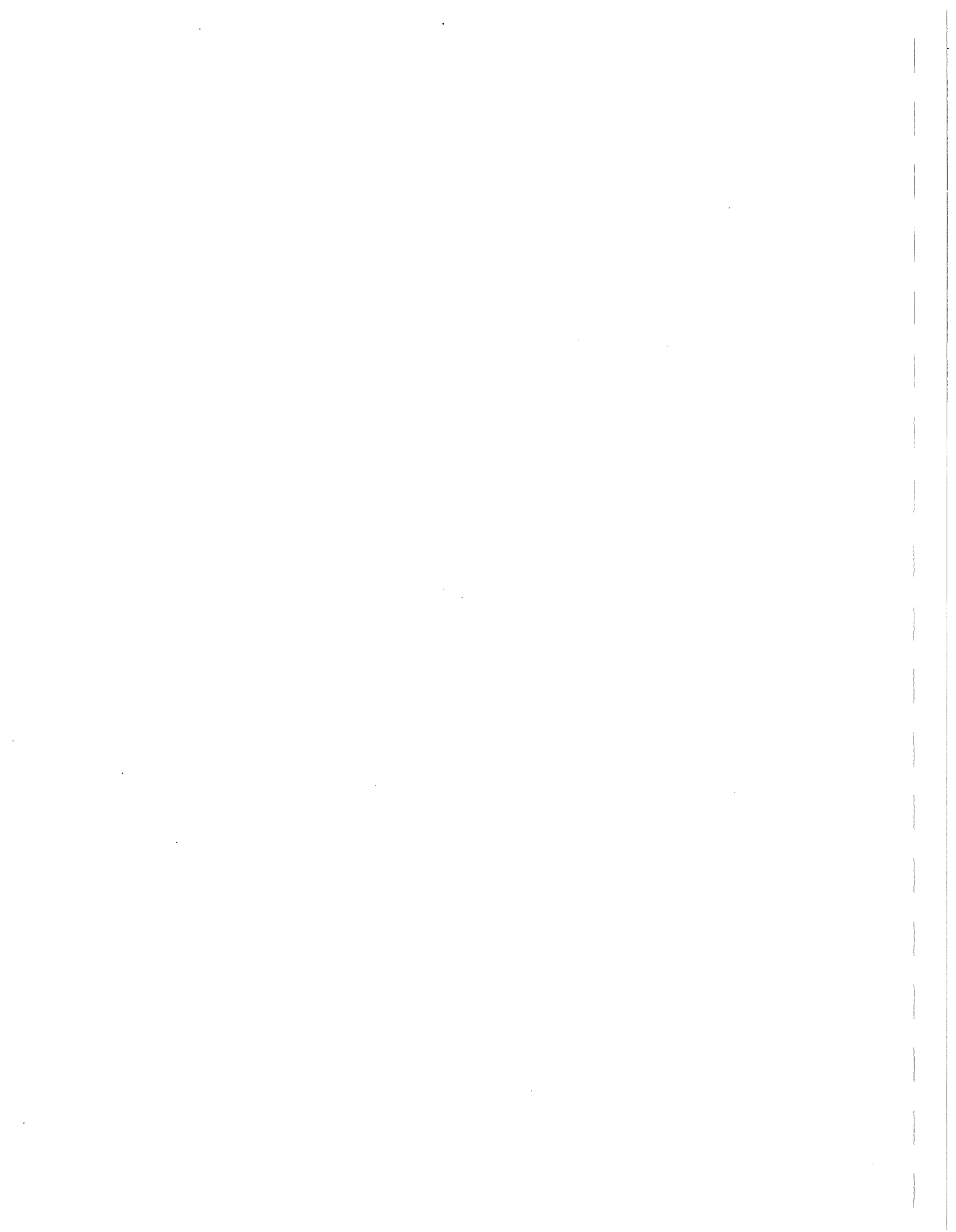
Area of Minority and Women's Business Expertise: _____

Date of any follow-up call and person spoke to: _____

d. Copies of returned envelopes.

e. Copies of certified mail return receipts.

f. Copies of letters from solicited firms declining offer.



**REGION 4 DISADVANTAGED BUSINESS ENTERPRISE (DBE) NEGOTIATED
RATES (Subject to change - refer to grant award for specific fair share objectives)**

KENTUCKY

SRF Construction:
(both programs)

3% MBE and 5% WBE

Equipment:

1.5% MBE and 6.4% WBE

Services:

4% MBE and 1.8% WBE

Supplies:*

2% MBE and 5% WBE



BONDS AND INSURANCE

Bonding requirements for contracts of \$100,000 or less are contained in 40 CFR 31.36(h).

Bond requirements for contracts in excess of \$100,000 are:

Bid guarantee equivalent to five percent of the bid price. The bid guarantee shall consist of a firm commitment such as a certified check or bid bond submitted with the bid;

Performance bond equal to 100 percent of the contract price, and

Payment bond equal to 100 percent of the contract price. Bonds must be obtained from companies holding Certificates of Authority as acceptable sureties, issued by the U.S. Treasury.

Insurance requirements are contained in the General Conditions of the contract. In addition to the other required insurance, the owner or the contractor, as appropriate, must acquire any flood insurance made available by the Federal Emergency Management Agency as required by 44 CFR Parts 59-79, if construction will take place in a flood hazard area identified by the Federal Emergency Management Agency. The owner's requirements on Flood Insurance are contained in the Special Conditions Section of the Contracts Documents.



OUTLAY MANAGEMENT

The contractor must provide a contract progress schedule of percentage of work in place and costs against time; and a schedule of projected payments (cumulative) for construction and for the architectural/engineering contract when the contract is awarded. The payment schedule must be submitted, in a format similar to the attached sample, to the owner for forwarding to the State when the contract is awarded, and whenever actual payments on a project vary beyond -5 percent and +10 percent from the schedule, as determined by the grantee.

Contractor will be required to review each of these contract schedules during the month of June and to submit revised schedules, as necessary, no later than July 1st of each year.



THIS FORMAT IS A SAMPLE ONLY.

CONSTRUCTION AND OUTLAY SCHEDULE

Project No.: _____

Applicant: _____

Contract Identification: _____

Description of Contract: _____

(INSTRUCTIONS FOR USE ON REVERSE SIDE)

SCHEDULE I - CONSTRUCTION SCHEDULE

Date for Advertisement: _____

Date for Opening Bids: _____

Pre-Construction Conference Date: _____

Date of Contract Award: _____

Contract Period: _____ days Projected Contract Completion Date: _____

Total Eligible Contract Amount: _____

Work Order Date: _____

Start Construction Date: _____

Contract Completed: _____

SCHEDULE II - CUMULATIVE OUTLAY SCHEDULE (55% EPA Share) - Projection
only for quarters that remain in the fiscal year (FY) plus cumulative
annual amount for the next FY.

Cum EPA Amount thru 1 st Qtr. Oct./Dec.:	\$ _____
Cum EPA Amount thru 2 nd Qtr. Jan./Mar.:	\$ _____
Cum EPA Amount thru 3 rd Qtr. Apr./June:	\$ _____
Cum EPA Amount thru 4 th Qtr. July/Sept.:	\$ _____
Cum EPA Amount for Next Fiscal Year:	\$ _____



INSTRUCTIONS

To insure timely achievement of the grant objectives the owner (grantee) must provide EPA with a grants activities schedule, contract construction schedules and corresponding payment outlay schedules for the grant and each contract under the grant. One copy of information similar to that showing the Construction and Outlay Schedule Form will be submitted for the grant schedule with the grant acceptance. A separate form will accompany each contract at time of contract award.

- A. The grant activities schedule shall depict the period from grant award through grant closeout and cover all major milestone date. The grant activities schedule shall include Schedule I information items as well as other appropriate items necessary to monitor the grant. Schedule II shall be filled out to estimate the cumulative (all construction and architectural/engineering contracts) payment schedule to be requested by the grantee from EPA during the grant period, and whenever actual outlays vary beyond -5% and +10% from the schedule.
- B. Individual contractor's construction schedules for each contract will be submitted to support the grant activities schedule. The Schedule I shall be submitted prior to date of advertisement of each contract and Schedule II along with the contractor's construction schedule shall be submitted seven (7) calendar days prior to the dates of the pre-construction conference. The contractor's construction schedule shall depict the contractor's plan for completing all contract requirements and show work placement in dollars versus contract time. Schedule II shall depict the contract payment outlay by month or quarter. The contract schedule will be coordinated with all parties at the pre-construction conference.

The grants activities schedule, contractor construction schedules, will be the basis for monitoring progress towards completion of the project. The schedules shall be maintained at the available for inspection and updated at least monthly. The schedules shall be revised to incorporate approved change orders as they occur.

All of the schedules will be submitted to the State Division of Water.

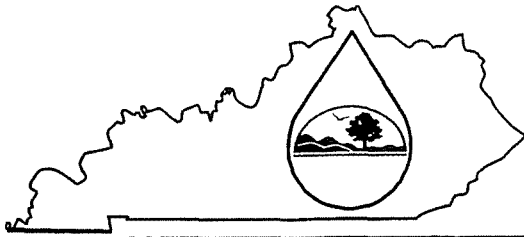


NOTICE OF INTENT

All construction projects with surface disturbance of more than 1 acre during the period of construction must have a KPDES Storm Water General Permit. The contractor must complete and submit the attached form at least 48 hours prior to start of construction to the address below:

Section Supervisor
Inventory and Data Management Section
KPDES Branch
Kentucky Division of Water
14 Reilly Road, Frankfort Office Park
Frankfort, Kentucky 40601





Kentucky Pollutant Discharge Elimination System (KPDES)
 Notice of Intent (NOI)
 for Storm Water Discharges
 Associated with Industrial Activity Under the
 KPDES General Permit

Submission of this Notice of Intent constitutes notice that the party identified in Section I of this form intends to be authorized by a KPDES permit issued for storm water discharges associated with industrial activity. Becoming a permittee obligates such discharger to comply with the terms and conditions of the permit.

ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM (See Instructions on back)

I. Facility Operator Information

Name:		Phone:	
Address:		Status of Owner/Operator:	
City, State, Zip Code:			

II. Facility/Site Location Information

Name:			
Address:			
City, State, Zip Code:			
County:			
Site Latitude: (degrees/minutes/seconds)		Site Longitude: (degrees/minutes/seconds)	

III. Site Activity Information

MS4 Operator Name:				
Receiving Water Body:				
Are there existing quantitative data?	Yes <input type="checkbox"/>	If Yes, submit with this form.		
	No <input type="checkbox"/>			
SIC or Designated Activity Code Primary		2 nd	3 rd	4 th
If this facility is a member of a Group Application, enter Group Application Number:				
If you have other existing KPDES Permits, enter Permit Numbers:				

IV. Additional Information Required FOR CONSTRUCTION ACTIVITIES ONLY

Project Start Date:		Completion Date:	
Estimated Area to be disturbed (in acres):			
Is the Storm Water Pollution Prevention Plan in Compliance with State and/or Local Sediment and Erosion Plans?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Printed or Typed Name:			
Signature:		Date:	

Kentucky Pollutant Discharge Elimination System (KPDES)
Instructions
Notice of Intent (NOI) for Storm Water Discharges Associated with Industrial Activity
To Be Covered Under The KPDES General Permit

WHO MUST FILE A NOTICE OF INTENT (NOI) FORM

Federal law at 40 CFR Part 122 prohibits point source discharges of stormwater associated with industrial activity to a water body of the Commonwealth of Kentucky without a Kentucky Pollutant Discharge Elimination System (KPDES) permit. The operator of an industrial activity that has such a storm water discharge must submit a NOI to obtain coverage under the KPDES Storm Water General Permit. If you have questions about whether you need a permit under the KPDES Storm Water program, or if you need information as to whether a particular program is administered by the state agency, call the Storm Water Contact, Industrial Section, Kentucky Division of Water at (502) 564-3410.

WHERE TO FILE NOI FORM

NOIs must be sent to the following address:

Section Supervisor
Inventory & Data Management Section
KPDES Branch, Division of Water
Frankfort Office Park
14 Reilly Road
Frankfort, KY 40601

COMPLETING THE FORM

Type or print legibly in the appropriate areas only. If you have any questions regarding the completion of this form call the Storm Water Contact, Industrial Section, at (502) 564-3410.

SECTION I - FACILITY OPERATOR INFORMATION

Give the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in this application. The name of the operator may or may not be the same as the name of the facility. The responsible party is the legal entity that controls the facility's operation, rather than the plant or site manager. Do not use a colloquial name. Enter the complete address and telephone number of the operator.

Enter the appropriate letter to indicate the legal status of the operator of the facility.

F = Federal M = Public (other than federal or state)
S = State P = Private

SECTION II - FACILITY/SITE LOCATION INFORMATION

Enter the facility's or site's official or legal name and complete street address, including city, state, and ZIP code.

SECTION III - SITE ACTIVITY INFORMATION

If the storm water discharges to a municipal separate storm sewer system (MS4), enter the name of the operator of the MS4 (e.g., municipality name, county name) and the receiving water of the discharge from the MS4. (A MS4 is defined as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is owned or operated by a state, city, town, borough, county, parish, district, association, or other public body which is designed or used for collecting or conveying storm water.)

If the facility discharges storm water directly to receiving water(s), enter the name of the receiving water.

Indicate whether or not the owner or operator of the facility has existing quantitative data that represent the characteristics and concentration of pollutants in storm water discharges.

If data is available submit with this form.

List, in descending order of significance, up to four 4-digit standard industrial classification (SIC) codes that best describe the principal products or services provided at the facility or site identified in Section II of this application.

If the facility listed in Section II has participated in Part 1 of an approved storm water group application and a group number has been assigned, enter the group application number in the space provided.

If there are other KPDES permits presently issued for the facility or site listed in Section II, list the permit numbers.

SECTION IV - ADDITIONAL INFORMATION REQUIRED FOR CONSTRUCTION ACTIVITIES ONLY

Construction activities must complete Section IV in addition of Sections I through III. Only construction activities need to complete Section IV.

Enter the project start date and the estimated completion date for the entire development plan.

Provide an estimate of the total number of acres of the site on which soil will be disturbed (round to the nearest acre).

Indicate whether the storm water pollution prevention plan for the site is in compliance with approved state and/or local sediment and erosion plans, permits, or storm water management plans.

SECTION V - CERTIFICATION

Federal statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed as follows:

For a corporation: by a responsible corporate officer, which means: (i) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For a partnership or sole proprietorship: by a general partner or the proprietor; or

For a municipality, state, Federal, or other public facility: by either a principal executive officer or ranking elected official.

WAGE RATES

Federal Davis-Bacon rates are not applicable for these funds. This determination applies only to the grant/loan portion of this project. Please contact the other funding sources, if applicable, for their requirements pertaining to federal wage rates. You must contact the Kentucky Labor Cabinet for determination of applicable state wages.



STATE WAGE RATES





Ernie Fletcher
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

Teresa J. Hill
Secretary

Philip J. Anderson
Commissioner

Christopher H. Smith
Executive Director

October 31, 2006

Jeff Reynolds
HMB Engineers
3 HMB Circle
Frankfort KY 40601

Re: South Woodford Water District, Phase IV Water Project
120-H-00041-05-2, Heavy/Highway

Advertising Date as Shown on Notification: November 1, 2006

Dear Jeff Reynolds:

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-2-007, dated May 18, 2005 for WOODFORD 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.

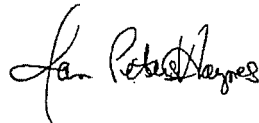
The determination number assigned to this project is based upon the advertising date contained in your notification. There may be modifications to this wage determination prior to the advertising date indicated. In addition, if the contract is not awarded within 90 days of this advertising date or if 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:
120-H-00041-05-2, Heavy/Highway

Sincerely,

LR-2







Jan Peters-Haynes
Prevailing Wage Specialist

KENTUCKY DEPARTMENT OF LABOR
PREVAILING WAGE DETERMINATION
CURRENT REVISION
LOCALITY NO. 007

Determination No. CR-2-007

Project No.
120-H-00041-05-2, Heavy/Highway

Date of Determination: May 18, 2005

This schedule of the prevailing rate of wages for Locality No. 007, which includes Anderson, Franklin & Woodford 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-2-007.

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.

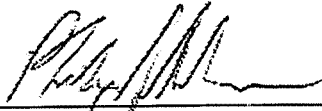
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HIGHWAY CONSTRUCTION

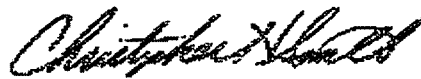
Highway construction includes the construction, alteration or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, and other similar projects not incidental to building or heavy construction. It includes all incidental construction in conjunction with the highway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



Philip J. Anderson, Commissioner
Kentucky Department of Labor



Christopher H. Smith, Executive Director
Office of Workplace Standards
Kentucky Department of Labor

Ratified September 28, 2005

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

ASBESTOS/INSULATION WORKERS:		BASE RATE	\$16.00
		FRINGE BENEFITS	2.00

BOILERMAKERS:		BASE RATE	\$24.65
		FRINGE BENEFITS	12.94

BRICKLAYERS:

Bricklayers:		BASE RATE	\$20.43
		FRINGE BENEFITS	5.33

Layout & Sawmen:		BASE RATE	\$20.68
		FRINGE BENEFITS	5.33

Refractory/Acid/Glass:		BASE RATE	\$20.93
		FRINGE BENEFITS	5.33

CARPENTERS:

Carpenters:	BUILDING	BASE RATE	\$16.63
		FRINGE BENEFITS	6.08

Piledrivermen	BUILDING	BASE RATE	\$17.13
		FRINGE BENEFITS	6.08

Carpenters:	HEAVY & HIGHWAY	BASE RATE	\$20.70
		FRINGE BENEFITS	5.68

Pildrivermen:	HEAVY & HIGHWAY	BASE RATE	\$20.95
		FRINGE BENEFITS	5.68

Divers:	HEAVY & HIGHWAY	BASE RATE	\$31.43
		FRINGE BENEFITS	5.68

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CLASSIFICATIONS

RATE AND FRINGE BENEFITS

CEMENT MASONS: BASE RATE \$ 17.50
 FRINGE BENEFITS 4.95

ELECTRICIANS: BASE RATE \$25.75
 FRINGE BENEFITS 9.52

***When electricians are required to work from Bosun chairs, trusses, stacks, tanks, scaffolds, catwalks, radio and TV towers, structural steel-open, unprotected, unfloored raw steel, bridges, or similar hazardous locations where workman are subject to a direct fall (except for work performed using JLG's and bucket trucks up to 75 ft.): 50' to 75' - add 25% above workman's straight time rate; over 75' - add 50% above workman's straight time rate.**

ELEVATOR CONSTRUCTORS: BASE RATE \$27.40
 FRINGE BENEFITS 9.60

ANDERSON COUNTY:

GLAZIERS: BASE RATE \$10.00

FRANKLIN COUNTY:

GLAZIERS: BASE RATE \$18.01
 FRINGE BENEFITS 3.88

WOODFORD COUNTY:

GLAZIERS: BASE RATE \$15.45

IRONWORKERS: BASE RATE \$23.16
 FRINGE BENEFITS 13.00

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

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 checkers excluding all field work performed by engineering firms), concrete pouring and curing, concrete form 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	\$13.73
	FRINGE BENEFITS	5.32

BUILDING GROUP 2:

All air tool operators, air track drills, asphalt rakers, tampers, batchers plant and scale man, chain saw, concrete saw, 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 tenders, multi-trade tender, pipe layers, plaster tenders, 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, walk behind trenching machines, mortar mixer machines, water pumpmen, and environmental laborers - nuclear, radiation, toxic and hazardous waste - Level C:

BUILDING	*BASE RATE	\$14.13
	FRINGE BENEFITS	5.32

BUILDING GROUP 3:

Gunnite nozzleman and gunnite nozzle machine operator, sand blaster nozzleman, concrete or grout pumpman, plaster pumpman:

BUILDING	*BASE RATE	\$14.33
	FRINGE BENEFITS	5.32

BUILDING GROUP 4:

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

BUILDING	*BASE RATE	\$14.43
	FRINGE BENEFITS	5.32

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

LABORERS/ BUILDING: (Continued)

BUILDING GROUP 5:

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

BUILDING	*BASE RATE	\$14.93
	FRINGE BENEFITS	5.32

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	\$15.23
	FRINGE BENEFITS	5.32

***Employees handling chemically treated materials which are harmful to the skin shall receive an additional \$.25 above base rate. Any employee working on high work such as towers or smoke stacks or any type of work putting the employee 50 feet above the ground or a solid floor shall receive an additional \$.50 per hour above the base rate. Any employee working on boilers, kilns, melting tanks, furnaces, or when refractory is done using live fire, drying fires, heatups or any hot work shall receive an additional 25% premium above the base rate.**

LABORERS/ HEAVY HIGHWAY:

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	\$16.34
	FRINGE BENEFITS	7.38

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

LABORERS/ HEAVY HIGHWAY: (Continued)

HEAVY HIGHWAY GROUP 2:

Batter board men (sanitary and storm sewer), brickmason tenders, mortar mixer operator, burner and welder, bushhammers, chain saw operator, concrete saw operators, deckhand scow man, dry cement handlers, environmental 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	\$16.59
	FRINGE BENEFITS	7.38

HEAVY HIGHWAY 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	\$16.64
	FRINGE BENEFITS	7.38

HEAVY HIGHWAY 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	\$17.24
	FRINGE BENEFITS	7.38

MARBLE, TILE & TERRAZZO:

Finishers:	BASE RATE	\$19.59
	FRINGE BENEFITS	3.70

Workers:	BASE RATE	\$13.34
	FRINGE BENEFITS	3.05

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

MILLWRIGHTS:

BASE RATE \$19.34
FRINGE BENEFITS 8.58

OPERATING ENGINEERS:

OPERATING ENGINEERS/ BUILDING:

BUILDING CLASS A:

Auto Patrol, Batch Plant, Bituminous Paver, Cableway, Carrydeck Crane, Central Compressor Plant, Clamshell, Concrete Mixer (21 cu. ft. 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, Heavy Equipment Robotics Operator/Mechanic, Hoe-Type Machine, Hoist (1 drum when used for stack or chimney construction or repair), Hoisting Engine (2 or more drums), Horizontal Directional Drill Operator, Hydraulic Boom Trucks, Locomotive, Mechanically Operated Laser Screed, Motor Scraper, Carry-all Scoop, Bulldozer, Heavy Duty Welder, Mechanic, Orangepeel Bucket, Overhead Crane, Piledriver, Power Blade, Motor Grader, Roller (bituminous), Scarifier, Shovel, Tractor Shovel, Truck Crane, Winch Truck, Push Dozer, Forklift (regardless of lift height and except when used for masonry construction), Telescoping Type Forklift, Highlift, 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 \$21.00
 FRINGE BENEFITS 9.65

***Operators on cranes with boom one-hundred fifty feet (150') and over including jib, shall receive one dollar (\$1.00) above base rate, two-hundred twenty-five feet (225') and over including jib shall receive one dollar and fifty-cents (\$1.50) above base rate. All cranes with piling leads will receive one dollar (\$1.00) above base rate regardless of boom length.**

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

OPERATING ENGINEERS/ BUILDING: (Continued)

BUILDING CLASS B:

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 Engineer (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:

BUILDING	BASE RATE	\$18.26
	FRINGE BENEFITS	9.65

BUILDING CLASS C:

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	\$17.49
	FRINGE BENEFITS	9.65

Employees assigned to work below ground level are to be paid ten percent (10%) above base wage rate. This does not apply to open cut work.

OPERATING ENGINEERS/ HEAVY HIGHWAY:

Continued on next page.

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

OPERATING ENGINEERS/ HEAVY HIGHWAY: (Continued)

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, Gurries, Heavy Equipment Robotics Operator/Mechanic, Highlift, 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, Tailboom, Telescoping Type Forklift, Tow or Push Boat, Tower Cranes (French, German and other types), Tractor Shovel, Truck Crane, Tunnel Mining Machines including Moles, Shields, or Similar types of Tunnel Mining Equipment:

HEAVY & HIGHWAY	**BASE RATE	\$22.15
	FRINGE BENEFITS	10.40

****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.), 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, Flex-Plane, 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, Switchman or Brakeman, Throttle Valve Man, Tractair and Road Widening Trencher, Tractor (50 HP and over), Truck Crane Oiler, Tugger, Welding Machine, Well Points, and Whirley Oiler:

HEAVY & HIGHWAY	BASE RATE	\$19.73
	FRINGE BENEFITS	10.40

CLASSIFICATIONS RATE AND FRINGE BENEFITS

OPERATING ENGINEERS/ HEAVY HIGHWAY: (Continued)

HEAVY HIGHWAY CLASS B2:

Greaser on Grease Facilities servicing Heavy Equipment:

HEAVY & HIGHWAY	BASE RATE	\$20.11
	FRINGE BENEFITS	10.40

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	\$19.47
	FRINGE BENEFITS	10.40

Employees assigned to work below ground level are to be paid ten percent (10%) above base wage rate. This does not apply to open cut work.

PAINTERS:

Brush & Roller:	BUILDING	BASE RATE	\$14.35
		FRINGE BENEFITS	3.87

Spray & Sandblast:	BUILDING	BASE RATE	\$14.85
		FRINGE BENEFITS	3.87

Brush & Roller:	HEAVY & HIGHWAY	BASE RATE	\$18.20
		FRINGE BENEFITS	5.08

Drywall Finishers & Plasterers:	HEAVY & HIGHWAY	BASE RATE	\$18.45
		FRINGE BENEFITS	5.08

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CLASSIFICATIONS

RATE AND FRINGE BENEFITS

PAINTERS: (Continued)

Spray, Sandblast, Power Tools, Waterblast, Steam Cleaning; Brush & Roller of Mastics, Creosotes, Kwinch Koate and Coal Tar Epoxy:

HEAVY & HIGHWAY	BASE RATE	\$19.20
	FRINGE BENEFITS	5.08

Spray of Mastics, Creosotes, Kwinch Koate and Coal Tar Epoxy:

HEAVY & HIGHWAY	BASE RATE	\$20.20
	FRINGE BENEFITS	5.08

PLASTERERS:

BASE RATE	\$20.65
FRINGE BENEFITS	5.85

PLUMBERS & PIPEFITTERS:

BASE RATE	\$26.31
FRINGE BENEFITS	10.61

ROOFERS: (Excluding Metal Roofs)

BASE RATE	\$17.90
FRINGE BENEFITS	5.73

SHEETMETAL WORKERS: (Including Metal Roofs)

BASE RATE	\$26.35
FRINGE BENEFITS	9.99

SPRINKLER FITTERS:

BASE RATE	\$25.05
FRINGE BENEFITS	11.00

BUILDING TRUCK DRIVERS:

Truck Helper and Warehouseman:

BUILDING	BASE RATE	\$15.60
	*FRINGE BENEFITS	6.23

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CLASSIFICATIONS

RATE AND FRINGE BENEFITS

TRUCK DRIVERS:

TRUCK DRIVERS/ BUILDING:

Driver - 3 tons and under, Greaser, Tire Changer and Mechanic Helper:

BUILDING	BASE RATE	\$15.72
	*FRINGE BENEFITS	6.23

Driver - over 3 tons, Drivers, Semi-Trailer or Pole Trailer; Dump Trucks, Tandem Axle; Farm Tractor when used to pull building material or equipment:

BUILDING	BASE RATE	\$15.83
	*FRINGE BENEFITS	6.23

Drivers, Concrete Mixer Trucks (all types, hauling on job sites only); Truck Mechanics:

BUILDING	BASE RATE	\$15.90
	*FRINGE BENEFITS	6.23

Drivers, Euclid and other Heavy Earth Moving Equipment and Low Boy, Winch Truck and A-Frame Truck and Monorail Truck when used to transport building materials, Forklift Truck when used inside warehouse or storage area:

BUILDING	BASE RATE	\$16.00
	*FRINGE BENEFITS	6.23

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.

***TRUCK DRIVER Fringe benefits - Apply to each employee (whose name appears on the payroll that week) who has been employed a minimum of twenty (20) calendar days within any ninety (90) consecutive day period for that employer.**

TRUCK DRIVERS/ HEAVY & HIGHWAY:

Mobile batch truck helper:	HEAVY & HIGHWAY	BASE RATE	\$16.57
		**FRINGE BENEFITS	7.34

Greaser, tire changer and mechanic helper:

HEAVY & HIGHWAY	BASE RATE	\$16.68
	**FRINGE BENEFITS	7.34

CLASSIFICATIONS RATE AND FRINGE BENEFITS

TRUCK DRIVERS/ HEAVY & HIGHWAY: (Continued)

Driver-single axle dump and flatbed truck, semi-trailer or pole trailer when used to pull building materials and equipment, tandem axle dump truck, driver of distributors, driver on mixer trucks(all types) & truck mechanic:

HEAVY & HIGHWAY	BASE RATE	\$16.86
	**FRINGE BENEFITS	7.34

Driver-Euclid and other heavy earthmoving equipment and low-boy, articulator, cat truck, 5-axle wheel, winch truck and A-Frame truck when used in transporting materials, Ross Carrier, forklift truck when used to transport building materials, driver on pavement breakers:

HEAVY & HIGHWAY	BASE RATE	\$16.96
	**FRINGE BENEFITS	7.34

****TRUCK DRIVER FRINGE BENEFITS apply to employees who have been employed a minimum of twenty (20) calendar days within any ninety (90) consecutive day period of that employer.**

**END DOCUMENT CR-2-007
MAY 18, 2005**

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

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

(Name of Surety)

hereinafter called SURETY, are held and firmly bound unto _____

(Name of Owner)

(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 (\$ _____) 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 CONDITIONS OF THIS OBLIGATION is such that whereas, the PRINCIPAL entered into a certain contract with the OWNER, dated the _____ day of _____, 20 __, a copy of which is hereto attached and made a part hereof for the construction of: _____

NOW, THEREFORE, if the PRINCIPAL shall promptly make payment to all persons, firms, and corporations furnishing materials for or performing labor in prosecution of the WORK provided for in such contract, and any authorized extensions or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and for all labor cost incurred in such WORK including that by a SUBCONTRACTOR, and to any mechanic or materialman lienholder whether it acquires its lien by operation of State or Federal law; then this obligation shall

be void, otherwise to remain in full force and effect.

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

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

PROVIDE FURTHER, that no suit or action shall be commenced hereunder by any claimant: (a) Unless claimant, other than one having a direct contract with the PRINCIPAL shall have given written notice to any two of the following: the PRINCIPAL, the OWNER, or the SURETY above named within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating 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 shall include any alteration, addition, extension or modification of any character whatsoever.

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

WITNESS WHEREOF, this instrument is executed in _____ counterparts, each of which
Number

shall be deemed an original, this the _____ day of _____.

ATTEST:

(Principal) Secretary

(SEAL)

Principal

By _____

(Address)

Witness as to Principal

(Address)

Surety

ATTEST:

Witness as to Surety

(Address)

By _____

Attorney-in-Fact

(Address)

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

If CONTRACTOR is partnership, all partners should execute BOND. IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the PROJECT is located.



PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

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

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto _____

(Name of Owner)

(Address of Owner)

hereinafter called OWNER, in the total aggregate penal sum of _____
_____ Dollars (\$ _____)

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 _____ 20 _____, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the SURETY and during the one year guaranty period and if the PRINCIPAL shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, 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 shall include any alteration, addition, extension, or modification of any character whatsoever.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each one
Number

of which shall be deemed an original, this the _____ day of _____.

ATTEST:

(Principal) Secretary

(SEAL)

Principal

By _____(s)

(Witness as to Principal)

(Address)

(Address)

Surety

ATTEST:

Witness to Surety

By _____
Attorney-in-Fact

(Address)

(Address)

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

If CONTRACTOR is partnership, all partners should execute BOND.

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



CONTRACT AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 20__

by and between _____
(Owner)

acting through its _____ hereinafter
called _____
(Mayor, Utility Commission, Chairmen)

the OWNER and _____ doing business as
(Contractor)

_____ of the city of _____
(an individual) (partnership) (a corporation)

_____, County, State of _____

hereinafter called the CONTRACTOR.

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

The CONTRACTOR will commence and complete the construction of

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

The CONTRACTOR will commence work under this contract on or before the date to be specified by the Owner, in a written "Notice to Proceed" and will fully complete the project within _____ consecutive calendar days thereafter. The CONTRACTOR further agrees to pay as liquidated damages, the sum of \$_____ For each consecutive calendar day that the work remains uncomplete after the expiration date of this contract, as modified by Change Order.

The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS for the sum of \$_____, or as shown in the Bid Schedule, Pages BS _____ thru BS _____.

The term "CONTRACT DOCUMENTS" means and includes the following:
SPECIFICATIONS prepared or issued by HMB Professional Engineers, Inc.

<u>TITLE</u>	<u>DESIGNATION</u>
Advertisement for Bids	<u>AD</u>
Instructions to Bidders	<u>IB</u>
General Conditions	<u>GC</u>
Labor Regulations	<u>LR</u>
Performance and Payment Bond	<u>PB</u>
Contract Agreement	<u>CON</u>
Notice of Award	<u>NA</u>
Notice to Proceed	<u>NP</u>
Change Order Format	<u>CO</u>
Special Conditions	<u>SC</u>
Technical Specifications	<u>TS</u>
Bid Schedule	<u>BS</u>

DRAWINGS prepared by HMB Professional Engineers, Inc.
numbered _____ through _____ and dated _____.

The following ADDENDA are included as part of this Contract:

ADDENDUM NO. _____

DATE

The OWNER shall make progress payments as the work is completed, in accordance with the appropriate Articles of the General Conditions.

Final payment shall be due thirty (30) days after completion and acceptance of the work.

Before issuance of final certificate, the Contractor shall submit evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the work have been paid.

If, after the work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and the Engineer so certifies, the Owner shall, upon certificate of the Engineer and without terminating the contract, make payment of the balance due for that portion of the work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

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

This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

CONTRACTOR

ATTEST:

Title
(SEAL)

By _____
Title

ATTEST:

OWNER

Title

By _____
Title



NOTICE OF AWARD

TO: _____

PROJECT Description _____

The OWNER has considered the BID submitted by you for the above described WORK in response to its Advertisement for Bids dated _____ 20 _____, and Instructions to Bidders.

You are hereby notified that your BID has been accepted for items in the amount of \$ _____, in accordance with the Bid Schedule.

You are required by the Instructions to Bidders to execute the Agreement and furnish the required Contractor's Performance Bond and Payment Bond within ten calendar days from the date of this Notice to you.

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

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

Dated this _____ day of _____, 20 _____.

Owner
By _____
Title _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by

_____ this the _____ of
_____, 20 _____.

Contractor Title



NOTICE TO PROCEED

TO _____ DATE: _____

PROJECT: _____

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

OWNER
By _____
Title _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____, this the _____ day of _____, 20 _____.

By _____
Title _____

CONTRACT CHANGE ORDER

ORDER NO. _____

DATE _____

STATE _____

COUNTY _____

CONTRACT FOR _____

OWNER _____

To: _____
 (Contractor)

You are hereby requested to comply with the following changes from the contract plans and specifications:

Description of Changes (Supplemental Plans and Specifications Attached)	DECREASE in Contract Price	INCREASE in Contract Price
	\$ _____	\$ _____
TOTALS	\$ _____	\$ _____
NET CHANGE IN CONTRACT PRICE	\$ _____	\$ _____

JUSTIFICATION:

The Original amount of the Contract is: _____ Dollars (\$ _____).

The amount of the current Contract including previous Change Orders: _____ Dollars (\$ _____).

The amount of the Contract will be (Increased Decreased) by this Change Order the sum of _____ Dollars (\$ _____).

The Contract Total including this and previous Change Orders will be: _____ Dollars (\$ _____).

The Contract period provided for completion will be increased: _____ Days

This document will become a supplement to the contract and all provisions will apply hereto.

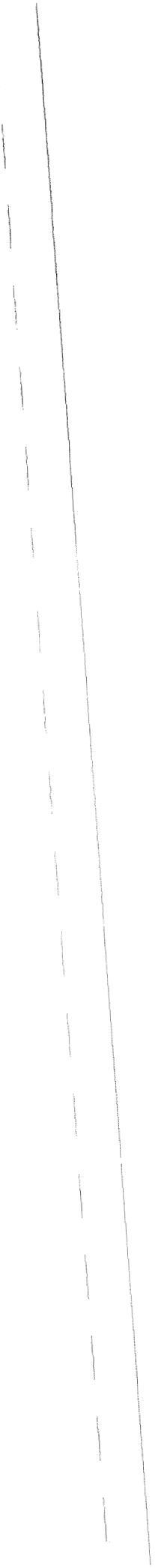
Requested _____ (Owner) _____ (Date)

Recommended _____ (Owner's Architect/Engineer) _____ (Date)

Accepted _____ (Contractor) _____ (Date)

Approved By _____ (Name and Title) _____ (Date)

This information will be used as a record of any changes to the original construction contract.



SPECIAL CONDITIONS

1. PROJECT FUNDING

Contractors bidding the project should be aware that funding is provided by a KIA Tobacco Grant, Special Appropriation EPA Grant, and KRWA Loan.

2. PROJECT INSPECTION

The Inspection services shall be provided by the Engineer. The Inspector shall be on the project at all times; however, due to meetings, etc. there may be times when he is not with the crew. Therefore, the Contractor shall not backfill any water main and/or appurtenances until the Inspector has seen it.

3. PRIORITY OF CONSTRUCTION

The Contractor shall proceed from the beginning point of a line and/or road and start installing water line and appurtenances and placing sections of line in service continuing to the end of the line. Jumping or skipping around laying scattered sections of water lines shall not be permitted. When a road is completed, cleanup must commence immediately. The Owner will hold payment on sections due to skipping; the intent is to proceed toward the end of the line, hooking up as many customers as is possible. Priority by road is as follows:

- | | |
|----------------------|----------------------|
| 1) Dry Ridge Road | 2) Shannon Run Road |
| 3) Hifner Road | 4) Craigs Creek Road |
| 5) Bowman Road | 6) Curds Lane |
| 7) Griers Creek Road | 8) Brushy Run Road |

4. DOT PERMIT COMPLIANCE

Contractor should take note of typical items required by DOT. The Contractor shall be responsible for complying with the various items listed in the DOT permit. See Appendix A-DOT Permit.

5. COUNTY ROAD PERMIT

Contractor should take note of the items required as part of the County Road Permit (Appendix B - County Road Permit). The Contractor shall be responsible for complying with the various items listed in the permit. Note: Flowable fill concrete shall be used where the water line is laid within 3 feet of the pavement.

6. UNCLASSIFIED EXCAVATION

All excavation is unclassified, no extra payment will be allowed for solid rock excavation. It is the Contractor's responsibility to make any additional investigations.

7. CONFLICTING SECTIONS/STATEMENTS IN THE TECHNICAL SPECIFICATIONS

It shall be noted that if any provision in these Technical Specifications is in conflict and/or is inconsistent with any other section or provision, then the most stringent shall apply per the interpretation of the ENGINEER.

8. FEDERAL/STATE/LOCAL REGULATIONS

The Contractor shall abide by all local and state laws or ordinances to the extent that such requirements do not conflict with federal laws or regulations.

9. SILTATION AND SOIL EROSION

The Contractor shall make every effort during construction to minimize siltation and soil erosion.

10. ROUGH CLEAN UP

- a. Rough clean up shall be performed on a daily basis concurring with the daily rate of production for pay items, amounts and/or quantities listed in the schedule of values.
- b. The Contractor is to provide sufficient labor and equipment for clean up as to not impede production schedules.
- c. Rough clean up shall be defined as follows:
 1. All open ditches shall be backfilled on a daily basis.
 2. Debris (rocks, roots, timber, etc.) shall be removed from the job site on a daily basis. This material may be stockpiled with the consent of the owner and the engineer in designated locations.
 3. Remaining backfill material (soil) shall be windrowed back on top of the ditch line, compacted and leveled giving consideration for settlement.

- d. At the direction of the engineer or his/her appointed representative, the Contractor shall readdress areas if identified as not being adequate in the initial rough clean process.

11. PROJECT PHOTOGRAPHY

The Contractor shall video tape each work area prior to beginning any construction. The audio portion of the video shall indicate the line being shown and the location along the line with addresses. The video shall show conditions of the adjacent properties prior to construction work beginning. These tapes shall be used to resolve any disputes with property owners.

The Contractor shall maintain one copy of each tape at his office and supply the Engineer and the Owner with one copy of each tape in VHS format. Each tape shall be labeled with the name of the city, the contract number and a reference number. A list of the contents of each tape shall also be submitted correlating with the reference number. ***Absolutely no construction will be permitted until video taping is completed and the Owner and the Engineer are supplied with copies of the video.***

12. QUANTITIES OF MATERIALS

The quantities of materials listed on the Bid Schedule are estimates only. The Contractor shall verify these quantities before ordering materials. In the event of an under run or over run of materials, the Contractor shall be responsible for any shipping and/or restocking fees.

13. PUMP STATION START-UP/WARRANTY

Start-up on the pump station will be performed once Contract II (250,000 Gallon Elevated Tank) has been completed. The one year warranty period will begin the date of the start-up. The time of completion for the pump station will be extended until the completion of Contract II (250,000 Gallon Elevated Tank).

13. EPA SPECIAL CONDITIONS

- a. 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 that 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.

- b. Change orders to the construction contract must comply with DOW Procurement Guidance for Construction and Equipment Contracts.
- c. Change orders exceeding \$25,000 require cost, pricing and certification.
- d. Contractor shall implement Best Management Practices as described in the Kentucky Best Management Practices for Construction Activities prepared by Division of Conservation and Division of Water, Natural Resources and Environmental Protection Cabinet.

14. PROJECT REQUIREMENTS

All Contractors bidding this project should be aware of the following requirements; while not all inclusive, the list is representative of those items that will be enforced by the Engineer during this project.

- a. The Owner requires Badger Meters
- b. The Owner requires Eclipse Post Hydrant
- c. Two inch PVC casing shall be used to encase service lines under state or county maintained roads.

SECTION 01010
Summary of Work

PART 1 GENERAL

1.1 DESCRIPTION

- A. The Work to be performed under this Contract shall consist of furnishing all labor, materials, tools, equipment and incidentals and performing all Work required to construct complete in place and ready to operate:
1. 28,200 L.F. of Various Size Water Line and Appurtenances
 2. 225 GPM Booster Pump Station and Appurtenances
- B. All Work described above shall be performed as shown on the Drawings and as specified.

1.2 PROJECT LOCATION

The equipment and materials to be furnished will be installed at the locations shown on the Drawings.

1.3 QUANTITIES

The Owner reserves the right to alter the quantities of work to be performed or to extend or shorten the improvements at any time when and as found necessary, and the Contractor shall perform the work as altered, increased or decreased. Payment for such increased or decreased quantity will be made in accordance with the Instructions to Bidders. No allowance will be made for any change in anticipated profits nor shall such changes be considered as waiving or invalidating any conditions or provisions of the Contract and Bond.

END OF SECTION



SECTION 01016

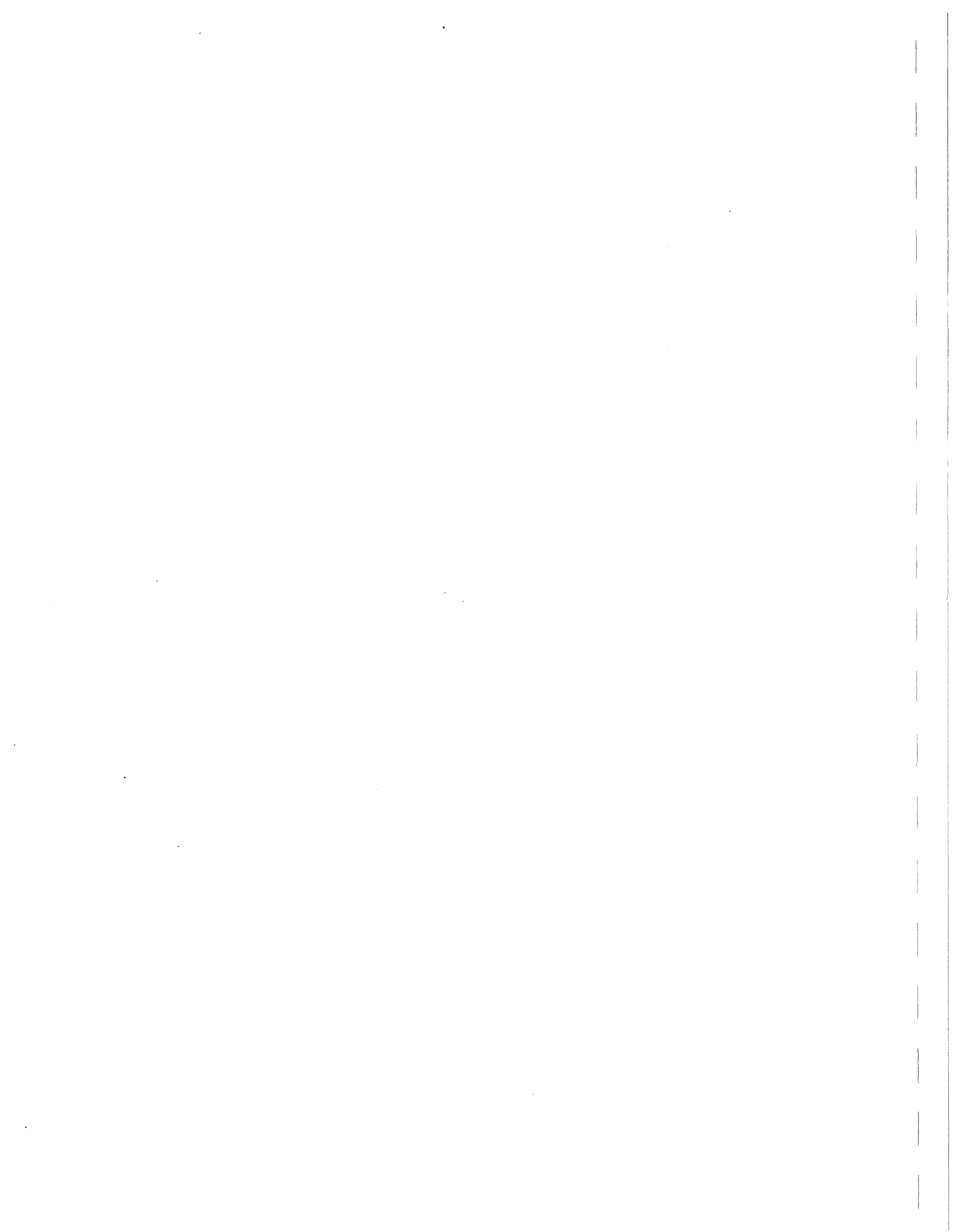
Occupancy

PART 1 GENERAL

1.1 PARTIAL OCCUPANCY BY OWNER

Whenever, in the opinion of the Engineer, any section or portion of the Work or any structure is in suitable condition, it may be put into use upon the written order of the Engineer and such usage will not be held in any way as an acceptance of said Work or structure, or any part thereof, or as a waiver of any of the provisions of these Specifications and the Contract. Pending final completion and acceptance of the Work, all necessary repairs and replacements, due to defective materials or workmanship or operations of the Contractor, for any section of the Work so put into use shall be performed by the Contractor at Contractor's own expense.

END OF SECTION



SECTION 01041
Project Coordination

PART 1 GENERAL

1.1 SCOPE

- A. Management of the Project shall be through the use of a logical method of construction planning, inspection, scheduling and cost value documentation.
- B. The work under this Section includes all surface and subsurface condition inspections and coordination by the Contractor necessary for the proper and complete performance of the Work.
- C. This Section applies to the work of every division and every section of these Specifications.

1.2 SITE CONDITIONS

- A. Inspection
 - 1. Prior to performing any work under a section, the Contractor shall carefully inspect the installed work of other trades and verify that all such work is complete to the point where the work under that section may properly commence.
 - 2. The Contractor shall verify that all materials, equipment and products to be installed under a section may be installed in strict accordance with the original design and pertinent reviewed shop drawings.
- B. Discrepancies
 - 1. In the event of discrepancy, immediately notify the Engineer.
 - 2. Do not proceed with construction in areas of discrepancy until all such discrepancies have been fully resolved.

1.3 COORDINATION

- A. Carefully coordinate work with all other trades and subcontractors to insure proper and adequate interface of the work of other trades and subcontractors with the work of every section of these Specifications.

- B. The Contractor shall coordinate operations with all utility companies in or adjacent to the area of Contractor's work. The Contractor shall require said utilities to identify in the field their property and provide drawings as necessary to locate them.

END OF SECTION

PART 1 GENERAL

- 1.1 The CONTRACTOR shall provide all necessary labor, materials, tools, equipment, insurances, and permits, etc., and perform all other related work, as may be required for the work in accordance with the applicable terms of these Specifications and other pertinent documents, etc.
- 1.2 The cost associated with the preparation of submittal and the preparation for and attendance at all project meetings shall be incidental to the work.
- 1.3 Items shown in the plan but not expressly described herein shall be considered incidental to the work.
- 1.4 Lump sum items shall be paid upon completion and acceptance of all work covered by the item. However, CONTRACTOR may submit an application for partial payment of lump sum items. Such application shall be in writing and shall define and provide justification for desired break down of the lump sum items. The application will be reviewed by the ENGINEER in a timely manner and any concerns will be discussed with the CONTRACTOR prior to issuing written agreement with the partial payment scheme. It is recommended that Partial Payment Applications be submitted and approval sought prior to the submission of the first invoice for the project.
- 1.5 The quantities shown are estimated. Only the actual quantities required, furnished, and installed and/or removed, will be eligible for payment. No minimum(s) is/are guaranteed.
- 1.6 The CONTRACTOR will NOT be paid for any items herein in excess of the estimated quantities or for any items not contained in the proposal(s) unless the CONTRACTOR has obtained WRITTEN authorization from the ENGINEER before proceeding with the work.
- 1.7 The various phases of contractual work that are required to complete the subject project must be performed in a most expeditious manner and to the satisfaction of the ENGINEER

PART 2 PAY ITEMS

2.1 WATER LINES

- A. Measurement - Measurement for the length of pipe to be included for payment at the unit prices bid shall be the actual length laid in the trench measured along the centerline of the pipe and including the lengths of and fittings in the line. Measurement shall begin at the ends of existing pipes, valves or fittings to which the new pipe is connected or such other point as may be designated on the plans.
- B. Payment - Payment for installing only water pipe lines complete will be made at the contract unit price bid per linear foot for water pipe of the various sizes and classifications. No pay item has been established for fittings or restraint joints. These

Measurement and Payment

are considered incidental and shall be included in the unit price bid per linear foot for water pipe. Payment for installing water pipe shall constitute full compensation for

trenching, installation of pipe and tracer wire, backfill, disinfecting and testing for the water line, together with other incidental and related work necessary for the completion of the water main installation except that valves, valve boxes, pavement replacement and such other items shall be paid for separately, if included as a pay item on the bid proposal.

2.2 VALVES

- A. Measurement - Valves will be measured by actual count on each size and type of valve installed in the completed system.
- B. Payment - Payment for installing only valves of the various sizes and classifications, accessories, adapters, extension stems, valve boxes with lids, concrete collar or other required appurtenances, shall be made on the basis of the contract unit prices bid. Such payment shall constitute full compensation for installing the valves complete in full accordance with the Plans and Specifications.

2.3 ROCK EXCAVATION

Excavation is unclassified, therefore, separate measurement or payment will not be made.

2.4 BITUMINOUS/CONCRETE PAVEMENT REPLACEMENT

- A. Measurement - Measurement for pavement replacement shall be equal to the length of the pavement installed, as measured along the centerline of the water main. Minimum width shall be equal to the nominal pipe diameter plus 3'-6" centered over the pipeline. For pavement replacement on State or Federal Highways where concrete base is required, the minimum width will be increased to 7'-6".
- B. Payment - Payment for pavement replacement shall be made on the basis of the unit prices bid for various classifications of pavements indicated in the proposal form. Such payment shall constitute full compensation for furnishing all labor, material, and equipment and replacing the damaged pavement, including the crushed stone base and crushed stone backfill as required. The CONTRACTOR is advised that although the limits of payment shall be as described under paragraph A, above he shall be responsible for replacing all pavement damaged during construction, at no additional cost, so that the paved area is left in a condition as good as or better than before the start of construction.

Payment for pavement replacement shall also include compensation for providing temporary pavement patches as required by the specifications and for maintaining the patches until such time as the permanent pavement is placed inasmuch as no separate payment will be made for this work.

2.5 CRUSHED STONE

- A. Measurement - Measurement of crushed stone for payment shall be based on linear feet of gravel replaced on driveways. This item will be paid for based upon amount disturbed and only a one time payment. Crushed stone used for bedding water mains in rock excavation or in backfill around fire hydrants and valves shall not be measured for payment. Payment shall be included in the unit price for pipe, valves or fire hydrant.

Crushed stone used as base material or backfill for pavement replacement also will not be measured for payment inasmuch as payment for this material will be included in the payment for pavement replacement.

- B. Payment - Payment for crushed stone, measured as provided above, which payment shall constitute full compensation for furnishing, hauling, placing and compacting the stone as specified.

2.6 CASING PIPE BY BORE & JACK

- A. Measurement - Measurement of casing pipe installed under pavement, railroad tracks, structures or other places by bore and jack shall be by the linear foot and shall be the centerline length of the casing installed and accepted.

- B. Payment - Payment shall be made on the basis of the contract unit price bid for various diameters. This price shall constitute payment for furnishing and installing casing pipe by boring and jacking and spacers; including all labor, tools and equipment. Payment for the water line to be installed in the casing pipe shall be paid for at applicable unit price bid.

2.7 CONNECTIONS TO EXISTING LINES

No additional compensation will be made for connections to existing lines as shown on drawings. Only those items employed in such connections and appear in this Section will be paid for separately.

2.8 STANDARD BLOW-OFF

- A. Measurement - Standard blow-offs shall be sized as shown on plans and include gate valve, restraints and fittings. This item will be measured by an actual count of blow-offs installed, tested, sterilized and accepted.
- B. Payment - Standard blow-off assemblies, installed and accepted will be paid for on the basis of the unit price per each and payment shall constitute full compensation for furnishing, hauling, installing complete, testing and sterilizing, for excavation, preparation of bed and backfilling, and for the furnishing of all equipment, tools and incidentals necessary to complete the item.

Measurement and Payment**2.9 FIRE HYDRANTS / FLUSH HYDRANTS**

- A. Measurement - Measurement of hydrants for payment shall be made by actual count of type of hydrant provided in the completed installation.
- B. Payment - Payment for hydrants complete shall be based on the contract unit prices bid. Such payments shall constitute compensation in full for hydrants complete with the necessary barrel and stem extensions, concrete base and kicker, valve, valve box and the required crushed stone for drainage as shown in the standard details in drawing package.

2.10 AIR RELEASE VALVE ASSEMBLY

- A. Measurement - Air release valve assemblies will be measured by an actual count of each size and type installed and accepted. The unit price bid for this item shall include tapping the main saddle, corporation stop, bronze gate valve, air release valve, meter box and cover, crushed stone and other fittings as covered by Specifications and Plans.
- B. Payment - Air release valve assemblies installed and accepted will be paid on the basis of the unit price per each and payment shall constitute full compensation for furnishing all materials and supplies, and installing complete, testing, excavation and for the furnishing of all equipment, tools and incidentals necessary to complete the item.

2.11 TYPE "B" CREEK CROSSING

- A. Measurement - Measurement of creek crossing for payment shall be made by the actual length of creek crossing provided in the complete installation.
- B. Payment - Payment for installing creek crossing complete will be made at the contract unit price bid per linear foot. Payment for installing creek crossing shall constitute full compensation for fittings, trenching, concrete, casing pipe, spacers, backfill, disinfecting and testing together with other incidental and related work necessary for the completion of the creek crossing. Payment for the water line to be installed in the creek crossing shall be paid for at the applicable unit price.

2.12 TYPE "C" CREEK CROSSING

- A. Measurement - Measurement of "C" Creek Crossing for payment shall be made by the actual length of creek crossing provided in the complete installation.
- B. Payment - Payment for installing creek crossing complete will be made at the contract unit price bid per linear foot. Payment for installing creek crossing shall constitute full compensation for water line or where indicated ball and socket water line, fittings, trenching, installation, backfill, concrete anchors, typical meter setting, disinfecting and testing together with other incidental and related work necessary for the completion of the creek crossing.

2.13 OPEN CUT WITH STEEL CASING OR PLASTIC CASING

- A. Measurement - Measurement of casing pipe installed by open cut shall be by the linear foot and shall be by the linear foot and shall be in the casing installed and accepted
- B. Payment - Payment shall be made on the basis of the contract unit price bid for the various diameters. The price shall constitute payment for furnishing and installing casing pipe by open cut and spacers; including all labor, tools, and equipment. Payment for the water line to be installed in the casing shall be paid for at applicable unit price bid.

2.14 FLOWABLE FILL CONCRETE

- A. Measurement - Measurement of flowable fill concrete for payment shall be based on linear feet installed in the trench measured along the centerline of the pipe.
- B. Payment - Payment for installing flowable fill concrete will be made at the contract unit price bid per linear foot. Payment for installing flowable fill concrete shall constitute full compensation for flowable fill concrete, sand, mechanical tamping and related work necessary to complete in accordance with the plans and specifications. Pavement replacement and gravel replacement shall be paid for separately.

2.15 GABION BASKET (N/A)

- A. Measurement - Measurement for gabion baskets for payment shall be based on the cubic yard of stone installed in the basket
- B. Payment - Payment for installation of gabion baskets will be made at the contract unit price bid per cubic yard. Payment shall constitute full compensation for excavation, installation, backfill, baskets, stone, together with other incidental and related work necessary for completion.

2.16 LINE PLUGGING (N/A)

- A. Measurement - Line plugs will be measured by actual count of plugs installed in the completed system.
- B. Payment - Payment for installing plug including concrete shall be made on the basis of the contract unit price bid. Such payment shall constitute full compensation for installing the plug complete in full accordance with the Plans and Specifications.

2.17 PUMP STATION

- A. Measurement - This is a Lump Sum Bid Item and measurement will not be required.
- B. Payment - Payment for the Pump Station shall be made on the basis of the Lump Sum Price Bid and shall constitute full compensation for all pumps, valves, fittings, piping,

Measurement and Payment

controls, heaters, fans, lights, concrete, gravel drive, site work, fence, power pole, electric to site, as shown on the plans and described in the specifications complete in place.

Contractor shall be responsible for getting electric to the pump station. Contractor shall be responsible for all coordination with the electric company. The Contractor shall include in the lump sum price for each station, an allowance of \$2,000 to get electric to each pump station site. The Contractor must submit a bill from the electric company to the Owner. At that time, an increasing or decreasing change order will be processed for the difference.

2.18 SERVICE CONNECTIONS

- A. Measurement - Service connections will be measured by an actual count of each size and type of service installed, tested, disinfected and accepted. The unit price bid for this item shall include saddles, corporation stop, curb stops, yoke, meter, meter box, pressure regulator, as required, service tubing or copper service tubing, as required, etc., as covered by Specifications and Plans.
- B. Payment - Service connections assemblies placed and accepted, measured as provided above, will be paid for at the contract unit price per each, which price and payment shall constitute full compensation for furnishing, hauling and installing complete, testing and disinfection, for excavation, preparation of bed and backfilling, and for the furnishing of all equipment, tools, and incidentals necessary to complete the item.

2.19 EXISTING SERVICE CONNECTION TO PROPOSED LINE (N/A)

- A. Measurement - Existing service connections to proposed line will be measured by the actual count of each size and type of service installed, tested, disinfected and accepted. The unit price bid for this item shall include saddles, corporation stop, connection to exist service line, service tubing or copper service tubing, as required, etc., as covered by Specifications and Plans.
- B. Payment - Existing service connections to proposed line assemblies placed and accepted, measured as provided above, will be paid for at the contract unit price per each, which price and payment shall constitute full compensation for furnishing, hauling and installing complete, testing and disinfection, for excavation, preparation of bed and backfilling, and for the furnishing of all equipment, tools, and incidentals necessary to complete the item.

2.20 SERVICE PIPE

- A. Measurement - Measurement for the length of service pipe used for service installatio included for payment at the unit prices bid shall be the actual length installed over and above the 10 feet and 70 feet of service tubing that is to be included in the price bid for meter settings and existing service connection to proposed line.
- B. Payment - Payment for installing only water service lines completed will be made at the contract unit price bid per linear foot for water service pipe of the various sizes, types and

Measurement and Payment

classifications. Payment for installing service pipe shall constitute full compensation for excavation, installation, backfill, disinfecting, testing and other incidentals and related work necessary for the completion of the bid item.

2.21. BORE & JACK UNCASSED

- A. Measurement - Measurement of bore & jack uncased installed under pavement, structures or other places shall be by the linear foot and be measured along the centerline of the water main.
- B. Payment - Payment shall be made on the basis of the contract unit price bid for various diameters. This price shall constitute payment for bore & jacking uncased; including all labor, tools and equipment. Payment for the waterline to be installed shall be paid for at applicable unit price bid.

2.22 MAINLINE PRESSURE REDUCING STATION (N/A)

- A. Measurement - Measurement of mainline pressure reducing stations shall be made by actual count of mainline pressure reducing stations provided in the completed installation.
- B. Payment - Mainline pressure reducing stations, installed and accepted will be paid for on the basis of unit price bid. Payment shall constitute full compensation for valves, strainers, piping, fitting, and concrete vault with access hatch, as shown on plans and described in the specifications, complete in place.

2.23 MASTER METER (N/A)

- A. Measurement - Measurement of master meter shall be made by actual count of master meters provided in the completed installation.
- B. Payment - Master meters, installed and accepted will be paid for on the basis of unit price bid. Payment shall constitute full compensation for valves, strainers, meters, check valves, piping, fitting, and concrete vault with access hatch, as shown on plans and described in the specifications, complete in place.



SECTION 01340

Shop Drawings, Product Data and Samples

PART 1 GENERAL

1.1 SCOPE

- A. The work under this Section includes submittal to the Engineer of shop drawings, product data and samples required by the various sections of these Specifications.
- B. Submittal Contents: The submittal contents required are specified in each section.
- C. The following forms shall be used for all major components of the work:
 - 1. Typical Maintenance Summary Form
 - 2. Notice of Start of Manufacturing
 - 3. Notice of Shipment of Equipment
 - 4. Notice of Schedule Impact

The forms are included at the back of this section.

- D. Definitions: Submittals are categorized as follows:
 - 1. Shop Drawings
 - a. Shop drawings shall include technical data, drawings, diagrams, procedure and methodology, performance curves, schedules, templates, patterns, test reports, calculations, instructions, measurements and similar information as applicable to the specific item for which the shop drawing is prepared.
 - b. Provide newly-prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated) or appropriate number of prints hereof, with name or preparer (firm name) indicated. The Contract Drawings shall not be traced or reproduced by any method for use as or in lieu of detail shop drawings. Show dimensions and note which are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards and special coordination requirements. Do not allow shop drawing copies without appropriate final "Action" markings by the Engineer to be used in connection with the Work.

- c. Drawings shall be presented in a clear and thorough manner. Details shall be identified by reference to sheet and detail, specification section, schedule or room numbers shown on the Contract Drawings.
 - d. Minimum assembly drawings sheet size shall be 24 x 36-inches.
 - e. Minimum detail sheet size shall be 8-1/2 x 11-inches.
 - f. Minimum Scale:
 - (1) Assembly Drawings Sheet, Scale: 1-inch = 30 feet.
 - (2) Detail Sheet, Scale: 1/4-inch = 1 foot.
2. Product Data
- a. Product data includes standard printed information on materials, products and systems, not specially prepared for this Project, other than the designation of selections from among available choices printed therein.
 - b. Collect required data into one submittal for each unit of work or system, and mark each copy to show which choices and options are applicable to the Project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked and special coordination requirements.
3. Samples
- a. Samples include both fabricated and un-fabricated physical examples of materials, products and units of work, both as complete units and as smaller portions of units of work, either for limited visual inspection or, where indicated, for more detailed testing and analysis.
 - b. Provide units identical with final condition of proposed materials or products for the work. Include "range" samples, not less than three units, where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide full set of optional samples where the Engineer's selection is required. Prepare samples to match the Engineer's sample where indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations and compliance with standards. Samples are submitted for review and confirmation of color, pattern, texture and "kind" by the Engineer. Engineer will note

"test" samples, except as otherwise indicated, for other requirements, which are the exclusive responsibility of the Contractor.

4. Miscellaneous submittals related directly to the Work (non-administrative) include warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical work records, statements of applicability, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, overrun stock, security/protection/safety keys and similar information, devices and materials applicable to the Work but not processed as shop drawings, product data or samples.

1.2 SPECIFIC CATEGORY REQUIREMENTS

- A. General: Except as otherwise indicated in the individual work sections, comply with general requirements specified herein for each indicated category of submittal. Submittals shall contain:
 1. The date of submittal and the dates of any previous submittals.
 2. The Project title.
 3. Numerical submittal numbers, starting with 1.0, 2.0, etc. Revisions to be numbered 1.1, 1.2, etc.
 4. The Names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
 5. Identification of the product, with the Specification section number, permanent equipment tag numbers and applicable Drawing No.
 6. Field dimensions, clearly identified as such.
 7. Relation to adjacent or critical features of the Work or materials.
 8. Applicable standards, such as ASTM or Federal Specification numbers.
 9. Notification to the Engineer in writing, at time of submissions, of any deviations on the submittals from requirements of the Contract Documents.

10. Identification of revisions on resubmittals.
11. An 8 x 3-inch blank space for Contractor and Engineer stamps.
12. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria and coordination of the information within the submittal with requirements of the Work and of Contract Documents.
13. Submittal sheets or drawings showing more than the particular item under consideration shall have all but the pertinent description of the item for which review is requested crossed out.

1.3 ROUTING OF SUBMITTALS

A. Submittals and routine correspondence shall be routed as follows:

1. Supplier to Contractor (through representative if applicable)
2. Contractor to Engineer
3. Engineer to Contractor and Owner
4. Contractor to Supplier

1.4 ADDRESS FOR COMMUNICATIONS

Engineer: Haworth, Meyer & Boleyn, Inc.
 3 HMB Circle
 Frankfort, KY 40601
 (502) 695-9800 FAX (502) 695-9810

PART 2 PRODUCTS

2.1 SHOP DRAWINGS

- A. Unless otherwise specifically directed by the Engineer, make all shop drawings accurately to a scale sufficiently large to show all pertinent features of the item and its method of connection to the Work.
- B. Submit all shop assembly drawings, larger than 11 x 17-inches, in the form of one reproducible transparency with two opaque prints or bluelines.

- C. Submit all shop drawings, 11 x 17-inches and smaller, in the form of six opaque prints or bluelines.
- D. One reproducible for all submittals larger than 11 x 17-inches and no more than three prints of other submittals will be returned to the Contractor.

2.2 MANUFACTURER'S LITERATURE

- A. Where content of submitted literature from manufacturers includes data not pertinent to this submittal, clearly indicate which portion of the contents is being submitted for the Engineer's review.
- B. Submit the number of copies which are required to be returned (not to exceed three) plus three copies which will be retained by the Engineer.

2.3 SAMPLES

- A. Samples shall illustrate materials, equipment or workmanship and established standards by which completed work is judged.
- B. Unless otherwise specifically directed by the Engineer, all samples shall be of the precise article proposed to be furnished.
- C. Submit all samples in the quantity which is required to be returned plus one sample which will be retained by the Engineer.

2.4 COLORS

- A. Unless the precise color and pattern is specifically described in the Contract Documents, wherever a choice of color or pattern is available in a specified product, submit accurate color charts and pattern charts to the Engineer for review and selection.
- B. Unless all available colors and patterns have identical costs and identical wearing capabilities, and are identically suited to the installation, completely describe the relative costs and capabilities of each.

PART 3 EXECUTION

3.1 CONTRACTOR'S COORDINATION OF SUBMITTALS

- A. Prior to submittal for the Engineer's review, the Contractor shall use all means necessary to fully coordinate all material, including the following procedures:

1. Determine and verify all field dimensions and conditions, catalog numbers and similar data.
 2. Coordinate as required with all trades and all public agencies involved.
 3. Submit a written statement of review and compliance with the requirements of all applicable technical Specifications as well as the requirements of this Section.
 4. Clearly indicate in a letter or memorandum on the manufacturer's or fabricator's letterhead, all deviations from the Contract Documents.
- B. Each and every copy of the shop drawings and data shall bear the Contractor's stamp showing that they have been so checked. Shop drawings submitted to the Engineer without the Contractor's stamp will be returned to the Contractor for conformance with this requirement.
- C. The Owner may backcharge the Contractor for costs associated with having to review a particular shop drawing, product data or sample more than two times to receive a "No Exceptions Taken" mark.
- D. **Grouping of Submittals**
1. Unless otherwise specifically permitted by the Engineer, make all submittals in groups containing all associated items.
 2. No review will be given to partial submittals of shop drawings for items which interconnect and/or are interdependent. It is the Contractor's responsibility to assemble the shop drawings for all such interconnecting and/or interdependent items, check them and then make one submittal to the Engineer along with Contractor's comments as to compliance, non-compliance or features requiring special attention.
- E. **Schedule of Submittals:** Within 30 days of Contract award and prior to any shop drawing submittal, the Contractor shall submit a schedule showing the estimated date of submittal and the desired approval date for each shop drawing anticipated. A reasonable period shall be scheduled for review and comments. Time lost due to unacceptable submittals shall be the Contractor's responsibility and some time allowance for resubmittal shall be provided. The schedule shall provide for submittal of items which relate to one another to be submitted concurrently.

3.2 TIMING OF SUBMITTALS

- A. Make all submittals far enough in advance of scheduled dates for installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittal, and for placing orders and securing delivery.
- B. In scheduling, allow sufficient time for the Engineer's review following the receipt of the submittal.

3.3 REVIEWED SHOP DRAWINGS

A. Engineer Review

1. Allow a minimum of 14 days for the Engineer's initial processing of each submittal requiring review and response, except allow longer periods where processing must be delayed for coordination with subsequent submittals. The Engineer will advise the Contractor promptly when it is determined that a submittal being processed must be delayed for coordination. Allow a minimum of two weeks for reprocessing each submittal. Advise the Engineer on each submittal as to whether processing time is critical to progress of the Work, and therefore the Work would be expedited if processing time could be foreshortened.
2. Acceptable submittals will be marked "No Exceptions Taken". A minimum of three copies will be retained by the Engineer for Engineer's and the Owner's use and the remaining copies will be returned to the Contractor.
3. Submittals requiring minor corrections before the product is acceptable will be marked "Make Corrections Noted". The Contractor may order, fabricate and ship the items included in the submittals, provided the indicated corrections are made. Drawings must be resubmitted for review and marked "No Exceptions Taken" prior to installation or use of products.
4. Submittals marked "Amend and Resubmit" must be revised to reflect required changes and the initial review procedure repeated.
5. The "Rejected - See Remarks" notation is used to indicate products which are not acceptable. Upon return of a submittal so marked, the Contractor shall repeat the initial review procedure utilizing acceptable products.
6. Only two copies of items marked "Amend and Resubmit" and "Rejected - See Remarks" will be reviewed and marked. One copy will be retained by

the Engineer and the other copy with all remaining unmarked copies will be returned to the Contractor for resubmittal.

- B. No work or products shall be installed without a drawing or submittal bearing the "No Exceptions Taken" notation. The Contractor shall maintain at the job site a complete set of shop drawings bearing the Engineer's stamp.
- C. Substitutions: In the event the Contractor obtains the Engineer's approval for the use of products other than those which are listed first in the Contract Documents, the Contractor shall, at the Contractor's own expense and using methods approved by the Engineer, make any changes to structures, piping and electrical work that may be necessary to accommodate these products.
- D. Use of the "No Exceptions Taken" notation on shop drawings or other submittals is general and shall not relieve the Contractor of the responsibility of furnishing products of the proper dimension, size, quality, quantity, materials and all performance characteristics, to efficiently perform the requirements and intent of the Contract Documents. The Engineer's review shall not relieve the Contractor of 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. The Contractor is responsible for dimensions to be confirmed and correlated at the job site. The Contractor is also responsible for information that pertains solely to the fabrication processes or to the technique of construction and for the coordination of the work of all trades.

3.4 RESUBMISSION REQUIREMENTS

- A. Shop Drawings
 - 1. Revise initial drawings as required and resubmit as specified for initial submittal, with the resubmittal number shown.
 - 2. Indicate on drawings all changes which have been made other than those requested by the Engineer.
- B. Project Data and Samples: Resubmit new data and samples as specified for initial submittal, with the resubmittal number shown.

END OF SECTION TEXT

FORMS FOLLOW

TYPICAL MAINTENANCE SUMMARY FORM

1. EQUIPMENT ITEM _____
2. MANUFACTURER _____
3. EQUIPMENT IDENTIFICATION NUMBER(S) _____
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) _____
5. NAMEPLATE DATA (hp, voltage, speed, etc.) _____
6. MANUFACTURER'S LOCAL REPRESENTATIVE
- Name _____ Telephone No. _____
- Address _____

7. MAINTENANCE REQUIREMENTS

Maintenance Operation	Frequency	Lubricant (If Applicable)	Comments
List briefly each maintenance operation req'd and refer to specific information in mfr's std. maintenance manual, if applicable.	List req'd frequency of each maintenance operation.	Refer by symbol to lubricant req'd.	

8. LUBRICANT LIST

Reference Symbol	Shell	Std. Oil	Gulf	Arco	Or Equal
List symbols used in Item 7. above.	List equivalent lubricants, as distributed by each Manufacturer for the specific use recommended.				

9. SPARE PARTS. Include your recommendations regarding what spare part, if any, should be kept on the job.

NOTICE OF START OF MANUFACTURING

DATE: _____

TO: _____

ATTENTION: _____

RE: Equipment Contract No. _____

Name of Contract: _____

Type of Equipment: _____

Quantity: _____

Scheduled Completion of Assembly: _____

Scheduled Date of Shipment: _____

NOTE: Delay to the above schedule which will affect shipment date by 5 days or more must be reported on the Schedule Impact form.

By: _____ Date: _____

Title: _____

ACTUAL MANUFACTURING AGENT:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____ Telephone: _____

NOTICE OF SHIPMENT OF EQUIPMENT

DATE: _____

TO: _____

ATTENTION: _____

RE: Equipment Contract No. _____

Name of Contract: _____

Type of Equipment Being Shipped: _____

QTY. DESCRIPTION (Include Equipment Numbers) SERIALS (If Applicable):

ATTACH BILL(S) OF LADING FOR ALL SHIPMENTS TO THIS FORM

Date of Shipment: _____

By: _____

Title: _____

ACTUAL MANUFACTURING AGENT:

Name: _____

01340-12

Shop Drawings, Product Data and Samples

Address: _____

City: _____ State: _____ Zip: _____ Telephone: _____

NOTICE OF SCHEDULE IMPACT

(Send this form to the Owner and Engineer if delay is over 5 days)

DATE: _____

TO: _____

ATTENTION: _____

RE: Equipment Contract No. _____

Name of Contract: _____

Type of Equipment Affected: _____

Nature of Delay: _____

New Estimated Date for Final Shop Drawings: _____

New Estimated Date for Start of Manufacture: _____

New Estimated Date for Finish Manufacture: _____

New Estimated Date for Shipment: _____

New Estimated Date for Arrival at Jobsite: _____

By: _____

Title: _____

ACTUAL MANUFACTURING AGENT:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____ Telephone: _____

SECTION 01562

Dust Control

PART 1 GENERAL

1.1 SCOPE

Limit blowing dust caused by construction operations by applying water or employing other appropriate means or methods to maintain dust control, subject to the approval of the Owner. As a minimum, this may require the use of a water wagon twice a day to suppress dusty conditions.

1.2 PROTECTION OF ADJACENT PROPERTY

- A. The Bidders shall visit the site and note the buildings, landscaping, roads, parking areas and other facilities near the Work site that may be damaged by their operations. The Contractor shall make adequate provision to fully protect the surrounding area and will be held fully responsible for all damages resulting from Contractor's operations.
- B. Protect all existing facilities (indoors or out) from damage by dust, fumes, spray or spills (indoors or out). Protect motors, bearings, electrical gear, instrumentation and building or other surfaces from dirt, dust, welding fumes, paint spray, spills or droppings causing wear, corrosion, malfunction, failure or defacement by enclosure, sprinkling or other dust palliatives, masking and covering, exhausting or containment.

END OF SECTION

SECTION 01610
Transportation and Handling

PART 1 GENERAL

1.1 SCOPE

- A. The Contractor shall provide transportation of all equipment, materials and products furnished under these Contract Documents to the Work site. In addition, the Contractor shall provide preparation for shipment, loading, unloading, handling and preparation for installation and all other work and incidental items necessary or convenient to the Contractor for the satisfactory prosecution and completion of the Work.
- B. All equipment, materials and products damaged during transportation or handling shall be repaired or replaced by the Contractor at no additional cost to the Owner prior to being incorporated into the Work.

1.2 TRANSPORTATION

- A. All equipment shall be suitably boxed, crated or otherwise protected during transportation.
- B. Where equipment will be installed using existing cranes or hoisting equipment, the Contractor shall ensure that the weights of the assembled sections do not exceed the capacity of the cranes or hoisting equipment.
- C. Small items and appurtenances such as gauges, valves, switches, instruments and probes which could be damaged during shipment shall be removed from the equipment prior to shipment, packaged and shipped separately. All openings shall be plugged or sealed to prevent the entrance of water or dirt.

1.3 HANDLING

- A. All equipment, materials and products shall be carefully handled to prevent damage or excessive deflections during unloading or transportation.
- B. Lifting and handling drawings and instructions furnished by the manufacturer or supplier shall be strictly followed. Eyebolts or lifting lugs furnished on the equipment shall be used in handling the equipment. Shafts and operating mechanisms shall not be used as lifting points. Spreader bars or lifting beams shall be used when the distance between lifting points exceeds that permitted by standard industry practice.

- C. Under no circumstances shall equipment or products such as pipe, structural steel, castings, reinforcement, lumber, piles, poles, etc., be thrown or rolled off of trucks onto the ground.
- D. Slings and chains shall be padded as required to prevent damage to protective coatings and finishes.

END OF SECTION

SECTION 01630
Substitutions and Options

PART 1 GENERAL

1.1 SCOPE

This Section outlines the restrictions and requirements for substitutions, product and manufacturer options, and construction method options.

1.2 DEFINITIONS

A. For the purposes of these Contract Documents, a "substitute item" shall be defined as one of the following:

1. A product or manufacturer offered as a replacement to a specified product or manufacturer.
2. A product or manufacturer offered in addition to a specified product or manufacturer.

B. For the purposes of these Contract Documents, a "substitute construction method" shall be defined as one of the following:

1. A mean, method, technique, sequence or procedure of construction offered as a replacement for a specified mean, method, technique, sequence or procedure of construction.
2. A mean, method, technique, sequence or procedure of construction offered in addition to a specified mean, method, technique, sequence or procedure of construction.

1.3 GENERAL

A. An item or construction method, which is offered where no specific product, manufacturer, mean, method, technique, sequence or procedure of construction is specified or shown on the Drawings, shall not be considered a substitute and shall be at the option of the Contractor, subject to the provisions in the Contract Documents for that item or construction method.

B. For products specified only by a referenced standard, the Contractor may select any product by any manufacturer, which meets the requirements of the Specifications, unless indicated otherwise in the Contract Documents.

- C. If the manufacturer is named on the Drawings or in the Specifications as an acceptable manufacturer, products of that manufacturer meeting all requirements of the Specifications and Drawings are acceptable.
- D. Whenever the Engineer's design is based on a specific product of a particular manufacturer, that manufacturer will be shown on the Drawings and/or listed first in the list of approved manufacturers in the Specifications. Any Bidder intending to furnish products of other than the first listed manufacturer, or furnish substitute items, shall
 - 1. Verify that the item being furnished will fit in the space allowed, perform the same functions and have the same capabilities as the item specified.
 - 2. Include in its Bid the cost of all accessory items which may be required by the other listed substitute product,
 - 3. Include the cost of any architectural, structural, mechanical, piping, electrical or other modifications required, and
 - 4. Include the cost of required additional work by the Engineer, if any, to accommodate the item.

1.4 APPROVALS

- A. Approval, of a substitution as an acceptable manufacturer, of the Engineer is dependent on determination that the product offered
 - 1. is essentially equal in function, performance, quality of manufacture, ease of maintenance, reliability, service life and other criteria to that on which the design is based, and
 - 2. will require no major modifications to structures, electrical systems, control systems or piping systems.

1.5 SUBSTITUTIONS AND OPTIONS

- A. See Bid Schedule for allowance of substitutions.
- B. After Notice to Proceed
 - 1. Substitute items will be considered for acceptable manufacturers in the Specification.

2. Where items are specified by referenced standard or specified as indicated in Article 1.3, Paragraph A. above, such items shall be submitted to the Engineer for review.
3. The Contractor shall submit shop drawings on the substitute item for the Engineer's review in accordance with the Section 01340.

C. Prior to Opening of Bids

1. No consideration or approvals will be made for products specified by a referenced standard, or specified as indicated in Article 1.3, Paragraph A. above. Such consideration may occur only after the Notice to Proceed.
2. No consideration or approvals will be made for products being offered where the term "equal to" precedes the name of an approved product. Such substitution consideration may occur only after the Notice to Proceed.

END OF SECTION



SECTION 01710

Cleaning

PART 1 GENERAL

1.1 SCOPE

This Section covers the general cleaning which the Contractor shall be required to perform both during construction and before final acceptance of the Project unless otherwise shown on the Drawings or specified elsewhere in these Specifications.

1.2 QUALITY ASSURANCE

- A. Daily, and more often if necessary, conduct inspections verifying that requirements of cleanliness are being met.
- B. In addition to the standards described in this Section, comply with all pertinent requirements of governmental agencies having jurisdiction.

1.3 HAZARDOUS MATERIAL AND WASTE

- A. The Contractor shall handle hazardous waste and materials in accordance with applicable local, state, and federal regulations. Waste shall also be disposed of in WFPA approved landfills as applicable.
- B. The Contractor shall prevent accumulation of wastes which create hazardous conditions.
- C. Burning or burying rubbish and waste materials on the site shall not be allowed.
- D. Disposal of hazardous wastes or materials into sanitary or storm sewers shall not be allowed.

1.4 DISPOSAL OF SURPLUS MATERIALS

Unless otherwise shown on the Drawings, specified or directed, the Contractor shall legally dispose off the site all surplus materials and equipment from demolition and shall provide suitable off-site disposal site, or utilize a site designated by the Owner.

PART 2 PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT

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

2.2 COMPATIBILITY

Use only the cleaning materials, methods and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material or as approved by the Engineer.

PART 3 EXECUTION

3.1 PROGRESS CLEANING

A. General

1. Do not allow the accumulation of scrap, debris, waste material and other items not required for construction of this Work.
2. At least each week, and more often if necessary, completely remove all scrap, debris and waste material from the job site.
3. Provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the environment.

B. Site

1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris and waste material. Remove all such items to the place designated for their storage.
2. Restack materials stored on site weekly.
3. At all times maintain the site in a neat and orderly condition which meets the approval of the Engineer.

C. Structures

1. Weekly, and more often if necessary, inspect the structures and pick up all scrap, debris and waste material. Remove all such items to the place designated for their storage.
2. Weekly, and more often if necessary, sweep all interior spaces clean. "Clean", for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by using a hand-held broom.
3. As required preparatory to installation of successive materials, clean the structures or pertinent portions as recommended by the manufacturer of the successive material.
4. Following the installation of finish floor materials, clean the finish floor daily. "Clean", for the purpose of this paragraph, shall be interpreted as meaning free from all foreign material which, in the opinion of the Engineer, may be injurious to the finish floor material.
5. Schedule cleaning operation so that dust and other contaminants resulting from cleaning operations will not fall on wet, recently painted surfaces.

3.2 FINAL CLEANING

- A. Definitions: Unless otherwise specifically specified, "clean" for the purpose of this Article shall be interpreted as the level of cleanliness generally provided by commercial building maintenance subcontractors using commercial quality building maintenance equipment and materials.
- B. General: Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris and waste. Conduct final progress cleaning as described in 3.01 above.
- C. Site: Unless otherwise specifically directed by the Engineer, hose down all paved areas on the site and all public sidewalks directly adjacent to the site; rake clean other surfaces of the grounds. Completely remove all resultant debris.
- D. Structures
 1. Remove all traces of soil, waste material, splashed material, and other foreign matter to provide a uniform degree of exterior cleanliness. Visually inspect all exterior surfaces and remove all traces of soil, waste material, and other foreign matter. Remove all traces of splashed materials from adjacent surfaces. If necessary to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure. In the event of

stubborn stains not removable with water, the Engineer may require light sandblasting or other cleaning at no additional cost to the Owner.

2. Visually inspect all interior surfaces and remove all traces of soil, waste material, smudges and other foreign matter. Remove all paint droppings, spots, stains and dirt from finished surfaces.
 3. Clean all glass inside and outside.
 4. Polish all surfaces requiring the routine application of buffed polish. Provide and apply polish as recommended by the manufacturer of the material being polished.
- E. **Post-Construction Cleanup:** All evidence of temporary construction facilities, haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other evidence of construction, as directed by the Engineer.
- F. **Restoration of Landscape Damage:** Any landscape feature damaged by the Contractor shall be restored as nearly as possible to its original condition at the Contractor's expense. The Engineer will decide what method of restoration shall be used.
- G. **Timing:** Schedule final cleaning as approved by the Engineer to enable the Owner to accept the Project.

3.3 CLEANING DURING OWNER'S OCCUPANCY

Should the Owner occupy the Work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning of the occupied spaces shall be as determined by the Engineer in accordance with the Supplementary Conditions of the Contract Documents.

END OF SECTION

SECTION 01720
Record Documents

PART 1 GENERAL

1.1 SCOPE

- A. The work under this Section includes, but is not necessarily limited to, the compiling, maintaining, recording and submitting of project record documents as herein specified.
- B. Record documents include, but are not limited to:
 - 1. Drawings;
 - 2. Specifications;
 - 3. Change orders and other modifications to the Contract;
 - 4. Engineer field orders or written instructions, including Requests for Information (RFI) and Clarification Memorandums;
 - 5. Reviewed shop drawings, product data and samples;
 - 6. Test records.
- C. The Contractor shall maintain on the Project site throughout the Contract Time an up to date set of Record Drawings.

1.2 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Storage
 - 1. Store documents and samples in the Contractor's field office, apart from documents used for construction.
 - 2. Provide files and racks for storage of documents.
 - 3. Provide locked cabinet or secure storage space for storage of samples.
- B. File documents and samples in accordance with format of these Specifications.

C. Maintenance

1. Maintain documents in a clean, dry, legible condition and in good order.
2. Do not use record documents for construction purposes.
3. Maintain at the site for the Owner one copy of all record documents.

D. Make documents and samples available at all times for inspection by Engineer.

E. Failure to maintain the Record Documents in a satisfactory manner may be cause for withholding of a certificate for payment.

1.3 QUALITY ASSURANCE

A. Unless noted otherwise, Record Drawings shall provide dimensions, distances and coordinates to the nearest 0.1 foot.

B. Unless noted otherwise, Record Drawings shall provide elevations to the nearest 0.01 foot for all pertinent items constructed by the Contractor.

1.4 RECORDING

A. Label each document "PROJECT RECORD" in neat, large printed letters.

B. Recording

1. Record information concurrently with construction progress.
2. Do not conceal any work until required information is recorded.

1.5 RECORD DRAWINGS

A. Record Drawings shall be reproducible, shall have a title block indicating that the drawings are Record Drawings, the name of the company preparing the Record Drawings, and the date the Record Drawings were prepared. The Contractor will be provided paper sepias of the Drawings, or it may elect to provide reproducible drawings via another method. Reproducible shall be defined as being translucent so as to allow a blueline print to be produced.

B. Legibly mark drawings to record actual construction, including:

1. All Construction

- a. Changes of dimension and detail.

- b. Changes made by Requests for Information (RFI), field order, clarification memorandums or by change order.
 - c. Details not on original Drawings.
2. Site Improvements, Including Underground Utilities
- a. Horizontal and vertical locations of all exposed and underground utilities and appurtenances, both new facilities constructed and those utilities encountered, referenced to permanent surface improvements.
 - b. Location of and dimensions of roadways and parking areas, providing dimensions to back of curb when present.
 - c. The locations shall be referenced to at least two easily identifiable, permanent landmarks (e.g., power poles, valve markers, etc.) or benchmarks.
 - d. The Record Drawings shall include the horizontal angle and distance between manhole covers.
3. Structures
- a. Depths of various elements of foundation in relation to finish first floor datum or top of wall.
 - b. Location of internal and buried utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.

1.6 SPECIFICATIONS

- A. Legibly mark 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 Requests for Information (RFI), field order, clarification memorandums, or by change order.

1.7 SUBMITTAL

- A. At contract closeout, deliver Record Documents to the Engineer for the Owner.
- B. Accompany submittal with transmittal letter, in duplicate, containing:
 - 1. Date
 - 2. Project title and number
 - 3. Contractor's name and address
 - 4. Title and number of each record document
 - 5. Signature of Contractor or Contractor's authorized representative

END OF SECTION

SECTION 01740
Warranties and Bonds

PART 1 GENERAL

1.1 PROJECT MAINTENANCE AND WARRANTY

- A. Maintain and keep in good repair the Work covered by these Drawings and Specifications until acceptance by the Owner.
- B. The Contractor shall warrant for a period of one year from the date of Owner's written acceptance of certain segments of the Work and/or Owner's written final acceptance of the Project, as defined in the Contract Documents, that the completed Work is free from all defects due to faulty products or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects. The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect throughout the warranty period.
- C. The Contractor shall not be obligated to make replacements which become necessary because of ordinary wear and tear, or as a result of improper operation or maintenance, or as a result of improper work or damage by another Contractor or the Owner, or to perform any work which is normally performed by a maintenance crew during operation.
- D. In the event of multiple failures of major consequences prior to the expiration of the one year warranty described above, the affected unit shall be disassembled, inspected and modified or replaced as necessary to prevent further occurrences. All related components which may have been damaged or rendered non-serviceable as a consequence of the failure shall be replaced. A new 12 month warranty against defective or deficient design, workmanship, and materials shall commence on the day that the item is reassembled and placed back into operation. As used herein, multiple failure shall be interpreted to mean two or more successive failures of the same kind in the same item or failures of the same kind in two or more items. Major failures may include, but are not limited to, cracked or broken housings, piping, or vessels, excessive deflections, bent or broken shafts, broken or chipped gear teeth, premature bearing failure, excessive wear or excessive leakage around seals. Failures which are directly and clearly traceable to operator abuse, such as operations in conflict with published operating procedures or improper maintenance, such as substitution of unauthorized replacement parts, use of incorrect lubricants or chemicals, flagrant over-or under-lubrication and using maintenance procedures not conforming with

published maintenance instructions, shall be exempted from the scope of the one year warranty. Should multiple failures occur in a given item, all products of the same size and type shall be disassembled, inspected, modified or replaced as necessary and rewarranted for one year.

- E. The Contractor shall, at Contractor's own expense, furnish all labor, materials, tools and equipment required and shall make such repairs and removals and shall perform such work or reconstruction as may be made necessary by any structural or functional defect or failure resulting from neglect, faulty workmanship or faulty materials, in any part of the Work performed by the Contractor. Such repair shall also include refilling of trenches, excavations or embankments which show settlement or erosion after backfilling or placement.
- F. Except as noted on the Drawings or as specified, all structures such as embankments and fences shall be returned to their original condition prior to the completion of the Contract. Any and all damage to any facility not designated for removal, resulting from the Contractor's operations, shall be promptly repaired by the Contractor at no cost to the Owner.
- G. The Contractor shall be responsible for all road and entrance reconstruction and repairs and maintenance of same for a period of one year from the date of final acceptance. In the event the repairs and maintenance are not made immediately and it becomes necessary for the owner of the road to make such repairs, the Contractor shall reimburse the owner of the road for the cost of such repairs.
- H. In the event the Contractor fails to proceed to remedy the defects upon notification within 15 days of the date of such notice, the Owner reserves the right to cause the required materials to be procured and the work to be done, as described in the Drawings and Specifications, and to hold the Contractor and the sureties on Contractor's bond liable for the cost and expense thereof.
- I. Notice to Contractor for repairs and reconstruction will be made in the form of a registered letter addressed to the Contractor at Contractor's home office.
- J. Neither the foregoing paragraphs nor any provision in the Contract Documents, nor any special guarantee time limit implies any limitation of the Contractor's liability within the law of the place of construction.

END OF SECTION

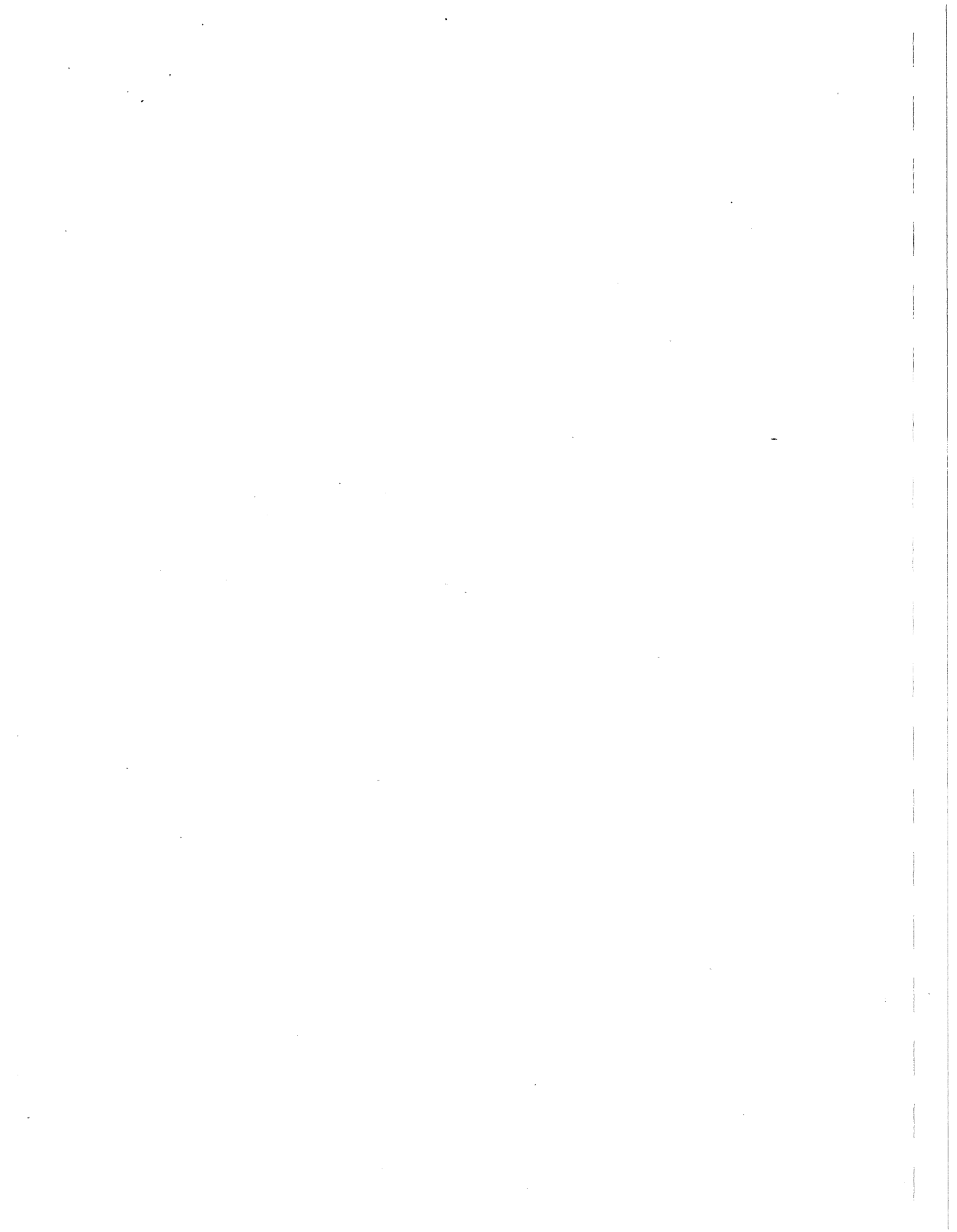
SECTION 02010
Subsurface Conditions

PART 1 GENERAL

1.1 DESCRIPTION

- A. Investigation: The Contractor shall visit the site and become acquainted with site conditions. Prior to bidding, prospective Contractors may make their own site and subsurface investigations to satisfy themselves with site and subsurface conditions. The Contractor shall be responsible for obtaining rights of ingress and egress to private property for site and subsurface investigation and shall assume all responsibility for any damage to property caused as a result of the Contractor's investigation.
- B. No geotechnical investigation has been performed on this site. The Contractor is responsible for making their own determination of subsurface conditions.

END OF SECTION



SECTION 02140

Dewatering

PART 1 GENERAL

1.1 SCOPE

- A. This Section shall apply to all excavation, except trench excavation.
- B. Construct all permanent work in areas free from water. Design, construct and maintain all dikes, levees, cofferdams and diversion and drainage channels as necessary to maintain the areas free from water and to protect the areas to be occupied by permanent work from water damage. Remove temporary works after they have served their purpose.
- C. The Contractor shall be responsible for the stability of all temporary and permanent slopes, grades, foundations, materials and structures during the course of the Contract. Repair and replace all slopes, grades, foundations, materials and structures damaged by water, both surface and subsurface, to the lines, grades and conditions existing prior to the damage, at no additional cost to the Owner.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 CARE OF WATER

- A. Except where the excavated materials are designated as materials for permanent work, material from required excavation may be used for dikes, levees, cofferdams and other temporary backfill.
- B. Furnish, install, maintain and operate necessary pumping and other equipment for dewatering the various parts of the work and for maintaining the foundation and other parts free from water as required for constructing each part of the work.
- C. Install all drainage ditches, sumps and pumps to control excessive seepage on excavated slopes, to drain isolated zones with perched water tables and to drain impervious surfaces at final excavation elevation.
- D. Dewater by means which will insure dry excavations, preserve final lines and grades, do not disturb or displace adjacent soil.
- E. All pumping and drainage shall be done with no damage to property or structures and without interference with the rights of the public, owners of private property,

pedestrians, vehicular traffic or the work of other contractors, and in accordance with all pertinent laws, ordinances and regulations.

- F. Do not overload or obstruct existing drainage facilities.
- G. After they have served their purpose, remove all temporary protective work at a satisfactory time and in a satisfactory manner. All diversion channels and other temporary excavations in areas where the compacted fill or other structures will be constructed shall be cleaned out, backfilled and processed under the same Specifications as those governing the compacted fill.
- H. When the temporary works will not adversely affect any item of permanent work or the planned usage of the Project, the Contractor may be permitted to leave such temporary works in place. In such instances, breaching of dikes, levees and cofferdams may be required.

3.2 DEWATERING

- A. By the use of well points, pumps, tile drains or other approved methods, the Contractor shall prevent the accumulation of water in excavated areas. Should water accumulate, it shall be promptly removed.
- B. Excavations shall be continuously dewatered to maintain a ground water level no higher than three to four feet below the lowest point in the excavation. Dewatering shall be accomplished well enough in advance of excavation to ensure that groundwater is already lowered prior to completing the final excavation to finish subgrade.
- C. All destabilized subgrade conditions caused by inadequate or untimely dewatering operations shall be undercut and backfilled with suitable backfill material at no additional cost to the Owner.
- D. Piezometric observation wells are required to monitor the ground water level to insure proper dewatering prior to excavation below the static water table. The number of wells required will vary depending on the size and depth of structures.

END OF SECTION

SECTION 02200
Earthwork

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. Extent of earthwork is indicated on the Drawings.
 - 1. Preparation of subgrade for tanks, basins, building slabs, walks, and pavements is included as part of this work.
 - 2. Engineered fill course for support of building or basin slabs is included as part of this work.
 - 3. Backfilling of tanks, basins, basements, and trenches within building lines is included as part of this work.
- B. Excavation for Mechanical/Electrical Work: Excavation and backfill required in conjunction with underground mechanical and electrical utilities, and buried mechanical and electrical appurtenances is included as work of this Section.
- C. Definition: "Excavation" consists or removal of all material encountered to subgrade elevations indicated and subsequent disposal of materials removed.

1.2 QUALITY ASSURANCE

- A. Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Testing and Inspection Services: Employ, at Contractor's expense, testing laboratory acceptable to the Owner to perform soil testing and inspection service for quality control testing during earthwork operations.

1.3 SUBMITTALS

- A. Test Reports-Excavating

Submit following reports directly to the Engineer from the testing services, with copy to Contractor:

- 1. Test reports on borrow material.
- 2. Verification of each footing subgrade.
- 3. Field density test reports.

4. One optimum moisture-maximum density curve for each type of soil encountered.
5. Report of actual unconfined compressive strength and/or results of bearing tests on each strata tested.

1.4 JOB CONDITIONS

A. Site Information

1. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil bearings. It is expressly understood that Owner will not be responsible for interpretation or conclusions drawn therefrom by Contractor. Data are made available for convenience of Contractor.
2. Additional test borings and other exploratory operations may be made by Contractor at no cost to Owner.

B. Existing Utilities: Prior to commencement of work, the Contractor shall locate existing underground utilities in areas of the work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.

C. Use of Explosives: The Contractor (or any of his subcontractors) shall not bring explosives onto site or use in work without prior written permission from the Owner. All activities involving explosives shall be in compliance with the rules and regulations of the Kentucky Department of Mines and Minerals, Division of Explosives and Blasting. Contractor is solely responsible for handling, storage, and use of explosive materials when their use is permitted.

D. Protection of Persons and Property

1. Barricade open excavations occurring as part of this work and post with warning lights.
 - a. Operate warning lights as recommended by authorities having jurisdiction.
 - b. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

A. Definitions

1. Satisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups GW, GP, GM, SM, SW, SP, GC, SC, ML and CL.
2. Unsatisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups MH, CH, OL, OH and PT.
3. Subbase Material: Naturally and artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand.
4. Drainage fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100 percent passing a 1-1/2 inch sieve and not more than 5 percent passing a No. 4 sieve.
5. Backfill and fill materials: Satisfactory soil materials free of debris, waste, frozen materials, vegetable, and other deleterious matter.
6. Engineered fill: (Refer to this Section, paragraph 3.7 A.1.)

PART 3 EXECUTION

3.1 STRIPPING AND TOPSOILING

- A. Before excavation and grading is commenced for buildings, structures or other work described hereinafter (except pipelines and manholes), the material meeting the topsoil specification of these Specifications shall be removed from the areas affected and stock-piled. When final grading is accomplished, particularly around buildings and other structures, the topsoil shall be spread evenly over the excavated area. Rough grading above excavated areas shall have been carried approximately 6 inches below finished grade (except solid rock, where it shall be carried 12 inches below finished grade) and brought back up to grade with topsoil as set out herein.

3.2 EXCAVATION

- A. Excavation includes excavation to subgrade elevations indicated including excavation of earth, rock, bricks, wood, cinders, and other debris. All excavation of materials in the lump sum portion of the work will be unclassified and no additional payment will be made regardless of type material encountered.
- B. Excavation Classifications (Not Used)
- C. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be at Contractor's expense.
 - 1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to the Engineer.
 - 2. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classifications.
- D. Additional Excavation
 - 1. When excavation has reached required subgrade elevations, notify the Engineer who will make an inspection of conditions.
 - a. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed in writing by the Engineer.
 - b. Removal of unsuitable material and its replacement as directed will be paid on basis of Contract conditions relative to changes in work.
- E. Stability of Excavations
 - 1. Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
 - 2. Maintain sides and slopes of excavations in safe condition until completion of backfilling.
- F. Shoring and Bracing

-
1. Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross-braces, in good serviceable condition.
 - a. Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.
 - b. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.
 - c. Provide permanent steel sheet piling or pressure creosoted timber sheet piling wherever subsequent removal of sheet piling might permit lateral movement of soil under adjacent structures. Cut off tops as required and leave permanently in place. In the event the Owner directs the Contractor to leave shoring materials in place, the Owner will reimburse the Contractor for the reasonable cost of leaving such materials in place.
 - G. Dewatering: Refer to this Division, Section 02140 for dewatering requirements.
 - H. Material Storage
 1. Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage.
 - a. Dispose of excess soil material and waste materials as herein specified.
 - I. Excavation for Structures
 1. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 feet and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.
 2. In excavating for footings and foundations, take care not to disturb bottom of excavation. All loose material shall be removed from the excavation just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - J. Excavation for Pavements

1. Cut surface under pavements to comply with cross-sections, elevations, and grades as shown.

K. Trench Excavation

1. The Contractor shall include in his lump sum bid all trenching and backfill necessary for installation of all pipelines as planned and specified. Trenching shall include clearing and grubbing of all trash, weeds, briars, trees, stumps encountered in trenching. The Contractor shall dispose of such material at no extra cost to the Owner. Shrubs shall be removed, maintained and replanted in the same or adjacent location as the Engineer may direct. Trenching also included such items as railroad, street, road, sidewalk, pipe, and small creek crossings; cutting, moving or repairing damage to fences, posts, gates, and other surface structures regardless of whether shown on the Drawings.
2. All existing facilities shall be protected from danger or damage while pipelines are being constructed and backfilled, and from damage due to settlement of the backfill.
3. In the event any existing structure is damaged, repair and restoration shall be made at once and backfill shall not be replaced until this is done. Restoration and repair shall be such that the damaged structure is equal to or better than its original condition and can serve its purpose as completely as before. All such restoration and repair shall be done without extra cost to the Owner.
4. Trenches must be dug to lines and grades shown on the Drawings. Hand trenching may be required in areas where machine trenching would result in undue damage to existing structures and facilities.
5. Excavation shall be open trenches, except where otherwise shown on the Drawings, for tunneling, boring, or jacking under structures, railroad, sidewalks and roads.
6. Sheeting and shoring of trenches shall be provided at the expense of the Contractor where necessary to protect life, property and the new or existing structures from damage or to maintain maximum permissible trench widths at top of pipe. All necessary materials, including, but not limited to, sheeting, sheet piling, trench jacks, braces, shores and stringers, shall be used to hold trench walls. Sheeting and shoring may be withdrawn as the trenches are being backfilled, after backfill has been tamped over top of the pipe at least 18 inches. If removal before backfill is completed to surface endangers adjacent structures, such as buildings, pipelines, street paving, and sidewalks, then the sheeting and shoring shall be left in place until such danger has passed, and then pulled if practical. Voids caused by sheeting

- withdrawal shall be backfilled and tamped. If not withdrawn, sheeting shall be cut off at least 18 inches below final surface grade, so there is no obstruction at the ground level. In the event the Owner directs the Contractor to leave shoring materials in place, the Owner will reimburse the Contractor for the reasonable cost of leaving such materials in place.
7. Where subgrade of trench has insufficient stability to support the pipeline and hold it to its original grade, the Engineer may order stabilization by various means. Exclusive of dewatering normally required for construction, and instability caused by neglect of the Contractor, the necessary stabilization shall be paid for at unit prices established in the Contract. In the event no particular bid price is applicable, then the payment for stabilization will be negotiated.
 8. The location of the pipelines and their appurtenances as shown are those intended for the final construction. However, conditions may present themselves before construction on any line is started that would indicate desirable changes in location. The Owner reserves the right to make reasonable changes in line and structure locations without extra cost, except as may be determined by extra units of materials and construction actually involved. The Owner is under no obligation to locate pipelines, so they may be excavated by machine.
 9. Tunneling may be used at the Contractor's option as an alternate to open-cut trenching, at no extra cost to the Owner. The annular space between plates and excavation shall be either permanently placed pea gravel or sand, pumped grout (3 parts sand and 1 part Portland cement by volume) or other suitably installed material approved by the Engineer. Backfilling shall be kept close to the heading and completed after each day's work. Where grout is used for backfill, injection holes with threaded plugs shall be provided in linear plates at various levels and in sufficient number of effectively grout to void around the tunnel. A minimum of 3 grout holes shall be provided in each 8 feet of tunnel length. Grout shall be injected in the lower holes first, proceeding upward as the void is filled. Plugs shall be installed after each hole is filled and grout stops shall be provided behind plates as necessary to ensure complete filling of the void. In tunneling under buildings, the Contractor will be responsible for all damage resulting from his operations and methods of excavation and backfilling. Boring may also be used at the Contractor's option as an alternate to tunneling or open-cut trenching, at no extra cost to the Owner.
 10. Dig trenches to the uniform width required for the particular item to be installed, sufficiently wide to provide ample working room. Provide 6" to 9" clearance on both sides of pipe or conduit.

- a. Excavate trenches to depth indicated or required. Carry depth of trenches for piping to establish indicated flow lines and invert elevations. Beyond building perimeter, keep bottoms of trenches sufficiently below finish grade to avoid freeze-ups.
- b. Where rock is encountered, carry excavation 6 inches below required elevation and backfill with a 6-inch layer of crushed stone or gravel prior to installation of pipe.
- c. For pipes or conduit 3 inches or less in nominal size and for flat-bottomed, multiple-duct conduit units, excavate to subbase depth indicated or, if not indicated, then to 4 inches below bottom of work to be supported.
- d. For pipes or conduit 6 inches or larger in nominal size, tanks, and other mechanical/electrical work indicated to receive subbase, excavate to subbase depth indicated or, if not otherwise indicated, to 6 inches below bottom of work to be supported.
- e. Except as otherwise indicated, excavation for exterior water-bearing piping (water, steam, condensate, drainage) so top of piping is no less than 3 feet 0 inches below finish grade.
- f. Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.
- g. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and which are carried below bottom of such footings, or which pass under wall footings. Place concrete to level of bottom of adjacent footing.
- h. Concrete is specified in Division 3.
- i. Do not backfill trenches until tests and inspections have been made and backfilling authorized by the Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.
- j. For piping or conduit less than 3 feet 0 inches below surface of roadways, furnish and install steel casing pipe, minimum wall thickness of 1/4", or sufficient diameter to carry the pipe or conduit to at least two feet beyond outside edge of pavement.

L. Cold Weather Protection

1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35°F (1°C).

3.3 COMPACTION

A. General

1. Control soil compaction during construction providing minimum percentage of density specified for each area classification indicated below.
 - a. Percentage of maximum density requirements: Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D698 and not less than the following percentages of relative density, determined in accordance ASTM D4253 and D4254, for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils).
 - b. Structures, building slabs and steps, pavements: Compact top 12 inches of subgrade and each layer of backfill or fill material at 95 percent standard proctor density.
 - c. Lawn or unpaved areas: Compact top 6 inches of subgrade and each layer of backfill or fill material at 90 percent standard proctor density.
 - d. Walkways: Compact top 6 inches of subgrade and each layer of backfill or fill material at 95 percent standard proctor density.

B. Moisture Control

1. Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface or subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.
2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
3. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value.

3.4 BACKFILL AND FILL

A. General

1. Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below. Backfill material shall be no larger than the specified depth of the layer to be placed and/or compacted.
 - a. In excavations, use satisfactory excavated or borrow material.
 - b. Under grassed areas, use satisfactory excavated or borrow material.
 - c. Under walks and pavements, use subbase material, or satisfactory excavated or borrow material, or combination of both.
 - d. Under steps, use subbase material.
 - e. Under building slabs, use subbase material for a minimum depth of 6 inches.

B. Backfill excavations as promptly as work permits, but not until completion of the following:

1. Acceptance of construction below finish grade including, where applicable, damproofing, waterproofing, and perimeter insulation.
2. Inspection, testing, approval, and recording locations of underground utilities.
3. Removal of concrete formwork.
4. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in manner to prevent settlement of the structure or utilities, or leave in place if required.
5. Removal of trash and debris.
6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.

C. Ground Surface Preparation

1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow,

strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

2. When existing ground surface has a density less than that specified under "Compaction" for particular area classification, break up ground surface, pulverize, moisture condition to optimum moisture content, and compact to required depth and percentage of maximum density.

D. Placement and Compaction

1. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers. Crushed stone shall be installed in accordance with Section 02255.
 - a. Before compaction, add moisture or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
 - b. Place backfill and fill materials evenly adjacent to structures, piping, or conduit to required elevations. Take care to prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping, or conduit to approximately same elevation in each lift.

E. Backfilling Trenches

1. Backfilling shall be accomplished as soon as practical after pipe has been laid and jointing and alignment approved. Packing of crushed rock between joints shall be the usual procedure as the laying progresses. This is in order to avoid danger of misalignment from slides, flooding or other causes. The Engineer shall be given a maximum of 24 hours for inspection before backfilling.
2. Any special requirements of the Railroad Company or Highway Department in regard to backfilling will take precedence over the following general Specifications.
3. The backfill over the pipe shall be in accordance with the standard details shown on the Drawings for bedding and backfilling pipe.

4. In case maximum permissible trench widths (as designated by the pipe manufacturer) are exceeded, the Contractor shall furnish crushed rock backfill to a minimum of 12 inches over the top of pipe at no extra cost to the Owner.
5. After the foregoing cover requirements over top of the pipe have been met, rock may be used in the backfill in pieces no larger than 12 inches in any dimension and to an extent not greater than one-half the backfilling materials used. If additional earth is required for backfilling, it must be obtained and placed by the Contractor. Filling with rock and earth shall proceed simultaneously, such that no voids are left in the rock. After cover requirements over top of pipe have been met, backfilling may be employed without tamping, provided caution is used in quantity per dump and uniformity of level of backfilling. Surplus material shall be uniformly ridged over trench and excess rock hauled away, with no rock over 1-1/2 inch diameter in the top 6 inches. Ridged backfill shall be confined to the width of the trench and no higher than needed for replacement of settlement of backfill.
6. In the case of street, highway, railroad, sidewalk and driveway crossings; or within any roadway paving; or about manholes, valve and meter boxes; the backfill must be mechanically tamped in not over 6 inch layers, measured loose. Alternate method of compacting backfill shall be used, if refill material is in large hard lumps (crushed rock excepted) which cannot be consolidated without leaving voids.
7. In the case of tunnels, the annular space between plates and excavation shall be either permanently placed pea gravel or sand, pump grout (3 parts sand and 1 part Portland cement by volume) or other suitably installed material approved by the Engineer. Backfilling shall be kept close to the heading and completed after each day's work. Where grout is used for backfill, injection holes with threaded plugs shall be provided in liner plates at various levels and in sufficient number to effectively grout the void around the tunnel. A minimum of 3 grout holes shall be provided in each 8 feet of tunnel length. Grout shall be injected in the lower holes first, proceeding upward as the void is filled. Plugs shall be installed after each hole is filled and grout stops shall be provided behind plates as necessary to ensure complete filling of the void.
8. Where traffic on streets, driveways, railroads, sidewalks and highways requires temporary surfacing, backfilling shall be terminated 4 inches below original ground level and 4 inches to 6 inches of dense graded aggregate shall be placed on the trench. Backfills shall be maintained easily passible to traffic at original ground level, until acceptance of project or replacement of paving or sidewalks.

9. The Contractor shall protect all sewer, gas, electric, telephone, water and drain pipes or conduits from damage while pipelines are being constructed and backfilled, and from danger due to settlement of trench backfill.
10. No extra pavement shall be made for backfilling of any kind, except as specified hereinbefore. Backfilling shall be included as a part of the lump sum bid. No extra payment will be made to the Contractor for supplying outside materials for backfill.
11. On completion of the project, all backfills shall be dressed; holes filled; and surplus material hauled away. All permanent walks, street paving, roadway, etc., shall be restored and seeding and sodding performed as required.

3.5 GRADING

A. General

1. Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

B. Grading Outside Building Lines

1. All materials used for backfill around structures shall be of a quality acceptable to the Engineer and shall be free from large or frozen lumps, wood and other extraneous material. All spaces excavated and not occupied by footings, foundations walls or other permanent work shall be refilled with earth up to the surface of the surrounding ground, unless otherwise specified, with sufficient allowance for settlement. In making the fills and terraces around the structures, the fill shall be placed in layers not exceeding 12 inches in depth and shall be kept smooth as the work progresses. Each layer of the fill shall be rolled with an approved type roller and/or be compacted. When it is not practicable to compact sections of the fill immediately adjacent to buildings or structures by rolling, then such section shall be thoroughly compacted by means of mechanical tamping or hand tamping as may be required by the conditions encountered. All fills shall be placed so as to load structures symmetrically.
2. As set out hereinbefore, rough grading shall be held below finished grade and then the topsoil which has been stockpiled shall be evenly spread over the surface. The grading shall be brought to the levels shown on the

Drawings or to the elevations established by the Engineer. Final dressing shall be accomplished by hand work or machine work, or a combination of these methods as may be necessary to produce a uniform and smooth finish to all parts of the regrade. The surface shall be free from clods greater than 2 inches in diameter. Excavated rock may be placed in the fills, but it shall be thoroughly covered. Rock placed in fills shall not be closer than 12 inches from finished grade.

3. Grade areas adjacent to building lines to drain away from structures and to prevent ponding.
 - a. Finish surfaces free from irregular surface changes, and as follows:
 - (1) Lawn or unpaved areas: Finish areas to receive topsoil to within not more than 0.10 ft. above or below required subgrade elevations.
 - (2) Walks: Shape surface of areas under walks to line, grade, and cross-section, with finish surface not more than 0.0 inch above or 1.0 inch below required subgrade elevation.
 - (3) Pavements: Shape surface of areas under pavement to line, grade, and cross-section, with finish surface not more than 0.0 inch above or 1 inch below required subgrade elevation.
 - C. Grading Surface of Fill Under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 0.0 inch above or 1 inch below required subgrade elevation when tested with a 10 ft. straightedge.
 - D. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or standard proctor density for each area classification.

3.6 PAVEMENT SUBBASE COURSE

- A. General
 1. Subbase course consists of placing subbase material, in layers of specified thickness, over subgrade surface to support a pavement base course.
 2. See other Division 2 sections for paving specifications.

- B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.
- C. Shoulders
 - 1. Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each subbase course layer. Compact and roll at least a 12 inch width of shoulder simultaneously with compacting and rolling of each layer of subbase course.
- D. Placing
 - 1. Place subbase course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations.
 - 2. When a compacted subbase course is shown to be 6 inches thick or less, place material in a single layer. When shown to be more than 6 inches thick, place material in equal layers, except no single layer more than 6 inches or less than 3 inches in thickness when compacted.

3.7 BUILDING SLAB ENGINEERED FILL COURSE

- A. General
 - 1. Engineered fill course consists of placement of crushed stone, size and type shown on drawings, in layers of indicated thickness, over subgrade surface to support concrete building slabs.
- B. Placing
 - 1. Place fill material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting material during placement operations.
 - 2. When a compacted course is shown to be 6 inches or less, place material in a single layer. When shown to be more than 6 inches thick, place material in equal layers, except no single layer shall be more than 6 inches or less than 3 inches in thickness when compacted.

3.8 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction

1. Allow testing service to inspect and report to the Engineer on findings and approve subgrades and fill layers before further construction work is performed.
 - a. Perform field density tests in accordance with ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2992 (nuclear density method), as applicable.
 - b. Footing subgrade: For each strata of soil on which footings will be placed, conduct at least one test to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata, when acceptable to Engineer.
 - c. Paved areas and building slab subgrade: Make at least one field density test of subgrade for every 2,000 square feet of paved area or building slab, but in no case less than three tests. In each compacted fill layer, make one field density test for every 2,000 square feet of overlaying building slab or paved area, but in no case less than three tests.
 - d. Foundation wall backfill: Take at least two field density tests, at locations and elevations as directed.

- B. If in opinion of the Engineer, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense.

3.9 MAINTENANCE

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
- B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.

- C. Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

END OF SECTION



SECTION 02255
Crushed Stone and Dense Graded Aggregate

PART 1 GENERAL

1.1 SCOPE

- A. Furnish and install crushed stone for miscellaneous uses as shown on the Drawings, as called for in the Specifications.
- B. Sizes, types, and quality of crushed stone are specified in this Section, but its use for replacement of unsuitable material, pavement base, and similar uses is specified in detail elsewhere in the Specifications. The Engineer may order the use of crushed stone for purposes other than those specified in other sections, if, in his opinion, such use is advisable. Payment for same will be subject to negotiation.

PART 2 PRODUCTS

2.1 MATERIALS

- A. When referred to in these Specifications, crushed stone shall be Number 57 graded in accordance with the Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Latest Edition, unless otherwise noted.
- B. When referred to in these Specifications, dense graded aggregate (DGA) shall be crushed stone classified by the Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Latest Edition, and conforming to the following requirements:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 inch	100
3/4 inch	70-100
3/8 inch	50-80
#4	35-65
#10	25-50
#40	15-30
#200	5-12

PART 3 EXECUTION

3.1 INSTALLATION

- A. Crushed stone shall be placed in uniform layers not greater than 6 inches deep and shaped by power equipment to required lines, grades, cross sections, and depths. No minimum compacted density, method of compaction, or compaction equipment is required since a nominal amount of compaction effort with vibration can establish the desired intergranular locking of the aggregate under controlled placement depth. Acceptable compaction can be achieved with pneumatic-tired and tracked equipment and rollers.
- B. All compaction operation shall be performed to the satisfaction of the Engineer.
- C. Crushed stone shall be placed in those areas as shown on the Drawings and as may be directed by the Engineer.

END OF SECTION

SECTION 02513
Bituminous Concrete Paving

PART 1 GENERAL

1.1 GENERAL

A. RELATED DOCUMENTS

1. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

B. DESCRIPTION OF WORK

1. Extent of bituminous concrete paving work is shown on drawings.
2. Prepared aggregate subbase is specified in earthwork sections.

C. SUBMITTALS

1. Material Certificates: Provide copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceed, specified requirements.

D. QUALITY ASSURANCE

1. Codes and Standards: Comply with Kentucky Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, and with local governing regulations if more stringent than herein specified.

E. SITE CONDITIONS

1. Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 deg. F (10 deg. C), and when temperature has not been below 35 deg. F (1 deg. C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

2. Construct asphalt concrete surface course when atmospheric temperature is above 40 deg. F (4 deg. C), and when base is dry. Base course may be placed when air temperature is above 30 deg. F (-1 deg. C) and rising.
3. Grade Control: Establish and maintain required lines and elevations.

1.2 PRODUCTS

A. MATERIALS

1. General: Use locally available material and gradations which exhibit a satisfactory record of previous installations.
2. Base Course Aggregate: Sound, angular crushed stone, crushed gravel, or crushed slag, sand, stone or slag screenings.
3. Surface Course Aggregate: Crushed stone, crushed gravel, crushed slag, and sharp-edged natural sand.
4. Mineral Filler: Rock or slag dust, hydraulic cement, or other inert material complying with AASHTO M 17 (ASTM D 242).
5. Asphalt Cement: AASHTO M 226 (ASTM D 3381) for viscosity-graded material.
6. Prime Coat: Cut-back asphalt type; AASHTO M 82 (ASTM D 2027) MC-30, MC-70 or MC-250.
7. Tack Coat: Emulsified asphalt; AASHTO M 140 (ASTM D 977) or M 208 (D 2397); SS-1, SS-1h, CSS-1 or CSS-1h, diluted with one part water to one part emulsified asphalt.
8. Lane Marking Paint: Chlorinated rubber-alkyd type, AASHTO M 248 (FS TT-P-115), Type III.

B. ASPHALT-AGGREGATE MIXTURE

1. Provide plant-mixed, hot-laid asphalt-aggregate mixture complying with Kentucky State Specification Section 400.

1.3 EXECUTION

A. SURFACE PREPARATION

1. Remove loose material from compacted subbase surface immediately before applying prime coat.
2. Proof roll prepared subbase surface to check for unstable areas and areas requiring additional compaction.
3. Notify Contractor of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.
4. Prime Coat: Apply at rate of 0.20 to 0.50 gal. per sq. yd., over compacted subgrade. Apply material to penetrate and seal, but not flood, surface. Cure and dry as long as necessary to attain penetration and evaporation of volatile.
5. Tack Coat: Apply to contact surfaces of previously constructed asphalt or portland cement concrete and surfaces abutting or projecting into asphalt concrete pavement. Distribute at rate of 0.05 to 0.15 gal. per sq. yd. of surface.
6. Allow to dry until at proper condition to receive paving.
7. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

B. PLACING MIX

1. General: Place asphalt concrete mixture on prepared surface, spread and strike-off. Spread mixture a minimum temperature of 225 deg. F (107 deg. C). Place inaccessible and small areas by hand. Place each course to required grade, cross-section, and compacted thickness.
2. Paver Placing: Place in strips not less than 10' wide, unless otherwise acceptable to Architect. After first strip has been placed and rolled, place succeeding strips and extend rolling to

overlap previous strips. Complete base course for a section before place in surface course.

3. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density and smoothness as other sections of asphalt concrete course. Clean contact surfaces and apply tack coat.

C. ROLLING

1. General: Begin rolling when mixture will bear roller weight without excessive displacement.
2. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
3. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.
4. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.
5. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.
6. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut-out such areas and fill with fresh, hot asphalt concrete. Compact by rolling to maximum surface density and smoothness.
7. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
8. Erect barricades to prevent paving from traffic until mixture has cooled enough not to become marked.

E. FIELD QUALITY CONTROL

1. General: Test in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by Architect.
2. Thickness: In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:
 - a. Base Course: 1/2", plus or minus.
 - b. Surface Course: 1/4", plus or minus.
3. Surface Smoothness: Test finished surface of each asphalt concrete course for smoothness, using 10' straightedge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness.
 - a. Base Course Surface: 1/4".
 - b. Wearing Course Surface: 3/16".
 - c. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template, 1/4".
4. Check surface areas at intervals as directed by Architect.

END OF SECTION



SECTION 02665

Water Mains and Accessories

PART 1 GENERAL

1.01 SCOPE

- A. This Section describes products to be incorporated into the water mains and requirements for the installation and use of these items. Furnish all products and perform all labor necessary to fulfill the requirements of these Specifications.
- B. General: Supply all products and perform all work in accordance with applicable American Society for Testing and Material (ASTM), American Water Works Association (AWWA), American National Standards Institute (ANSI), or other recognized standards. Latest revisions of all standards are applicable.

1.02 QUALIFICATIONS

If requested by the Engineer, submit evidence that manufacturers have consistently produced products of satisfactory quality and performance for a period of at least two years.

1.03 SUBMITTALS

Complete shop drawings and engineering data for all products shall be submitted to the Engineer in accordance with the requirements of Section 01340 of these Specifications.

1.04 TRANSPORTATION AND HANDLING

- A. Unloading: Furnish equipment and facilities for unloading, handling, distributing and storing pipe, fittings, valves and accessories. Make equipment available at all times for use in unloading. Do not drop or dump materials. Any materials dropped or dumped will be subject to rejection without additional justification. Pipe handled on skids shall not be rolled or skidded against the pipe on the ground.
- B. Handling: Handle pipe, fittings, valves and accessories carefully to prevent shock or damage. Handle pipe by rolling on skids, forklift, or front end loader. Do not use material damaged in handling. Slings, hooks or pipe tongs shall be padded and used in such a manner as to prevent damage to the exterior coatings or internal lining of the pipe.

1.05 OWNER FURNISHED MATERIALS (Not Used)**1.06 STORAGE AND PROTECTION**

- A. Store all pipe which cannot be distributed along the route. Contractor shall make arrangements for the use of suitable storage areas.
- B. Stored materials shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt or foreign matter at all times. Valves and hydrants shall be drained and stored in a manner that will protect them from damage by freezing.
- C. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom tier shall be kept off the ground on timbers, rails or concrete. Pipe in tiers shall be alternated: bell, plain end; bell, plain end. At least two rows of timbers shall be placed between tiers and chocks, affixed to each other in order to prevent movement. The timbers shall be large enough to prevent contact between the pipe in adjacent tiers.
- D. Stored mechanical and push-on joint gaskets shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.
- E. Mechanical-joint bolts shall be handled and stored in such a manner that will ensure proper use with respect to types and sizes.

1.07 QUALITY ASSURANCE

The manufacturer shall provide written certification to the Engineer that all products furnished comply with all applicable requirements of these Specifications.

PART 2 PRODUCTS**2.01 PIPING MATERIALS AND ACCESSORIES**

- A. Ductile Iron Pipe (DIP)
 - 1. Ductile iron pipe shall be manufactured in accordance with AWWA C151. All pipe, except specials, shall be furnished in nominal lengths of 18 to 20 feet. Sizes will be as shown on the Drawings. All pipe shall have a minimum pressure rating as indicated in the following table, and corresponding minimum wall thickness, unless otherwise specified or shown on the Drawings:

Pipe Sizes (inches)	Pressure Class (psi)
4 - 12	350
14 - 18	250
20	250
24	200
30 - 54	250
60 - 64	200

2. Flanged pipe minimum wall thickness shall be equal to Special Class 53. Flanges shall be furnished by the pipe manufacturer.
3. Pipe and fittings shall be cement lined in accordance with AWWA C104. Pipe and fittings shall be furnished with a bituminous outside coating.
4. Fittings shall be ductile iron and shall conform to AWWA C110 or AWWA C153 with a minimum rated working pressure of 250 psi or as indicated on plans.
5. Joints
 - a. Unless shown or specified otherwise, joints shall be push-on or restrained joint type for pipe and standard mechanical, push-on or restrained joints for fittings. Push-on and mechanical joints shall conform to AWWA C111. Restrained joints for pipe and fittings shall be American "FLEX-RING" or "LOK-RING", Clow "SUPER-LOCK", or U.S. Pipe "TR FLEX". No field welding of restrained joint pipe will be permitted. No mega lug type restraints are allowed on 24" and 30" water line.
 - b. Restrained joint pipe (RJP) on supports shall have bolted joints and shall be specifically designed for clear spans of at least 36 feet.
 - c. Flanged joints shall meet the requirements of ANSI B16.1, Class 125.
6. Provide the appropriate gaskets for mechanical and flange joints. Gaskets for flange joints shall be made of 1/8-inch thick, cloth reinforced rubber; gaskets may be ring type or full face type.
7. Provide the necessary bolts for mechanical, restrained and flange connections. Bolts for flange connections shall be steel with American

Regular unfinished square or hexagon heads. Nuts shall be steel with American Standard Regular hexagonal dimensions, all as specified in ANSI B17.2. All bolts and all nuts shall be threaded in accordance with ANSI B1.1, Coarse Thread Series, Class 2A and 2B fit. Mechanical joint glands shall be ductile iron.

8. Acceptance will be on the basis of the Engineer's inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards.

B. Polyvinyl Chloride Pipe (PVC) - (SDR-21)

1. All PVC pipe shall have belled ends for push-on type jointing and shall conform to ASTM D 2241. The pipe shall have a Standard Dimension Ratio (SDR) of 21 and shall be capable of withstanding a working pressure of 200 psi. Pipe shall be supplied in minimum lengths of 20 feet.
2. All fittings shall be of cast or ductile iron meeting the requirements of AWWA C110 or AWWA C153 with a minimum rated working pressure of 150 psi. Fittings shall be cement lined in accordance with AWWA C104. Fittings shall be furnished with a bituminous outside coating. Special adapters shall be provided as recommended by the manufacturer to adapt the PVC pipe to mechanical jointing with cast or ductile iron pipe, fittings, or valves.
3. Detection tape shall be provided over all PVC water mains.
4. Acceptance will be on the basis of the Engineer's inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards, including the National Sanitation Foundation. Additionally, each piece of pipe shall be stamped "NSF Approved".

C. Polyvinyl Chloride Pipe (PVC) - (C-900)

1. All PVC pipe shall have belled ends for push-on type jointing and shall conform to AWWA C900, ductile iron pipe equivalent outside diameters. The pipe shall have a Dimension Ratio (DR) of 14 and shall be capable of withstanding a working pressure of 200 psi. Pipe shall be supplied in minimum lengths of 20 feet.
2. All fittings shall be of cast or ductile iron meeting the requirements of AWWA C110 or AWWA C153 with a minimum rated working pressure of

250 psi. Fittings shall be cement lined in accordance with AWWA C104. Fittings shall be furnished with a bituminous outside coating. Special adapters shall be provided, as recommended by the manufacturer, to adapt the PVC pipe to mechanical jointing with cast or ductile iron pipe, fittings or valves.

3. Detection tape shall be provided over all PVC water mains.
4. Acceptance will be on the basis of the Engineer's inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards, including the National Sanitation Foundation. Additionally, each piece of pipe shall be stamped "NSF Approved".

2.02 VALVES

A. Gate Valves (GV)

1. 3-Inches in Diameter and Smaller: Gate valves shall be bronze, heavy duty, rising stem, wedge type with screwed or union bonnet. Valve ends shall be threaded or solder type as appropriate. Valves shall have a minimum 200 psi working pressure for water (125 psi working pressure for steam). Valves shall be made in the U.S.A. Gate valves shall be equal to Crane No. 428 (threaded) or Crane No. 1334 (solder end).
2. 4-Inches Through 12-Inches in Diameter: Gate valves 4-inches through 12-inches shall be resilient wedge type conforming to the requirements of AWWA C509 rated for 200 psi working pressure.
 - a. Valves shall be provided with two O-ring stem seals with one O-ring located above and one O-ring below the stem collar. The area between the O-rings shall be filled with lubricant to provide lubrication to the thrust collar bearing surfaces each time the valve is operated. At least one anti-friction washer shall be utilized to further minimize operating torque. All seals between valve parts, such as body and bonnet, bonnet and bonnet cover, shall be flat gaskets or O-rings.
 - b. The valve gate shall be made of cast iron having a vulcanized, synthetic rubber coating, or a seat ring attached to the disc with retaining screws. Sliding of the rubber on the seating surfaces to compress the rubber will not be allowed. The design shall be such that compression-set of the rubber shall not affect the ability of the

valve to seal when pressure is applied to either side of the gate. The sealing mechanism shall provide zero leakage at the water working pressure when installed with the line flow in either direction.

- c. All internal ferrous surfaces shall be coated with epoxy to a minimum thickness of 4 mils. The epoxy shall be non-toxic, impart no taste to the water and shall conform to AWWA C550, latest revision.
- d. Gate valves 4 through 12-inches shall be manufactured by American-Darling, Mueller or M & H Valve.

B. Butterfly Valves (BV)

1. Butterfly valves shall be resilient seated, short body design, and shall be designed, manufactured, and tested in accordance with all requirements of AWWA C504, and as modified below. Valves shall be designed for a rated working pressure of 250 psi. Class B, AWWA C504 Section 5.2 testing requirements are modified as follows:
 - a. the leakage test shall be performed at a pressure of 250 psi;
 - b. the hydrostatic test shall be performed at a pressure of 500 psi; and
 - c. proof of design tests shall be performed and certification of such proof of design test shall be provided to the Engineer.
2. Valve bodies shall be ductile iron conforming to ASTM A 536, Grade 65-45-12 or ASTM A 126, Grade B cast iron. Shafts and shaft hardware shall be ASTM A 564, Type 630 stainless steel, machined and polished. Valve discs shall be ductile iron, ASTM A 536, Grade 65-45-12. The resilient valve seat shall be located either on the valve disc or in the valve body and shall be fully field adjustable and field replaceable.
3. Valves shall be installed with the valve shafts horizontal. Valves and actuators shall have seals on all shafts and gaskets on valve actuator covers to prevent the entry of water. Actuator mounting brackets shall be totally enclosed and shall have gasket seals.
4. Actuators
 - a. Valves shall be equipped with traveling nut, self-locking type actuators designed, manufactured and tested in accordance with AWWA C504. Actuators shall be capable of holding the disc in any position between full open and full closed without any movement or fluttering of the disc.

- b. Actuators shall be furnished with fully adjustable mechanical stop-limiting devices. Actuators that utilize the sides of the actuator housing to limit disc travel are unacceptable.
 - c. Valve actuators shall be capable of withstanding a minimum of 450 foot pounds of input torque in either the open or closed position without damage.
5. Operators: Valves for buried service shall have a nut type operator and shall be equipped with a valve box and stem extension, as required.
 6. Valve ends shall be mechanical joint type, except where flanged or restrained joint ends are shown. Flange joints shall meet the requirements of ANSI B16.1, Class 125. MJ Joint ends shall be restrained were called for using American MJ coupled joint or approved equal.
 7. Butterfly valves shall be manufactured by Mueller, M & H Valve, DeZurik, or Pratt.

2.03 FIRE HYDRANTS (FH)

- A. All fire hydrants shall conform to the requirements of AWWA C502 for 250 psi working pressure. Hydrants shall be the compression type, closing with line pressure. The valve opening shall not be less than [5-1/4-inches].
- B. In the event of a traffic accident, the hydrant barrel shall break away from the standpipe at a point above grade and in a manner which will prevent damage to the barrel and stem, preclude opening of the valve, and permit rapid and inexpensive restoration without digging or cutting off the water.
- C. The means for attaching the barrel to the standpipe shall permit facing the hydrant a minimum of eight different directions.
- D. Hydrants shall be fully bronze mounted with all working parts of bronze. Valve seat ring shall be bronze and shall screw into a bronze retainer.
- E. All working parts, including the seat ring shall be removable through the top without disturbing the barrel of the hydrant.
- F. The operating nut shall match those on the existing hydrants. The operating threads shall be totally enclosed in an operating chamber, separated from the hydrant barrel by a rubber O-ring stem seal and lubricated by a grease or an oil reservoir.

- G. Hydrant shall be a non-freezing design and be provided with a simple, positive, and automatic drain which shall be fully closed whenever the main valve is opened.
- H. Hose and pumper connections shall be breech-locked, pinned, or threaded and pinned to seal them into the hydrant barrel. Each hydrant shall have two 2-1/2-inch hose connections and one 4-1/2-inch pumper connection, all with National Standard threads and each equipped with cap and non-kinking chain.
- I. Hydrants shall be furnished with a mechanical joint connection to the spigot of the 6-inch hydrant lead.
- J. Minimum depth of bury shall be 4.5 feet. Provide extension section where necessary for proper vertical installation and in accordance with manufacturer's recommendations.
- K. All outside surfaces of the barrel above grade shall be painted with enamel equal to Koppers Glamortex 501 in a color to be selected by the Owner.
- L. Hydrants shall be traffic model and shall be Mueller Super Centurion or approved equal.

2.04 VALVE BOXES (VB) AND EXTENSION STEMS

- A. All valves shall be equipped with valve boxes. The valve boxes shall be cast iron two-piece screw type with drop covers. Valve boxes shall have a 5.25-inch inside diameter. Valve box covers shall weigh a minimum of 13 pounds. The valve boxes shall be adjustable to 6-inches up or down from the nominal required cover over the pipe. Valve boxes shall be of sufficient length that bottom flange of the lower belled portion of the box is below the valve operating nut. Ductile or cast iron extensions shall be provided as necessary. Covers shall have "WATER VALVE" or "WATER" cast into them. Valve boxes shall be manufactured in the United States.
- B. All valves shall be furnished with extension stems, as necessary, to bring the operating nut to within 30-inches of the top of the valve box. Connection to the valve shall be with a wrench nut coupling and a set screw to secure the coupling to the valve's operating nut. The coupling and square wrench nut shall be welded to the extension stem. Extension stems shall be equal to Mueller A-26441 or M & H Valve Style 3801.

2.05 VALVE MARKERS (VM)

The Contractor shall provide a concrete valve marker as detailed on the Drawings for each valve installed. Valve markers shall be stamped "Water".

2.06 TAPPING SLEEVES AND VALVES (TS&V)

Tapping sleeves shall be cast or ductile iron of the split-sleeve, mechanical joint type. The Contractor shall be responsible for determining the outside diameter of the pipe to be connected to prior to ordering the sleeve. Valves shall be gate valves furnished in accordance with the specifications shown above, with flanged connection to the tapping sleeve and mechanical joint connection to the branch pipe. The tapping sleeve and valve shall be supplied by the valve manufacturer. Tapping sleeves shall be equal to American-Darling, Mueller or M & H Valve.

2.07 TAPPING SADDLES

Tapping saddles shall be ductile iron body type with O-ring gasket and alloy steel straps. Connection shall be flanged or mechanical joint as detailed on the Drawings. Tapping saddles shall be equal to ACIPCO A-10920.

2.08 CORPORATION COCKS AND CURB STOPS

Corporation cocks and curb stops shall be ground key type, shall be made of bronze conforming to ASTM B 61 or B 62, and shall be suitable for the working pressure of the system. Ends shall be suitable for flared tube compression type joint. Threaded ends for inlet and outlet of corporation cocks shall conform to AWWA C800; coupling nut for connection to flared copper tubing shall conform to ANSI B16.26. Corporation cocks and curb stops shall be manufactured by Mueller or Ford.

2.09 AIR VALVES

A. Air Release Valves: Air release valves shall be one of the following types:

1. The air release valve shall automatically release air accumulations from the pipeline due to the action of the float. When the air valve body fills with air, the float falls freely from the orifice to allow the air to escape to the atmosphere. When all the air has been exhausted from the valve body, the float will be buoyed up to seat against the orifice and prevent water from

being exhausted from the valve. The valve body and cover shall be constructed of cast iron (ASTM A 126-B). A synthetic orifice button shall be affixed to the valve cover to provide a non-corrosive seat for the float. The float shall be constructed of stainless steel. A resilient, Buna-N seat shall be attached to the float for drop-tight closure. The float shall be free floating within the valve body. Valve orifice size shall be as shown on the Drawings.

2. The air release valve shall automatically release air accumulations from the pipeline due to the action of the float and lever mechanism. When the air valve body fills with air, the float falls. Through the leverage mechanism, this causes the resilient seat to open the orifice and allow the air to escape to the atmosphere. When all the air has been exhausted from the valve body, the float will be buoyed up. Through the leverage mechanism, this will cause the resilient seat to close the orifice, preventing water from being exhausted from the valve. The valve body and cover shall be constructed of cast iron (ASTM A 126-B). The float shall be constructed of stainless steel and attached to a stainless steel lever mechanism. A resilient, Buna-N seat shall be attached to the lever mechanism for drop-tight closure. Valve orifice size shall be as shown on the Drawings.
- B. **Air/Vacuum Valve:** The air/vacuum valve shall discharge large amounts of air as the pipeline fills and allow air to enter the pipeline as it drains or in the event of vacuum conditions. The valve shall operate by means of a non-collapsible stainless steel float which seals an orifice. As air enters the valve the float shall drop from the orifice and allow the air to escape. As water rises in the valve, the float will again seal the orifice. The valve will be of such design that the float cannot blow shut at any air velocity. All working parts shall be of stainless steel. The inside of the valve body shall be epoxy coated. Valve inlet size shall be as shown on the Drawings.
- C. **Combination Air Valves:** Combination air valves shall combine the features of an air release valve and an air/vacuum valve and shall be of one of the following types:
1. Valve shall consist of an air/vacuum valve described in paragraph B. above, with an air release valve described in A. above tapped into its body. The valve shall be of two-piece body design with an isolation gate valve separating the two valves.
 2. Valve shall be single body, double orifice, allowing large volumes of air to escape out the larger diameter air and vacuum orifice when filling a pipeline and closes watertight when the liquid enters the valve. During large orifice

closure, the smaller diameter air release orifice will open to allow small pockets of air to escape automatically and independently of the large orifice. The large air/vacuum orifice shall also allow large volumes of air to enter through the orifice during pipeline drainage to break the vacuum. The Buna-N seats must be fastened to the valve, without distortion, for drop-tight shut-off. The float shall be stainless steel. Valve sizes shall be as shown on the Drawings.

- D. Surge Check Valve: Where shown on the Drawings or specified, provide a surge check valve on the inlet of the air/vacuum valve. The surge check valve shall be normally open, spring loaded valve consisting of a body, seat and plug bolted to the inlet of the air/vacuum valve. The surge check shall operate on the interphase between the kinetic energy and relative velocity flows of air and water, allowing air to pass through but water shall close the surge check, reducing the rate of water flow by means of throttling orifices in the plug to prevent shock closure of the air/vacuum valve. The surge check orifices must be an adjustable type to suit operating conditions in the field.
- E. All air valves and accessories shall be supplied by a single manufacturer and shall be G.A. Industries, APCO, Crispin or Val-Matic.

2.10 METER SETTERS

The meter setter shall be a tandem coppersetter as shown on the standard detail drawings with 3/4" double purpose ends and be 15" high with padlock wing. It shall be all purpose, designed for 5/8" x 3/4" meter and be of sufficient height to raise meters above the bottom of the meter box. The meter setter shall be Ford, or equal. Meter setters shall have an inverted key inlet valve.

Setters shall be installed so that the meters are centered in the meter box.

The water service line shall be extended a minimum of 18" beyond the meter box on the customer end. The end of the extension shall be capped or plugged to prevent entry of foreign material until the connection is made.

2.11 WATER METERS

Water meter shall be cold water displacement type meeting all requirement of AWWA C700-77. The meter sizes shall be 5/8-inch x 3/4-inch meters for 3/4" service rated at a flow of 20 gpm and 1" meters for 1" service rated at a flow of 50 gpm. Meters shall be of frost-proof design and be rotating disk type. The meters shall be equipped with a straight-reading register recording in U.S. Gallons hermetically sealed to prevent fogging and with a removable corrosion resistant

strainer screen between the outer case and measuring chamber. Register shall be equipped with a device to afford capability for accurately testing each meter according to AWWA Standards. The body case shall have the manufacturer's serial number imprinted thereon and have raised markings to indicate the direction of flow.

2.12 HYDRANT TEES (Not Used)

2.13 ANCHOR COUPLINGS (Not Used)

2.14 VALVE KEYS

The Contractor shall provide to the Owner one valve key for every five valves provided, but no more than three and not less than one valve key. Valve keys shall be 72-inches long with a tee handle and a 2-inch square wrench nut. Valve keys shall be furnished by the valve manufacturer. Valve keys shall be equal to Mueller A-24610 or ACIPCO No. 1303.

2.15 CONCRETE

Concrete shall have a compressive strength of not less than 3000 psi, with not less than 5.5 bags of cement per cubic yard and a slump between 3 and 5-inches. For job mixed concrete, submit the concrete mix design for approval by the Engineer. Ready-mixed concrete shall be mixed and transported in accordance with ASTM C 94. Reinforcing steel shall conform to the requirements of ASTM A 615, Grade 60.

PART 3 EXECUTION

3.01 EXISTING UTILITIES AND OBSTRUCTIONS

- A. The Drawings indicate utilities or obstructions that are known to exist according to the best information available to the Owner. The Contractor shall call the agencies or departments that own and/or operate utilities in the vicinity of the construction work site at least 72 hours (three business days) prior to construction to verify the location of the existing utilities.
- B. Existing Utility Location: The following steps shall be exercised to avoid interruption of existing utility service.
 1. Provide the required notice to the utility owners and allow them to locate their facilities. Field utility locations are valid for only 10 days after original notice. The Contractor shall ensure, at the time of any excavation, that a valid utility location exists at the point of excavation.

2. Expose the facility, for a distance of at least 200 feet in advance of pipeline construction, to verify its true location and grade. Repair, or have repaired, any damage to utilities resulting from locating or exposing their true location.
3. Avoid utility damage and interruption by protection with means or methods recommended by the utility owner.
4. Maintain a log identifying when phone calls were made, who was called, area for which utility relocation was requested and work order number issued, if any. The Contractor shall provide the Engineer an updated copy of the log bi-weekly, or more frequently if required.

C. Conflict with Existing Utilities

1. **Horizontal Conflict:** Horizontal conflict shall be defined as when the actual horizontal separation between a utility, main, or service and the proposed water main does not permit safe installation of the water main by the use of sheeting, shoring, tying-back, supporting, or temporarily suspending service of the parallel or crossing facility. The Contractor may change the proposed alignment of the water main to avoid horizontal conflicts if the new alignment remains within the available right-of-way or easement, complies with regulatory agency requirements and after a written request to and subsequent approval by the Engineer. Where such relocation of the water main is denied by the Engineer, the Contractor shall arrange to have the utility, main, or service relocated.
2. **Vertical Conflict:** Vertical conflict shall be defined as when the actual vertical separation between a utility, main, or service and the proposed water main does not permit the crossing without immediate or potential future damage to the utility, main, service, or the water main. The Contractor may change the proposed grade of the water main to avoid vertical conflicts if the changed grade maintains adequate cover and complies with regulatory agencies requirements after written request to and subsequent approval by the Engineer. Where such relocation of the water main is denied by the Engineer, the Contractor shall arrange to have the utility, main, or service relocated.

- D. **Electronic Locator:** Have available at all times an electronic pipe locator and a magnetic locator, in good working order, to aid in locating existing pipe lines or other obstructions.

E. Water and Sewer Separation

1. Water mains should maintain a minimum 10 foot edge-to-edge separation from sewer lines, whether gravity or pressure. If the main cannot be installed in the prescribed easement or right-of-way and provide the 10 foot separation, the separation may be reduced, provided the bottom of the water main is a minimum of 18-inches above the top of the sewer. Should neither of these two separation criteria be possible, the water main shall be installed below the sewer with a minimum vertical separation of 18-inches.
2. The water main, when installed below the sewer, shall be encased in concrete with a minimum 6-inch concrete depth to the first joint in each direction. Where water mains cross the sewer, the pipe joint adjacent to the pipe crossing the sewer shall be cut to provide maximum separation of the pipe joints from the sewer.
3. No water main shall pass through, or come in contact with, any part of a sanitary sewer manhole.

3.02 CONSTRUCTION ALONG HIGHWAYS, STREETS AND ROADWAYS

- A. Install pipe lines and appurtenances along highways, streets and roadways in accordance with the applicable regulations of, and permits issued by, the Department of Transportation, Mason and Fleming Counties and the City of Flemingsburg with reference to construction operations, safety, traffic control, road maintenance and repair.
- B. Traffic Control
 1. The Contractor shall provide, erect and maintain all necessary barricades, suitable and sufficient lights and other traffic control devices; provide qualified flagmen where necessary to direct traffic; take all necessary precautions for the protection of the work and the safety of the public.
 2. Construction traffic control devices and their installation shall be in accordance with the current Manual On Uniform Traffic Control Devices for Streets and Highways.
 3. Placement and removal of construction traffic control devices shall be coordinated with the Department of Transportation, Mason and Fleming Counties and the City of Flemingsburg a minimum of 48 hours in advance of the activity.
 4. Placement of construction traffic control devices shall be scheduled ahead of associated construction activities. Construction time in street

right-of-way shall be conducted to minimize the length of time traffic is disrupted. Construction traffic control devices shall be removed immediately following their useful purpose. Traffic control devices used intermittently, such as "Flagmen Ahead", shall be removed and replaced when needed.

5. Existing traffic control devices within the construction work zone shall be protected from damage. Traffic control devices requiring temporary relocation shall be located as near as possible to their original vertical and horizontal locations. Original locations shall be measured from reference points and recorded in a log prior to relocation. Temporary locations shall provide the same visibility to affected traffic as the original location. Relocated traffic control devices shall be reinstalled in their original locations as soon as practical following construction.
6. Construction traffic control devices shall be maintained in good repair and shall be clean and visible to affected traffic for daytime and nighttime operation. Traffic control devices affected by the construction work zone shall be inspected daily.
7. Construction warning signs shall be black legend on an orange background. Regulatory signs shall be black legend on a white background. Construction sign panels shall meet the minimum reflective requirements of the Department of Transportation, Mason and Fleming Counties and the City of Flemingsburg. Sign panels shall be of durable materials capable of maintaining their color, reflective character and legibility during the period of construction.
8. Channelization devices shall be positioned preceding an obstruction at a taper length as required by the current Manual On Uniform Traffic Control Devices for Streets and Highways, as appropriate for the speed limit at that location. Channelization devices shall be patrolled to insure that they are maintained in the proper position throughout their period of use.

C. Construction Operations

1. Perform all work along highways, streets and roadways to minimize interference with traffic.
2. Stripping: Where the pipe line is laid along road right-of-way, strip and stockpile all sod, topsoil and other material suitable for right-of-way restoration.

3. Trenching, Laying and Backfilling: Do not open the trench any further ahead of pipe laying operations than is necessary. Backfill and remove excess material immediately behind laying operations. Complete excavation and backfill for any portion of the trench in the same day.
 4. Shaping: Reshape damaged slopes, side ditches, and ditch lines immediately after completing backfilling operations. Replace topsoil, sod and any other materials removed from shoulders.
 5. Construction operations shall be limited to 400 feet along areas within KYDOT jurisdiction, including clean-up and utility exploration.
- D. Excavated Materials: Do not place excavated material along highways, streets and roadways in a manner which obstructs traffic. Sweep all scattered excavated material off of the pavement in a timely manner.
- E. Drainage Structures: Keep all side ditches, culverts, cross drains, and other drainage structures clear of excavated material. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.
- F. Landscaping Features: Landscaping features shall include, but are not necessarily limited to: fences; property corners; cultivated trees and shrubbery; manmade improvements; subdivision and other signs within the right-of-way and easement. The Contractor shall take extreme care in moving landscape features and promptly re-establishing these features.
- G. Maintaining Highways, Streets, Roadways and Driveways
1. Maintain streets, highways, roadways and driveways in suitable condition for movement of traffic until completion and final acceptance of the Work.
 2. During the time period between pavement removal and completing permanent pavement replacement, maintain highways, streets and roadways by the use of steel running plates. Running plate edges shall have asphalt placed around their periphery to minimize vehicular impact. The backfill above the pipe shall be compacted as specified elsewhere up to the existing pavement surface to provide support for the steel running plates.
 3. Furnish a road grader or front-end loader for maintaining highways, streets, and roadways. The grader or front-end loader shall be available at all times.

4. Immediately repair all driveways that are cut or damaged. Maintain them in a suitable condition for use until completion and final acceptance of the Work.

3.03 PIPE DISTRIBUTION

- A. Pipe shall be distributed and placed in such a manner that will not interfere with traffic.
- B. No pipe shall be strung further along the route than 1000 feet beyond the area in which the Contractor is actually working without written permission from the Owner.
- C. No street or roadway may be closed for unloading of pipe without first obtaining permission from the proper authorities. The Contractor shall furnish and maintain proper warning signs and obstruction lights for the protection of traffic along highways, streets and roadways upon which pipe is distributed.
- D. No distributed pipe shall be placed inside drainage ditches.
- E. Distributed pipe shall be placed as far as possible from the roadway pavement, but no closer than five feet from the roadway pavement, as measured edge-to-edge.

3.04 LOCATION AND GRADE

- A. The Drawings show the alignment of the water main and the location of valves, hydrants and other appurtenances.
- B. Construction Staking
 1. The base lines for locating the principal components of the work and a bench mark adjacent to the work are shown on the Drawings. Base lines shall be defined as the line to which the location of the water main is referenced, i.e., edge of pavement, road centerline, property line, right-of-way or survey line. The Contractor shall be responsible for performing all survey work required for constructing the water main, including the establishment of base lines and any detail surveys needed for construction. This work shall include the staking out of permanent and temporary easements to insure that the Contractor is not deviating from the designated easements.
 2. The level of detail of survey required shall be that which the correct location of the water main can be established for construction and verified by the

Engineer. Where the location of components of the water main, e.g. tunnels and fittings, are not dimensioned, the establishment on the location of these components shall be based upon scaling these locations from the Drawings with relation to readily identifiable land marks, e.g., survey reference points, power poles, manholes, etc.

C. Reference Points

1. The Contractor shall take all precautions necessary, which includes, but is not necessarily limited to, installing reference points, in order to protect and preserve the centerline or baseline established by the Engineer.
2. Reference points shall be placed, at or no more than three feet, from the outside of the construction easement or right-of-way. The location of the reference points shall be recorded in a log with a copy provided to the Engineer for use, prior to verifying reference point locations. Distances between reference points and the manhole centerlines shall be accurately measured to 0.01 foot.
3. The Contractor shall give the Engineer reasonable notice that reference points are set. The reference point locations must be verified by the Engineer prior to commencing clearing and grubbing operations.

- D.** After the Contractor locates and marks the water main centerline or baseline, the Contractor shall perform clearing and grubbing.
- E.** Construction shall begin at a connection location and proceed without interruption. Multiple construction sites shall not be permitted without written authorization from the Engineer for each site.
- F.** The Contractor shall be responsible for any damage done to reference points, base lines, center lines and temporary bench marks, and shall be responsible for the cost of re-establishment of reference points, base lines, center lines and temporary bench marks as a result of the operations.

3.05 LAYING AND JOINTING PIPE AND ACCESSORIES

- A.** Lay all pipe and fittings to accurately conform to the lines and grades established by the Engineer.
- B.** Pipe Installation

1. Proper implements, tools and facilities shall be provided for the safe performance of the Work. All pipe, fittings, valves and hydrants shall be lowered carefully into the trench by means of slings, ropes or other suitable tools or equipment in such a manner as to prevent damage to water main materials and protective coatings and linings. Under no circumstances shall water main materials be dropped or dumped into the trench.
2. All pipe, fittings, valves, hydrants and other appurtenances shall be examined carefully for damage and other defects immediately before installation. Defective materials shall be marked and held for inspection by the Engineer, who may prescribe corrective repairs or reject the materials.
3. All lumps, blisters and excess coating shall be removed from the socket and plain ends of each pipe, and the outside of the plain end and the inside of the bell shall be wiped clean and dry and free from dirt, sand, grit or any foreign materials before the pipe is laid. No pipe containing dirt shall be laid.
4. Foreign material shall be prevented from entering the pipe while it is being placed in the trench. No debris, tools, clothing or other materials shall be placed in the pipe at any time.
5. As each length of pipe is placed in the trench, the joint shall be assembled and the pipe brought to correct line and grade. The pipe shall be secured in place with approved backfill material.
6. It is not mandatory to lay pipe with the bells facing the direction in which work is progressing.
7. Applying pressure to the top of the pipe, such as with a backhoe bucket, to lower the pipe to the proper elevation or grade, shall not be permitted.
8. Detection tape shall be buried 4 to 10-inches deep. Should detection tape need to be installed deeper, the Contractor shall provide 3-inch wide tape. In no case shall detection tape be buried greater than 20-inches from the finish grade surface.

C. Alignment and Gradient

1. Lay pipe straight in alignment and gradient or follow true curves as nearly as practicable. Do not deflect any joint more than the maximum deflection recommended by the manufacturer.

2. Maintain a transit, level and accessories on the job to lay out angles and ensure that deflection allowances are not exceeded.
- D. **Expediting of Work:** Excavate, lay the pipe, and backfill as closely together as possible. Do not leave unjointed pipe in the trench overnight. Backfill and compact the trench as soon as possible after laying and jointing is completed. Cover the exposed end of the installed pipe each day at the close of work and at all other times when work is not in progress. If necessary to backfill over the end of an uncompleted pipe or accessory, close the end with a suitable plug, either push-on, mechanical joint, restrained joint or as approved by the Engineer.
- E. **Joint Assembly**
1. Push-on, mechanical, flange and restrained type joints shall be assembled in accordance with the manufacturer's recommendations.
 2. The Contractor shall inspect each pipe joint within 200 feet on either side of main line valves to insure 100 percent seating of the pipe spigot, except as noted otherwise.
 3. Each restrained joint shall be inspected by the Contractor to ensure that it has been "homed" 100 percent.
 4. The Contractor shall internally inspect each pipe joint to insure proper assembly for pipe 24-inches in diameter and larger after the pipe has been brought to final alignment.
- F. **Cutting Pipe:** Cut ductile iron pipe using an abrasive wheel saw. Cut PVC pipe using a suitable saw; remove all burrs and smooth the end before jointing. The Contractor shall cut the pipe and bevel the end, as necessary, to provide the correct length of pipe necessary for installing the fittings, valves, accessories and closure pieces in the correct location. Only push-on or mechanical joint pipe shall be cut.
- G. **Polyethylene Encasement:** Installation shall be in accordance with AWWA C105 and the manufacturer's instructions. All ends shall be securely closed with tape and all damaged areas shall be completely repaired to the satisfaction of the Engineer.
- H. **Valve and Fitting Installation**
1. Prior to installation, valves shall be inspected for direction of opening, number of turns to open, freedom of operation, tightness of

pressure-containing bolting and test plugs, cleanliness of valve ports and especially seating surfaces, handling damage and cracks. Defective valves shall be corrected or held for inspection by the Engineer. Valves shall be closed before being installed.

2. Valves, fittings, plugs and caps shall be set and joined to the pipe in the manner specified in this Section for cleaning, laying and joining pipe, except that 12-inch and larger valves shall be provided with special support, such as treated timbers, crushed stone, concrete pads or a sufficiently tamped trench bottom so that the pipe will not be required to support the weight of the valve. Valves shall be installed in the closed position.
3. A valve box shall be provided on each underground valve. They shall be carefully set, centered exactly over the operating nut and truly plumbed. The valve box shall not transmit shock or stress to the valve. The bottom flange of the lower belled portion of the box shall be placed below the valve operating nut. This flange shall be set on brick, so arranged that the weight of the valve box and superimposed loads will bear on the base and not on the valve or pipe. Extension stems shall be installed where depth of bury places the operating nut in excess of 30-inches beneath finished grade so as to set the top of the operating nut 30-inches below finished grade. The valve box cover shall be flush with the surface of the finished area or such other level as directed by the Engineer.
4. In no case shall valves be used to bring misaligned pipe into alignment during installation. Pipe shall be supported in such a manner as to prevent stress on the valve.
5. A valve marker shall be provided for each underground valve. Unless otherwise detailed on the Drawings or directed by the Engineer, valve markers shall be installed 6-inches inside the right-of-way or easement.

I. Hydrant Installation

1. Prior to installation, inspect all hydrants for direction of opening, nozzle threading, operating nut and cap nut dimensions, tightness of pressure-containing bolting, cleanliness of inlet elbow, handling damage and cracks. Defective hydrants shall be corrected or held for inspection by the Engineer.
2. All hydrants shall stand plumb and shall have their nozzles parallel with or at right angles to the roadway, with pumper nozzle facing the roadway,

except that hydrants having two-hose nozzles 90 degrees apart shall be set with each nozzle facing the roadway at an angle of 45 degrees.

3. Hydrants shall be set to the established grade, with the centerline of the lowest nozzle at least 12-inches above the ground or as directed by the Engineer.
4. Each hydrant shall be connected to the main with a 6-inch branch controlled by an independent 6-inch valve. When a hydrant is set in soil that is pervious, drainage shall be provided at the base of the hydrant by placing coarse gravel or crushed stone mixed with coarse sand from the bottom of the trench to at least 6-inches above the drain port opening in the hydrant to a distance of 12-inches around the elbow.
5. When a hydrant is set in clay or other impervious soil, a drainage pit 2 x 2 x 2 feet shall be excavated below each hydrant and filled with coarse gravel or crushed stone mixed with coarse sand under and around the elbow of the hydrant and to a level of 6-inches above the drain port.
6. Hydrants shall be located as shown on the Drawings or as directed by the Engineer. In the case of hydrants that are intended to fail at the ground-line joint upon vehicle impact, specific care must be taken to provide adequate soil resistance to avoid transmitting shock moment to the lower barrel and inlet connection. In loose or poor load bearing soil, this may be accomplished by pouring a concrete collar approximately 6-inches thick to a diameter of 24-inches at or near the ground line around the hydrant barrel.

3.06 CONNECTIONS TO WATER MAINS

- A. Make connections to existing pipe lines with tapping sleeves and valves, unless specifically shown otherwise on the Drawings.
- B. Location: Before laying pipe, locate the points of connection to existing water mains and uncover as necessary for the Engineer to confirm the nature of the connection to be made.
- C. Interruption of Services: Make connections to existing water mains only when system operations permit. Operate existing valves only with the specific authorization and direct supervision of the Owner.
- D. Tapping Saddles and Tapping Sleeves

1. Holes in the new pipe shall be machine cut, either in the field or at the factory. No torch cutting of holes shall be permitted.
 2. Prior to attaching the saddle or sleeve, the pipe shall be thoroughly cleaned, utilizing a brush and rag, as required.
 3. Before performing field machine cut, the watertightness of the saddle or sleeve assembly shall be pressure tested. The interior of the assembly shall be filled with water. An air compressor shall be attached, which will induce a test pressure as specified in this Section. No leakage shall be permitted for a period of five minutes.
 4. After attaching the saddle or sleeve to an existing main, but prior to making the tap, the interior of the assembly shall be disinfected. All surfaces to be exposed to potable water shall be swabbed or sprayed with a one percent hypochlorite solution.
- E. Connections Using Solid Sleeves: Where connections are shown on the Drawings using solid sleeves, the Contractor shall furnish materials and labor necessary to make the connection to the existing pipe line.
- F. Connections Using Couplings: Where connections are shown on the Drawings using couplings, the Contractor shall furnish materials and labor necessary to make the connection to the existing pipe line, including all necessary cutting, plugging and backfill.

3.07 VALVE BOX ADJUSTMENT (Not Used)

3.08 THRUST RESTRAINT

- A. Provide restraint at all points where hydraulic thrust may develop.
- B. Concrete Blocking
1. Provide concrete blocking for all bends, tees, valves, and other points where thrust may develop, except where other exclusive means of thrust restraint are specifically shown on the Drawings.
 2. Concrete shall be as specified in this Section.
 3. Form and pour concrete blocking at fittings as shown on the Drawings and as directed by the Engineer. Pour blocking against undisturbed earth. Increase dimensions when required by over excavation.

3.09 INSPECTION AND TESTING**A. Pressure and Leakage Test**

1. All sections of the water main subject to internal pressure shall be pressure tested in accordance with AWWA C600. A section of main will be considered ready for testing after completion of all thrust restraint and backfilling.
2. Each segment of water main between main valves shall be tested individually.
3. Test Preparation
 - a. For water mains less than 24-inches in diameter, flush sections thoroughly at flow velocities, greater than 2.5 feet per second, adequate to remove debris from pipe and valve seats. For water mains 24-inches in diameter and larger, the main shall be carefully swept clean, and mopped if directed by the Engineer. Partially open valves to allow the water to flush the valve seat.
 - b. Partially operate valves and hydrants to clean out seats.
 - c. Provide temporary blocking, bulkheads, flanges and plugs as necessary, to assure all new pipe, valves and appurtenances will be pressure tested.
 - d. Before applying test pressure, air shall be completely expelled from the pipeline and all appurtenances. Insert corporation cocks at highpoints to expel air as main is filled with water as necessary to supplement automatic air valves. Corporation stops shall be constructed as detailed on the Drawings with a meter box.
 - e. Fill pipeline slowly with water. Provide a suitable pump with an accurate water meter to pump the line to the specified pressure.
 - f. The differential pressure across a valve or hydrant shall equal the maximum possible, but not exceed the rated working pressure. Where necessary, provide temporary backpressure to meet the differential pressure restrictions.
 - g. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure.
4. Test Pressure: Test the pipeline at 50 psi above the rated working pressure measured at the lowest point for at least two hours. Maintain the test pressure within 5 psi of the specified test pressure for the test duration. Should the pressure drop more than 5 psi at any time during the test period,

the pressure shall be restored to the specified test pressure. Provide an accurate pressure gage with graduation not greater than 5 psi.

5. Leakage

- a. Leakage shall be defined as the sum of the quantity of water that must be pumped into the test section, to maintain pressure within 5 psi of the specified test pressure for the test duration plus water required to return line to test pressure at the end of the test. Leakage shall be the total cumulative amount measured on a water meter.
- b. The Owner assumes no responsibility for leakage occurring through existing valves.

6. Test Results: No test section shall be accepted if the leakage exceeds the limits determined by the following formula:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

Where:	L	=	allowable leakage, in gallons per hour
	S	=	length of pipe tested, in feet
	D	=	nominal diameter of the pipe, in inches
	P	=	average test pressure during the leakage test, in pounds per square inch (gauge)

As determined under Section 4 of AWWA C600.

If the water main section being tested contains lengths of various pipe diameters, the allowable leakage shall be the sum of the computed leakage for each diameter. The leakage test shall be repeated until the test section is accepted. All visible leaks shall be repaired regardless of leakage test results.

7. Completion: After a pipeline section has been accepted, relieve test pressure. Record type, size and location of all outlets on record drawings.

3.10 DISINFECTING PIPELINE

- A. After successfully pressure testing each pipeline section, disinfect in accordance with AWWA C651 for the continuous-feed method and these Specifications.
- B. Specialty Contractor: Disinfection shall be performed by an approved specialty contractor. Before disinfection is performed, the Contractor shall submit a written procedure for approval before being permitted to proceed with the disinfection. This plan shall also include the steps to be taken for the neutralization of the chlorinated water.

C. Chlorination

1. Apply chlorine solution to achieve a concentration of at least 50 milligrams per liter free chlorine in new line. Retain chlorinated water for 24 hours.
2. Chlorine concentration shall be recorded at every outlet along the line at the beginning and end of the 24 hour period.
3. After 24 hours, all samples of water shall contain at least 25 milligrams per liter free chlorine. Re-chlorinate if required results are not obtained on all samples.

D. Disposal of Chlorinated Water: Reduce chlorine residual of disinfection water to less than one milligram per liter if discharged directly to a body of water or to less than two milligrams per liter if discharged onto the ground prior to disposal. Treat water with sulfur dioxide or other reducing chemicals to neutralize chlorine residual. Flush all lines until residual is equal to existing system.

E. Bacteriological Testing: After final flushing and before the main is placed into service, the Contractor shall assist the Owner in collecting samples from the line to have tested for bacteriological quality. Testing shall be performed by the Owner at a laboratory certified by the State of Kentucky. Re-chlorinate lines until the required results are obtained.

3.11 PROTECTION AND RESTORATION OF WORK AREA

A. General: Return all items and all areas disturbed, directly or indirectly by work under these Specifications, to their original condition or better, as quickly as possible after work is started.

1. The Contractor shall plan, coordinate, and prosecute the work such that disruption to personal property and business is held to a practical minimum.
2. All construction areas abutting lawns and yards of residential or commercial property shall be restored promptly. Backfilling of underground facilities, ditches, and disturbed areas shall be accomplished on a daily basis as work is completed. Finishing, dressing, and grassing shall be accomplished immediately thereafter, as a continuous operation within each area being constructed and with emphasis placed on completing each individual yard or business frontage. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.

3. Handwork, including raking and smoothing, shall be required to ensure that the removal of roots, sticks, rocks, and other debris is removed in order to provide a neat and pleasing appearance.
 4. The Department of Transportation's engineer shall be authorized to stop all work by the Contractor when restoration and cleanup are unsatisfactory and to require appropriate remedial measures.
- B. Man-Made Improvements: Protect, or remove and replace with the Engineer's approval, all fences, walkways, mail boxes, pipe lines, drain culverts, power and telephone lines and cables, property pins and other improvements that may be encountered in the Work.
- C. Cultivated Growth: Do not disturb cultivated trees or shrubbery unless approved by the Engineer. Any such trees or shrubbery which must be removed shall be heeled in and replanted under the direction of an experienced nurseryman.
- D. Cutting of Trees: Do not cut trees for the performance of the work except as absolutely necessary. Protect trees that remain in the vicinity of the work from damage from equipment. Do not store spoil from excavation against the trunks. Remove excavated material stored over the root system of trees within 30 days to allow proper natural watering of the root system. Repair any damaged tree over 3-inches in diameter, not to be removed, under the direction of an experienced nurseryman. All trees and brush that require removal shall be promptly and completely removed from the work area and disposed of by the Contractor. No stumps, wood piles, or trash piles will be permitted on the work site.
- E. Disposal of Rubbish: Dispose of all materials cleared and grubbed during the construction of the Project in accordance with the applicable codes and rules of the appropriate county, state and federal regulatory agencies.

3.12 ABANDONING EXISTING WATER MAINS (Not Used)

END OF SECTION



SECTION 02933

Seeding

PART 1 GENERAL

1.1 SCOPE

- A. The work covered by this section shall include the establishment of all ground cover including areas to be seeded and sodded. This work shall include the supply of all materials, labor, superintendence and maintenance as outlined in these specifications.
- B. The part of the site not covered by roads, walks, building, etc. shall be seeded according to these specifications. The areas to be sodded shall include a three foot strip immediately adjacent to all roads, walks, and structures, etc.

PART 2 PRODUCTS

2.1 LIME

- A. Agriculture lime shall be spread over the entire area to be planted at an average rate of one (1) ton per acre. One tillage operation shall incorporate both the lime and the fertilizer into the soil to a depth of four inches (4").

2.2 FERTILIZER

- A. Two fertilizer materials shall be applied to all areas to be seeded. The first shall be complete commercial fertilizer with 1:2:2 ratio of nitrogen, phosphorus, and potassium. Eight hundred pounds (800 lbs) per acre of a 6-12-12 fertilizer, or equivalent amount of another 1:2:2 ratio fertilizer shall be used.
- B. In addition to a complete fertilizer, a slowly available nitrogen fertilizer shall be applied. Two hundred fifty pounds (250 lbs.) per acre of urea formaldehyde (38-0-0) shall be used.
- C. Both fertilizer materials shall be free flowing and suitable for application with approved equipment. Each material shall conform to State fertilizer laws. Bagged fertilizer shall be delivered in sealed standard containers and shall bear the name, trademark, and warranty of the producer. The fertilizers shall be incorporated into the surface four inches (4") by tillage.

2.3 SEED

- A. Grass seed shall be fresh, clean and new crop seed composed of the following varieties mixed in the proportion by weight as shown and shall be certified as to varietal purity. All seed shall be mixed by a dealer furnished in sealed standard containers, and tagged with the dealer's guaranteed statement of composition of mixture and percentage of purity and germination. All areas disturbed by construction activity shall be seeded within the following blend at a rate of two hundred pounds (200 lbs.) per acre (4.6 pounds per 1000 square feet).
- B. The quality of seed shall conform to or exceed the minimum requirement for seed quality of the Kentucky Seed Improvement Association and shall meet or exceed the following standards for purity and germination:

Variety	Min% Purity/Germ	Wt.%	Seeding Rate Pounds Per Acre
Kentucky Bluegrass-Kenblue	98/80	20	40
Creeping Red Fescue-Pennlawn	98/85	70	140
Perennial Ryegrass	95/90	10	20

2.4 MULCH

- A. Mulch for hydroseeding shall be natural wood cellulose fiber or wood pulp which disperses readily in water and which has no toxic effect when combined with seed or other materials. It shall be a commercially available product made for use in spray applicators. Wood cellulose mulch shall be applied at a rate of 1000 lbs. per acre when work is done in the spring or fall season as defined below and 1500 pounds per acre when work is done during summer months.

2.5 SOD

- A. Sod shall be bluegrass sod strongly rooted and free of pernicious weeds. It shall be a uniform thickness of not more than 1 1/2" and shall have not less than 3/4" of soil. All sod shall be grown on a commercial turf farm and no pasture sod shall be acceptable. The source of the sod must be approved by the Engineer before it is cut for delivery.

PART 3 EXECUTION

3.1 PLANTING SEASON

- A. The normal seasonal dates for seeding mixtures containing Kentucky Bluegrass or tall fescue shall be August 15 to October 15 and from the time the soil is workable in the spring to May 1. Seeding of a specified grass variety at times other than the normal seasonal dates must be approved by the Engineer. Seeding shall not be done during windy weather or when the ground is excessively wet, frozen or otherwise untillable.

3.2 SOIL PREPARATION

- A. All areas shall be graded to surface drain as shown on the plans. The lime and fertilizer shall be applied at the rates specified above and tilled into the surface 4 inches with approved tillage equipment to provide a reasonably firm, but friable seedbed.
- B. All areas to be seeded or sodded shall meet the specified grades, and be free of any weed or undesirable plant growth or debris.
- C. Lime and fertilizer for all areas shall be applied at the rate specified and incorporated into the top four inches by approved tillage equipment. The seed and wood cellulose mulch shall then be mixed with adequate water to produce a slurry and then applied uniformly with a hydroseeder at the rates specified above. Any area inadequately covered shall be redone as directed by the Engineer.

3.3 MAINTENANCE OF SEEDED AREAS:

- A. The Contractor shall maintain seeded areas until they have been mowed two times and then he shall repair eroded areas one time after the second mowing. Each mowing shall be when the grass is about four inches (4") high and cut back to about 2 1/2". After the second mowing, the Contractor shall notify the Engineer that he is ready to repair erosion damage so that an inspection can be scheduled when the erosion repair work is complete. Once the erosion areas have been filled with topsoil, fertilized, seeded and mulched and the work has been inspected and approved by the Engineer, the work under this section is complete. Any further erosion repair work necessary will be treated as an extra and shall be done only when authorized by the Engineer.

3.4 CARE DURING CONSTRUCTION

- A. The Contractor shall be responsible for repair to turf areas damaged by his equipment or men until all work is accepted. Temporary haul roads and storage areas shall be tilled to depth of four inches (4") and fertilized, seeded and mulched as specified above.

END OF SECTION

SECTION 02957
Erosion Control and Stabilization

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes provisions for erosion control and stabilization.

PART 2 PRODUCTS

2.1 EROSION CONTROL

- A. All drainage paths and swales to be cut, graded, and seeded prior to any utilities trenching.
- B. All drainage paths and excavated areas to be mulched upon completion of seeding. Straw bales are to be staked perpendicular to flow in bottom of swale every 100 feet along drainage swale route. Straw bales to remain in swale route until a substantial growth of grass has been established. Straw bales are to be staked around all inlet rims where swale lines are excavated to route storm water flow into inlet.
- C. Erosion control requires immediate seeding and mulching of any stripped and unvegetated areas, including unpaved right-of-ways.

2.2 SEEDING

- A. A leguminous inoculated seed mixture shall be used for all seed areas. Class of seeding as follows:

1. Mixture A: shall be used for all drainage paths, swales, side slopes, and all other areas where existing lawn is disturbed during construction.

Seed mixture shall be as follows:

2 lbs./1000 sq. ft. - Chewings Fescue
2 lbs./1000 sq. ft. - Kentucky Bluegrass
2 lbs./1000 sq. ft. - Perennial Rye

Seed shall be sown at a rate of 6 lbs. per 1000 sq. ft. of area.

2. Mixture B: shall be for all areas disturbed by excavation and re-grading as seasonal or temporary cover in bare areas.

Seed mixture shall be as follows:

1 lb./1000 sq. ft. - Perennial Rye
1 lb./1000 sq. ft. - Annual Rye

Seed shall be sown at a rate of 4 lbs. per 1000 sq. ft. of area.

3. Mixture C: shall be used for all lake or pond banks.

Seed mixture shall be as follows:

20% Perennial Ryegrass
15% Kentucky Bluegrass
15% Creeping Red Fescue
50% Nutri-Kote plus Apron fungicide seed coating.

Seed shall be sown at a rate of 5 lbs. per 1000 sq. ft. of area.

2.3 FERTILIZER

- A. Apply a minimum of 600 lbs. of 12-12-12 fertilizer per acre.

2.4 MULCH

- A. Mulch shall consist of clean, seed-free threshed straw of wheat, rye, oats, or barley. Spread mulch uniformly to form a continuous blanket not less than 1.5 inches loose measurement over "Mixture A" and "Mixture C" seeded areas.
- B. The mulch shall be held in place by being mechanically crimped into the soil, tackified with a bio-degradable tackifier, or netted and stapled to the soil with degradable netting. The mulch should be applied at a minimum rate of 1500 lbs. per acre.

2.5 STRAW TACKIFIER - MULCH TACKIFIER

- A. The tackifier shall be a naturally derived product from all organic sources resulting in a strong resilient muciloid, non-bitumen M-Binder. The product can be used in a hydro-seeder with both 100% Virgin Wood Fiber or Paper Wood Cellulose mulch and can be sprayed on 100% Wheat Straw Mulch for stabilization from the wind. Application rates vary between 60-140 lbs. per acre depending upon the existing conditions. The product shall be packed in 40 lbs. fiber bags.

Technical Specifications:

Protein Content	1.62
Ash Content	2.7
Fiber	4.0
pH of 1% Solution	6.8
Settleable Solids	5.0

- B. Erosion control requires immediate seeding and mulching of any stripped and un-vegetated areas, including unpaved right-of-ways.

PART 3 (NOT USED)

END OF SECTION



SECTION 03300
Cast-in-place Concrete

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.
- B. Cast-in-place concrete includes the following:
 - 1. Foundations and footings.
 - 2. Slabs-on-grade.
 - 3. Fill for steel deck.
 - 4. Foundation walls.
 - 5. Shear walls.
 - 6. Load-bearing building walls.
 - 7. Building frame members.
 - 8. Equipment pads and bases.
 - 9. Fill for steel pan stairs.

1.3 SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others if requested by Engineer.
- C. Shop drawings for reinforcement detailing fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, bent bar diagrams, and arrangement of concrete reinforcement. Include special reinforcing required for openings through concrete structures.
- D. Shop drawings for formwork indicating fabrication and erection of forms for specific

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finished concrete surfaces. Show form construction including jointing, special form joints or reveals, location and pattern of form tie placement, and other items that affect exposed concrete visually.

1. Engineer's review is for general applications and features only. Designing formwork for structural stability and efficiency is Contractor's responsibility.

E. Samples of materials as requested by Engineer, including names, sources, and descriptions, as follows:

1. Color finishes.
2. Normal weight aggregates.
3. Fiber reinforcement.
4. Reglets.
5. Waterstops.
6. Vapor retarder/barrier.
7. Form liners.

F. Laboratory test reports for concrete materials and mix design test.

G. Material certificates in lieu of material laboratory test reports when permitted by Engineer. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."
2. ACI 318, "Building Code Requirements for Reinforced Concrete."
3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."

B. Concrete Testing Service: Engage a testing agency acceptable to Engineer to perform material evaluation tests and to design concrete mixes.

C. Materials and installed work may require testing and retesting at any time during progress of Work. Tests, including retesting of rejected materials for installed Work, shall be done at Contractor's expense.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
- B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Textured Finish Concrete: Units of face design, size, arrangement, and configuration to match control sample. Provide solid backing and form supports to ensure stability of textured form liners.
- D. Forms for Cylindrical Columns and Supports: Metal, glass-fiber-reinforced plastic, or paper or fiber tubes that will produce smooth surfaces without joint indications. Provide units with sufficient wall thickness to resist wet concrete loads without deformation.
- E. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to support weight of placed concrete without deformation.
- F. Carton Forms: Biodegradable paper surface, treated for moisture-resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- G. Form Release Agent: Provide commercial formulation form release agent with a maximum of 350 g/L volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- H. Form Ties: Factory-fabricated, adjustable-length, stainless steel, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling of concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches (38 mm) to the plane of the exposed concrete surface.
 - 1. Provide ties that, when removed, will leave holes not larger than 1 inch (25 mm) in diameter in the concrete surface. Use only stainless material.

2.2 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615 Grade 60 (ASTM A 615M Grade 400), deformed.

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- B. Galvanized Reinforcing Bars: ASTM A 767 (ASTM A 767M), Class II [2.0 oz. zinc psf (610 g/sq. m)], hot-dip galvanized after fabrication and bending.
- C. Epoxy-Coated Reinforcing Bars: ASTM A 775 (ASTM A 775M).
- D. Steel Wire: ASTM A 82, plain, cold-drawn steel.
- E. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.
- F. Deformed-Steel Welded Wire Fabric: ASTM A 497.
- G. Epoxy-Coated Welded Wire Fabric: ASTM A 884, Class A.
- H. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar-type supports complying with CRSI specifications.
 - 1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with legs that are protected by plastic (CRSI, Class 1) or stainless steel (CRSI, Class 2).

2.3 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
 - 1. Use one brand of cement throughout Project.
- B. Fly Ash: ASTM C 618, Type F.
- C. Normal-Weight Aggregates: ASTM C 33 and as specified. Provide aggregates from a single source for exposed concrete.
 - 1. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling.
 - 2. Local aggregates not complying with ASTM C 33 that have been shown to produce concrete of adequate strength and durability by special tests or actual service may be used when acceptable to Engineer..
- D. Lightweight Aggregates: ASTM C 330.

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- E. Water: Potable.
- F. Fiber Reinforcement: Polypropylene fibers engineered and designed for secondary reinforcement of concrete slabs, complying with ASTM C 1116, Type III, not less than 3/4 inch long.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Gilco Fibers, Cormix Construction Chemicals.
 - b. Durafiber, Durafiber Corp.
 - c. Fiberstrand 100, Euclid Chemical Co.
 - d. Fibermesh, Fibermesh Co., Div. Synthetic Industries, Inc.
 - e. Forta, Forta Corp.
 - f. Grace Fibers, W.R. Grace & Co.
 - g. Polystrand, Metalcrete Industries
- G. Admixtures, General: Provide concrete admixtures that contain not more than 0.1 percent chloride ions.
- H. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Air-Tite, Cormix Construction Chemicals.
 - b. Air-Mix or Perma-Air, Euclid Chemical Co.
 - c. Darex AEA or Daravair, W.R. Grace & Co.
 - d. MB-VR or Micro-Air, Master Builders, Inc.
 - e. Sealtight AEA, W.R. Meadows, Inc.
 - f. Sika AER, Sika Corp.
- I. Water-Reducing Admixture: ASTM C 494, Type A.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Chemtard, ChemMasters Corp.
 - b. PSI N, Cormix Construction Chemicals.
 - c. Eucon WR-75, Euclid Chemical Co.
 - d. WRDA, W.R. Grace & Co.

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- e. Pozzolith Normal or Polyheed, Master Builders, Inc.
- f. Metco W.R., Metalcrete Industries.
- g. Prokrete-N, Prokrete Industries.
- h. Plastocrete 161, Sika Corp.

J. High-Range Water-Reducing Admixture: ASTM C 494, Type F or Type G.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Super P, Anti-Hydro Co., Inc.
 - b. Cormix 200, Cormix Construction Chemicals.
 - c. Eucon 37, Euclid Chemical Co.
 - d. WRDA 19 or Daracem, W.R. Grace & Co.
 - e. Rheobuild or Polyheed, Master Builders, Inc.
 - f. Superslump, Metalcrete Industries.
 - g. PSPL, Prokrete Industries.
 - h. Sikament 300, Sika Corp.

K. Water-Reducing, Accelerating Admixture: ASTM C 494, Type E.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Q-Set, Conspec Marketing & Manufacturing Co.
 - b. Lubricon NCA, Cormix Construction Chemicals.
 - c. Accelguard 80, Euclid Chemical Co.
 - d. Daraset, W.R. Grace & Co.
 - e. Pozzutec 20, Master Builders, Inc.
 - f. Accel-Set, Metalcrete Industries.

L. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. PSI-R Plus, Cormix Construction Chemicals.
 - b. Eucon Retarder 75, Euclid Chemical Co.
 - c. Daratard-17, W.R. Grace & Co.
 - d. Pozzolith R, Master Builders, Inc.
 - e. Protard, Prokrete Industries.
 - f. Plastiment, Sika Corporation.

2.4 RELATED MATERIALS

- A. Reglets: Where sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than 0.0217- inch- (0.46-mm-) thick galvanized sheet steel. Fill reglet or cover face opening to prevent intrusion of concrete or debris.
- B. Dovetail Anchor Slots: Hot-dip galvanized sheet steel, not less than 0.0336 inch thick (0.76 mm) with bent tab anchors. Fill slot with temporary filler or cover face opening to prevent intrusion of concrete or debris.
- C. Waterstops: Provide flat, dumbbell-type or centerbulb-type waterstops at construction joints and other joints as indicated. Size to suit joints.
- D. Rubber Waterstops: Corps of Engineers CRD-C 513.
 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. The Burke Co.
 - b. Progress Unlimited.
 - c. Williams Products, Inc.
- E. Polyvinyl Chloride Waterstops: Corps of Engineers CRD-C 572.
 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. The Burke Co.
 - b. Greenstreak Plastic Products Co.
 - c. W.R. Meadows, Inc.
 - d. Progress Unlimited.
 - e. Schlegel Corp.
 - f. Vinylex Corp.
- F. Sand Cushion: Clean, manufactured or natural sand.
- G. Vapor Retarder: Provide vapor retarder that is resistant to deterioration when tested according to ASTM E 154, as follows:

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1. Polyethylene sheet not less than 8 mils (0.2 mm) thick.
- H. Vapor Barrier: Premolded seven-ply membrane consisting of reinforced core and carrier sheet with fortified bitumen layers, protective weathercoating, and plastic antistick sheet. Water vapor transmission rate of 1 perm when tested according to ASTM E 96, Method B. Provide manufacturer's recommended mastics and gusset tape.
1. Product: Subject to compliance with requirements, provide Sealtight Premoulded Membrane by W.R. Meadows, Inc.
- I. Nonslip Aggregate Finish: Provide fused aluminum oxide granules or crushed emery as the abrasive aggregate for a nonslip finish, with emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide. Use material that is factory-graded, packaged, rustproof, nonglazing, and unaffected by freezing, moisture, and cleaning materials.
- J. Colored Wear-Resistant Finish: Packaged dry combination of materials consisting of portland cement, graded quartz aggregate, coloring pigments, and plasticizing admixture. Use coloring pigments that are finely ground nonfading mineral oxides interground with cement. Color as selected by Owner from manufacturers' standards, unless otherwise indicated.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Conshake 600 Colortone, Conspec Marketing & Mfg. Co.
 - b. Floorcron, Cormix Construction Chemicals.
 - c. Quartz Tuff, Dayton-Superior.
 - d. Surfex, Euclid Chemical Co.
 - e. Colorundum, A.C. Horn, Inc.
 - f. Quartz Plate, L&M Construction Chemicals, Inc.
 - g. Colorcron, Master Builders, Inc.
 - h. Floor Quartz, Metalcrete Industries
 - i. Lithochrome Color Hardener, L.M. Scofield Co.
 - j. Harcol Redi-Mix, Sonneborn-Chemrex.
 - k. Hard Top, Symons Corp.
- K. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m), complying with AASHTO M 182, Class 2.
- L. Moisture-Retaining Cover: One of the following, complying with ASTM C 171.

1. Waterproof paper.
 2. Polyethylene film.
 3. Polyethylene-coated burlap.
- M. Liquid Membrane-Forming Curing Compound: Liquid-type membrane-forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.55 kg/sq. m when applied at 200 sq. ft./gal (4.9 sq. m/L).
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. A-H 3 Way Sealer, Anti-Hydro Co., Inc.
 - b. Spartan-Cote, The Burke Co.
 - c. Conspec #1, Conspec Marketing & Mfg. Co.
 - d. Sealco 309, Cormix Construction Chemicals.
 - e. Day-Chem Cure and Seal, Dayton Superior Corp.
 - f. Eucocure, Euclid Chemical Co.
 - g. Horn Clear Seal, A.C. Horn, Inc.
 - h. L&M Cure R, L&M Construction Chemicals, Inc.
 - i. Masterkure, Master Builders, Inc.
 - j. CS-309, W.R. Meadows, Inc.
 - k. Seal N Kure, Metalcrete Industries.
 - l. Kure-N-Seal, Sonneborn-Chemrex.
 - m. Stontop CS2, Stonhard, Inc.
- N. Water-Based Acrylic Membrane Curing Compound: ASTM C 309, Type I, Class B.
1. Provide material that has a maximum volatile organic compound (VOC) rating of 350 g/L.
 2. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Highseal, Conspec Marketing and Mfg. Co.
 - b. Sealco - VOC, Cormix Construction Chemicals.
 - c. Safe Cure and Seal, Dayton Superior Corp.
 - d. Aqua-Cure, Euclid Chemical Co.
 - e. Dress & Seal WB, L&M Construction Chemicals, Inc.
 - f. Masterkure 100W, Master Builders, Inc.
 - g. Vocomp-20, W.R. Meadows, Inc.
 - h. Metcure, Metalcrete Industries.
 - i. Stontop CS1, Stonhard, Inc.

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- O. Evaporation Control: Monomolecular film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Aquafilm, Conspec Marketing and Mfg. Co.
 - b. Eucobar, Euclid Chemical Co.
 - c. E-Con, L&M Construction Chemicals, Inc.
 - d. Confilm, Master Builders, Inc.
 - e. Waterhold, Metalcrete Industries.
- P. Underlayment Compound: Free-flowing, self-leveling, pumpable, cement-based compound for applications from 1 inch (25 mm) thick to feathered edges.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. K-15, Ardex, Inc.
 - b. Self-Leveling Wear Topping, W.R. Bonsal Co.
 - c. Conflow, Conspec Marketing and Mfg. Co.
 - d. Corlevel, Cormix Construction Chemicals.
 - e. LevelLayer II, Dayton Superior Corp.
 - f. Flo-Top, Euclid Chemical Co.
 - g. Gyp-Crete, Gyp-Crete Corp.
 - h. Levelex, L&M Construction Chemicals, Inc.
 - i. Underlayment 110, Master Builders, Inc.
 - j. Stoncrete UL1, Stonhard, Inc.
 - k. Concrete Top, Symons Corp.
 - l. Thoro Underlayment Self-Leveling, Thoro System Products.
- Q. Bonding Agent: Polyvinyl acetate or acrylic base.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Polyvinyl Acetate (Interior Only):
 - 1) Superior Concrete Bonder, Dayton Superior Corp.
 - 2) Euco Weld, Euclid Chemical Co.
 - 3) Weld-Crete, Larsen Products Corp.

- 4) Everweld, L&M Construction Chemicals, Inc.
 - 5) Herculox, Metalcrete Industries.
 - 6) Ready Bond, Symons Corp.
- b. Acrylic or Styrene Butadiene:
- 1) Acrylic Bondcrete, The Burke Co.
 - 2) Strongbond, Conspec Marketing and Mfg. Co.
 - 3) Day-Chem Ad Bond, Dayton Superior Corp.
 - 4) SBR Latex, Euclid Chemical Co.
 - 5) Daraweld C, W.R. Grace & Co.
 - 6) Hornweld, A.C. Horn, Inc.
 - 7) Everbond, L&M Construction Chemicals, Inc.
 - 8) Acryl-Set, Master Builders Inc.
 - 9) Intralok, W.R. Meadows, Inc.
 - 10) Acrylpave, Metalcrete Industries.
 - 11) Sonocrete, Sonneborn-Chemrex.
 - 12) Stonlock LB2, Stonhard, Inc.
 - 13) Strong Bond, Symons Corp.
- R. Epoxy Adhesive: ASTM C 881, two-component material suitable for use on dry or damp surfaces. Provide material type, grade, and class to suit Project requirements.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Burke Epoxy M.V., The Burke Co.
 - b. Spec-Bond 100, Conspec Marketing and Mfg. Co.
 - c. Resi-Bond (J-58), Dayton Superior.
 - d. Euco Epoxy System #452 or #620, Euclid Chemical Co.
 - e. Epoxite Binder 2390, A.C. Horn, Inc.
 - f. Epabond, L&M Construction Chemicals, Inc.
 - g. Concrevice Standard Liquid, Master Builders, Inc.
 - h. Rezi-Weld 1000, W.R. Meadows, Inc.
 - i. Metco Hi-Mod Epoxy, Metalcrete Industries.
 - j. Sikadur 32 Hi-Mod, Sika Corp.
 - k. Stonset LV5, Stonhard, Inc.
 - l. R-600 Series, Symons Corp.

2.5 PROPORTIONING AND DESIGNING MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial

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batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to Engineer for preparing and reporting proposed mix designs.

1. Do not use the same testing agency for field quality control testing.
 2. Limit use of fly ash to not exceed 25 percent of cement content by weight.
- B. Submit written reports to Engineer of each proposed mix for each class of concrete prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed.
- C. Design mixes to provide normal weight concrete with the following properties as indicated on drawings and schedules:
1. 4000 psi (27.6 MPa), 28-day compressive strength; water-cement ratio, 0.44 maximum (non-air-entrained), 0.35 maximum (air-entrained).
- D. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:
1. Subjected to freezing and thawing: W/C 0.45.
 2. Subjected to deicers/watertight: W/C 0.40.
 3. Subjected to brackish water, salt spray, or deicers: W/C 0.40.
- E. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
1. Ramps, slabs, and sloping surfaces: Not more than 3 inches (75 mm).
 2. Reinforced foundation systems: Not less than 1 inch (25 mm) and not more than 3 inches (75 mm).
 3. Concrete containing high-range water-reducing admixture (superplasticizer): Not more than 8 inches (200 mm) after adding admixture to site-verified 2 - 3 inch (50 - 75 mm) slump concrete.
 4. Other concrete: Not more than 4 inches (100 mm).
- F. Lightweight Structural Concrete: Lightweight aggregate and concrete shall conform to ASTM C 330. Proportion mix to produce concrete with a minimum compressive strength of 3000 psi (20.7) at 28 days and a calculated equilibrium unit weight of 110 pcf (1762 kg/cu. m) plus or minus 3 pcf (48.1 kg/cu. m) as determined by ASTM C 567. Concrete slump at the point of placement shall be the minimum necessary for efficient mixing, placing, and finishing. Maximum slump shall be 6 inches (150 mm) for pumped

concrete and 5 inches (125 mm) elsewhere. Air entrain concrete exposed to weather according to ACI 301 requirements.

- G. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Engineer before using in Work.
- H. Fiber Reinforcement: Add at manufacturer's recommended rate but not less than 1.5 lb/cu. yd. (0.9 kg/cu. m).

2.6 ADMIXTURES

- A. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
- B. Use accelerating admixture in concrete slabs placed at ambient temperatures below 50 deg F (10 deg C).
- C. Use high-range water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs, architectural concrete, parking structure slabs, concrete required to be watertight, and concrete with water-cement ratios below 0.50.
- D. Use air-entraining admixture in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within the following limits:
 - 1. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or hydraulic pressure:
 - a. 4.5 percent (moderate exposure); 5.5 percent (severe exposure) for 1-1/2 inch (38 mm) maximum aggregate.
 - b. 4.5 percent (moderate exposure); 6.0 percent (severe exposure) for 1 inch (25 mm) maximum aggregate.
 - c. 5.0 percent (moderate exposure); 6.0 percent (severe exposure) for 3/4 inch (19 mm) maximum aggregate.
 - d. 5.5 percent (moderate exposure); 7.0 percent (severe exposure) for 1/2 inch (13 mm) maximum aggregate.
 - 2. Other concrete not exposed to freezing, thawing, or hydraulic pressure, or to

- C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal.
- D. Provide temporary openings for clean-outs and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- E. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- F. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.3 VAPOR RETARDER/BARRIER INSTALLATION

- A. General: Place vapor retarder/barrier sheeting in position with longest dimension parallel with direction of pour.
- B. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended mastic or pressure-sensitive tape.
 - 1. Cover vapor retarder/barrier with sand cushion and compact to depth indicated.

3.4 PLACING REINFORCEMENT

- A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as specified.
 - 1. Avoiding cutting or puncturing vapor retarder/barrier during reinforcement placement and concreting operations. Repair damages before placing concrete.

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receive a surface hardener: 2 to 4 percent air.

- E. Use admixtures for water reduction and set accelerating or retarding in strict compliance with manufacturer's directions.

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements of ASTM C 94, and as specified.
 - 1. When air temperature is between 85 deg F (29 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 GENERAL

- A. Coordinate the installation of joint materials, vapor retarder/barrier, and other related materials with placement of forms and reinforcing steel.

3.2 FORMS

- A. General: Design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 limits:
 - 1. Provide Class A tolerances for concrete surfaces exposed to view.
 - 2. Provide Class C tolerances for other concrete surfaces.
- B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.

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- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved.
- D. Place reinforcement to maintain minimum coverages as indicated for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

- A. Construction Joints: Locate and install construction joints so they do not impair strength or appearance of the structure.
- B. Provide keyways at least 1-1/2 inches (38 mm) deep in construction joints in walls and slabs and between walls and footings. Bulkheads designed and accepted for this purpose may be used for slabs.
- C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as indicated otherwise. Do not continue reinforcement through sides of strip placements.
- D. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.
- E. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's printed instructions.
- F. Isolation Joints in Slabs-on-Grade: Construct isolation joints in slabs-on-grade at points of contact between slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
- G. Contraction (Control) Joints in Slabs-on-Grade: Construct contraction joints in slabs-on-grade to form panels of patterns as shown. Use saw cuts 1/8 inch (3 mm) wide by one-

fourth of slab depth or inserts 1/4 inch (6 mm) wide by one-fourth of slab depth, unless otherwise indicated.

1. Form contraction joints by inserting premolded plastic, hardboard, or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.
2. Contraction joints in unexposed floor slabs may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
3. If joint pattern is not shown, provide joints not exceeding 15 ft. (4.5 m) in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays).
4. Provide joint fillers and sealants.

3.6 INSTALLING EMBEDDED ITEMS

- A. General: Set and build into formwork anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached.
- B. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles, and other conditions.
- C. Install dovetail anchor slots in concrete structures as indicated on drawings.
- D. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.7 PREPARING FORM SURFACES

- A. General: Coat contact surfaces of forms with an approved, nonresidual, low-VOC, form-coating compound before placing reinforcement.
- B. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply according to manufacturer's instructions.

1. Coat steel forms with a nonstaining, rust-preventative material. Rust-stained steel formwork is not acceptable.

3.8 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.
- D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than 24 inches (600 mm) and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
 1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.
 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.
- E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until completing placement of a panel or section.
 1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement, other embedded items and into corners.
 2. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats or darbies to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

3. Maintain reinforcing in proper position on chairs during concrete placement.
- F. Cold-Weather Placement: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
- G. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
- H. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.
1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
 3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
 4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions.

3.9 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: Provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished Work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch (6 mm) in height rubbed down or chipped off.
- B. Smooth-Formed Finish: Provide a smooth-formed finish on formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or

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a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or another similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.

- C. **Smooth-Rubbed Finish:** Unless otherwise shown or scheduled, provide smooth-rubbed finish on all exposed, vertical concrete surfaces that have received smooth-formed finish treatment not later than 1 day after form removal.
 - 1. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
- D. **Grout-Cleaned Finish:** Provide grout-cleaned finish on scheduled concrete surfaces that have received smooth-formed finish treatment.
 - 1. Combine one part portland cement to one and one-half parts fine sand by volume, and a 50:50 mixture of acrylic or styrene butadiene-based bonding admixture and water to form the consistency of thick paint. Blend standard portland cement and white portland cement in amounts determined by trial patches so that final color of dry grout will match adjacent surfaces.
 - 2. Thoroughly wet concrete surfaces, apply grout to coat surfaces, and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.
- E. **Related Unformed Surfaces:** At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 MONOLITHIC SLAB FINISHES

- A. **Scratch Finish:** Apply scratch finish to monolithic slab surfaces to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and where indicated.
 - 1. After placing slabs, finish surface to tolerances of F(F) 15 (floor flatness) and F(L) 13 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set with stiff brushes, brooms, or rakes.

- B. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as specified; slab surfaces to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo; and where indicated.
1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Finish surfaces to tolerances of F(F) 18 (floor flatness) and F(L) 15 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
- C. Trowel Finish: Apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or another thin film-finish coating system.
1. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and finish surfaces to tolerances of F(F) 20 (floor flatness) and F(L) 17 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Grind smooth any surface defects that would telegraph through applied floor covering system.
- D. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply a trowel finish as specified, then immediately follow by slightly scarifying the surface with a fine broom.
- E. Nonslip Broom Finish: Apply a nonslip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with before application.
- F. Nonslip Aggregate Finish: Apply nonslip aggregate finish to concrete stair treads, platforms, ramps, sloped walks, and where indicated.
1. After completing float finishing and before starting trowel finish, uniformly spread dampened nonslip aggregate at a rate of 25 lb per 100 sq. ft. (12 kg/10 sq. m) of

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surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as specified.

2. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose nonslip aggregate.

3.11 MISCELLANEOUS CONCRETE ITEMS

- A. **Filling In:** Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.
- B. **Curbs:** Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. **Equipment Bases and Foundations:** Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.
- D. **Steel Pan Stairs:** Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.12 CONCRETE CURING AND PROTECTION

- A. **General:** Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before power floating and troweling.
- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.
- C. **Curing Methods:** Cure concrete by curing compound, by moist curing, by moisture-retaining cover curing, or by combining these methods, as specified.

- D. Provide moisture curing by the following methods:
1. Keep concrete surface continuously wet by covering with water.
 2. Use continuous water-fog spray.
 3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with a 4 inch (100 mm) lap over adjacent absorptive covers.
- E. Provide moisture-retaining cover curing as follows:
1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches (75 mm) and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
- F. Apply curing compound on exposed interior slabs and on exterior slabs, walks, and curbs as follows:
1. Apply curing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
 2. Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.
- G. Curing Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces, by moist curing with forms in place for the full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.
- H. Curing Unformed Surfaces: Cure unformed surfaces, including slabs, floor topping, and other flat surfaces, by applying the appropriate curing method.
1. Final cure concrete surfaces to receive finish flooring with a moisture-retaining cover, unless otherwise directed.

3.13 SHORES AND SUPPORTS

- A. General: Comply with ACI 347 for shoring and reshoring in multistory construction, and as specified.

- B. Extend shoring from ground to roof for structures four stories or less, unless otherwise permitted.
- C. Extend shoring at least three floors under floor or roof being placed for structures over four stories. Shore floor directly under floor or roof being placed, so that loads from construction above will transfer directly to these shores. Space shoring in stories below this level in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members where no reinforcing steel is provided. Extend shores beyond minimums to ensure proper distribution of loads throughout structure.
- D. Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to support work without excessive stress or deflection.
- E. Keep reshores in place a minimum of 15 days after placing upper tier, or longer, if required, until concrete has attained its required 28-day strength and heavy loads due to construction operations have been removed.

3.14 REMOVING FORMS

- A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.
- B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.
- C. Form-facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

3.15 REUSING FORMS

- A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.

- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use patched forms for exposed concrete surfaces except as acceptable.

3.16 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable.
- B. Mix dry-pack mortar, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh (1.2 mm) sieve, using only enough water as required for handling and placing.
 - 1. Cut out honeycombs, rock pockets, voids over 1/4 inch (6 mm) in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch (25 mm). Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.
 - 2. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- C. Repairing Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Owner. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes and fill with dry-pack mortar or precast cement cone plugs secured in place with bonding agent.
 - 1. Repair concealed formed surfaces, where possible, containing defects that affect the concrete's durability. If defects cannot be repaired, remove and replace the concrete.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.

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1. Repair finished unformed surfaces containing defects that affect the concrete's durability. Surface defects include crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to the reinforcement or completely through nonreinforced sections regardless of width, spalling, popouts, honeycombs, rock pockets, and other objectionable conditions.
 2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
 3. Correct low areas in unformed surfaces during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable.
 4. Repair defective areas, except random cracks and single holes not exceeding 1 inch (25 mm) in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose reinforcing steel with at least 3/4 inch (19 mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- E. Repair isolated random cracks and single holes 1 inch (25 mm) or less in diameter by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Place dry-pack before bonding agent has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- F. Perform structural repairs with prior approval of Engineer for method and procedure, using specified epoxy adhesive and mortar.
- G. Repair methods not specified above may be used, subject to acceptance of Engineer.

3.17 QUALITY CONTROL TESTING DURING CONSTRUCTION

- A. General: The Owner will employ a testing agency to perform tests and to submit test reports.
- B. Sampling and testing for quality control during concrete placement may include the following, as directed by Engineer.

1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
 - a. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
 - b. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
 - c. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.
 - d. Compression Test Specimen: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
 - e. Compressive-Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yd. (4 cu. m) plus additional sets for each 50 cu. yd. (38 cu. m) more than the first 25 cu. yd. (19 cu. m) of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
 2. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
 3. When total quantity of a given class of concrete is less than 50 cu. yd. (38 cu. m), Engineer may waive strength testing if adequate evidence of satisfactory strength is provided.
 4. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
 5. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi (3.4 MPa).
- C. Test results will be reported in writing to Engineer within 3 days. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-

Cast-in-place Concrete

day tests and 28-day tests.

- D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
- E. Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

END OF SECTION

SECTION 03310
FLOWABLE FILL CONCRETE

PART 1 GENERAL

1.1 DESCRIPTION

Flowable fill is a low strength mixture of portland cement, sand, Class F fly ash, and water. It is proportioned to flow under and around the pipe requiring no compaction and little or no finishing. Flowable fill may be used by the Contractor as backfill material for pipe. When using flowable fill with aluminum pipe, an approved means of separation must be provided, such as bituminous coating.

PART 2 PRODUCT

2.2 MATERIALS

Ingredient materials shall meet the requirements specified in the following sections of the Standard Specifications:

Portland Cement, Type I	801
Sand	804
Fly Ash, Class F	844
Water	803

The flowable fill shall be initially mixed in the following proportions per cubic yard:

Cement (Minimum)	40 lbs.
Fly Ash	300 lbs.
Sand (SSD)	3000 lbs.
Water (Maximum)	550 lbs.

To expedite settlement of the flowable fill it will be necessary for bleed water to appear on the surface within 5 to 10 minutes after placement. A delay in bleeding indicates there are too many fines in the mixture or insufficient water. If the maximum water was added, the fly ash quantity shall be reduced in increments of 50 lbs. until mixture is bleeding freely. Approximately 60 lbs. of sand shall be added to replace each 50 lbs. increment of fly ash to maintain the original yield. The flowable fill is too dry when cracks develop as it flows into place.

A set of test cylinders shall be cast for each 300 cubic yards of flowable fill. Cylinders shall not be rodded, but the sides of the mold shall be tapped lightly after each layer. The test cylinders should be allowed to bleed for about 30 minutes, refilled, and then covered with a sheet of tough durable impervious plastic. Secure the plastic in place around the mold,

within one inch of the top, with a rubber band or string prior to covering with wet burlap. Remove the burlap after 24 hours and cure at 60° F to 90° F, in the shade, until 28 days old. Then remove the plastic covering and mold and perform compressive strength test. The average of the 28 days compressive strength tests is expected to be approximately 50 PSI.

PART 3 EXECUTION

3.3 CONSTRUCTION

Flowable fill shall be delivered in a revolving drum truck mixer conforming to Section 601 to insure that the mixture is in suspension when placed. Agitation is required during transportation and waiting time. Subsidence may occur if the mixture is not agitated. Normally, a trench can be backfilled directly from the truck chute or a pump may be used.

The flowable fill may extend from the top of the compacted bedding to the bottom of the pavement structure. Flowable fill shall be a minimum of 2 hours of age prior to the addition and compaction of any material above it.

When flowable fill is used, the Contractor may reduce the trench width to a minimum of 6 inches clear on each side of the pipe. Standing water in the trench does not have to be pumped out before backfilling with flowable fill.

Certain types of pipe may float, therefore backfilling may have to be done in lifts or else the pipe will need to be anchored. Backfilling in lifts is generally more applicable to long lines of pipe, allowing time for a substantial amount of the water to dissipate prior to applying the next lift. Anchors can be made of small lumber, metal straps, and must be adequately spaced. For larger diameter pipe, it may be possible to maintain a surge of flowable fill on top of the pipe to help prevent floating. Generally floating is not a problem after the level of the backfill is above the springline of the pipe. The contractor is responsible to take whatever action is necessary to insure that the pipe remains in the correct horizontal position and at the specified elevation.

END OF SECTION

SECTION 11200

Underground Packaged Booster Pump Station

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The contractor shall furnish and install one factory built underground packaged booster pumping station. The station shall be complete with all equipment factory installed in a welded steel chamber with a prefabricated roof scuttle and ladder for access.

The internal equipment shall include two pumps and motors, piping and valves, sump pump, ventilation system, dehumidifier, heater, automatic central control panel with starters and breakers, and all internal wiring.

1.02 SUBMITTALS

- A. Submit shop drawings and engineering data in accordance with the requirements of Section 01340 of these Specifications.
- B. Operation and maintenance manuals shall be furnished in accordance with the requirements of Section 01730 of these Specifications.

1.03 STORAGE AND PROTECTION

- A. Pump Station and accessories shall be stored and protected in accordance with the manufacturer's recommendations. Pump Stations shall not be stored outside or exposed to the weather.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

The underground water booster pump station shall be manufactured by DAKOTA PUMP INCORPORATED, Mitchell, South Dakota, or approved equal. The local representative for DPI is Straeffler Pump and Supply, Inc. and can be reach at (800) 837-7867.

2.02 OPERATING CONDITIONS

Each pump shall be capable of delivering 225 gallons per minute of water against a total dynamic head of 150 feet. The pumps shall have a maximum allowable speed of 3600 RPM. The minimum rated horsepower of each motor shall be 15. The minimum pump efficiency shall be 73 %.

Underground Packaged Booster Pump Station

2.03 EQUIPMENT CHAMBER

The station shall be built in two major sections, consisting of the main pump chamber and the prefabricated roof scuttle. Both sections shall be joined at the factory before shipment, to minimize field erection.

The pump chamber shall be rolled from 1/4-inch minimum thickness, ASTM A36 steel plate, to a nominal outside diameter of 10 feet. The clear inside height shall be 8 feet. This height shall be adequate to permit use of a chain or cable hoist for pump disassembly. A lifting hook shall be welded to the ceiling over each pump to facilitate service work.

The equipment chamber floor shall be 3/8-inch minimum thickness ASTM A36 steel plate. It shall be welded to the side shell on both the inside and the outside with fillet welds of adequate section to insure the structural integrity of the completed unit. The pump station manufacturer shall determine the chamber bottom reinforcement. The size and location of these structural members shall be determined to adequately resist the loads imposed by the depth of bury of the chamber.

The equipment chamber top shall be fabricated from 3/8-inch minimum thickness ASTM A36 steel plate. It shall be welded to the side shell on both the inside and the outside with fillet welds of adequate section to insure the structural integrity of the completed unit. The pump station manufacturer shall determine the chamber top reinforcement. The size and location of these structural members shall be determined to adequately resist the loads imposed by the depth of bury of the chamber. Three equally placed lifting lugs shall be welded to the chamber head to facilitate handling at the jobsite.

An 18 inch diameter sump shall be provided in the chamber floor. This sump shall be fabricated from 1/4 inch steel plate. Where steel pipes pass through the chamber walls, a continuous watertight weld shall be made on both sides of the wall. All non-weld piping required to pass through the chamber wall will be housed in a 1/4 inch steel sleeve. The space between the pipe and the sleeve shall be filled with mechanical link seals to prevent leaks. If used, mechanical joint wall sleeves shall have two compression joints with rubber gaskets.

Fresh air shall enter the chamber from above the ground through a 180-degree bend with a screened opening, mounted on a 4" steel vent tube. Air shall be discharged above grade with the same arrangement.

2.04 ENTRANCE

The chamber entrance man way shall be a prefabricated metal roof scuttle with a minimum clear opening of 30 inches by 36 inches. The cover shall be 11-gauge aluminum with a 3" beaded flange. Insulation shall be glass fiber 1" thick, fully covered and protected by a metal liner of 18-gauge aluminum. The scuttle shall be provided with a 3 1/2" flange with holes for bolting to the framing on the equipment chamber top. The scuttle shall be completely assembled with heavy pintle hinges, compression spring operators enclosed in telescopic tubes, positive snap latch with turn handles and padlock hasps, weatherproof padlock with two keys, and an automatic hold open arm with red vinyl grip release.

Underground Packaged Booster Pump Station

The ladder shall be fabricated of aluminum, with side rails of 3" inch extruded I-Beams. The rungs shall be 1 1/4" diameter serrated aluminum tubing, double crimped to the side rails. The ladder shall meet the requirements of OSHA for Type I Heavy Duty service, and ANSI A14.2. The ladder shall be easily removable.

2.05 SAFETY POST

Install on the ladder below the roof scuttle a Bilco Model LU-1 Ladder-UP safety post. The Ladder-UP safety post shall be manufactured of high strength steel with telescoping tubular section that locks automatically when fully extended. Upward and downward movement shall be completely assembled with fasteners for securing to the ladder rungs in accordance with the manufacture's instructions.

2.06 WELDING

All steel members shall be joined by electric arc welding, with welds of adequate section for the joint involved. Where possible, all joints shall be welded inside and outside the chamber. All welds shall be continuous and watertight.

2.07 CORROSION PROTECTION

After all welding has been completed, all inside and outside surfaces of the structure shall be factory blasted to remove all rust, mill scale and weld slag. All weld spatter and surface roughness shall be removed by grinding. Surface preparation will comply with SSPC-SP10 specifications. Immediately after cleaning the inside surface of the structure, the unburied portions of the chamber and outside surface of the piping will receive a 2-mil minimum thickness of rust inhibitive high build catalyzed polyamide/bisphenol. An epoxy primer designed for fast dry and quick or extended recoatability and which meets Class A requirements for ASTM A490 Slip. A 4-mil thickness of high solids, high build, fast drying, polyamide epoxy will then be applied directly over the epoxy primer. Polyamide epoxy will contain 72% volume solids / 85% weight solids and be suitable for use in USDA inspected facilities.

Following blasting, the exterior portions of the chamber which are buried, shall have a 12 mil coating of a one coat, high build polyamide cured Sher-Tar epoxy enamel containing 24% pigment by weight / 76% vehicle by weight.

A touch-up kit containing epoxy coatings, as specified above, shall be provided for the coating of all field welds and for repair of any scratches or abrasions that have occurred during shipment or installation.

Four, 17# packaged magnesium anode packs with heavy copper wire shall be provided for cathodic protection. They shall be placed at the extreme limits of the excavation, prior to backfilling. The #12 wire anode leads shall be run into a 3/4" conduit, provided through the chamber wall, then down into the anode test box located in the pump chamber. The anode test

Underground Packaged Booster Pump Station

box shall have a 0-30 milliamp gauge and a selector switch to monitor the performance of each anode. The anode test box shall be housed in a NEMA 1 enclosure.

A dielectric rubber floor mat shall be placed on the floor of the chamber, in all normal walk areas, to protect the floor from abrasions.

2.08 PUMPS

Two horizontal end-suction centrifugal water pumps shall be installed in the booster station. Each pump shall meet all the requirements set forth in this specification under OPERATING CONDITIONS, and as follows:

Each pump shall be bronze fitted, single stage with close grain cast iron construction. The pump casing shall have a bronze replaceable wear ring. The impeller shall be bronze, of the enclosed type, and statically and dynamically balanced. The one-piece pump/motor shaft shall be stainless steel or steel with a bronze sleeve. The pump shall have a single mechanical shaft seal of the Ni-Resist type, and properly vented to the suction connection. Suction and discharge connections shall be either threaded connections or 125 lb. ANSI flanges, depending upon pump size.

Each pump shall be close-coupled to a 15 HP, 3500 RPM, 1 phase, 60 hertz, 230 volt ball-bearing, open drip proof, standard horizontal electric motor, with a service factor of 1.15. Motor shall be of such size that it will operate continuously without exceeding its horsepower rating, exclusive of its service factor, at the design conditions.

2.09 CONTROL SYSTEM

The power distribution center and electrical controls shall be mounted in a common NEMA Type 1 gasketed fabricated steel enclosure. The enclosure shall have a full opening door, mounted on heavy piano hinges. Suitable type latching devices shall be provided on the door. Starters, breakers, relays, timers and wiring raceway shall be neatly arranged on a removable steel back plate. All circuit breaker operators, selector switches, indicating lights, and single phase items shall be mounted on or through die cut openings in the enclosure door. A duplex grounding type convenience outlet shall be mounted in die cut openings on the side of the enclosure, for operation of 115-volt devices. It shall not be necessary to open this enclosure, except for adjustment of controls. Additional enclosures may be used as necessary to meet power and control requirements.

The control panel shall conform to the National Electrical Code specifications and shall be UL listed and labeled in accordance with UL standards No. 508 for Industrial Control Panels. In accordance with U.L. procedures, a U.L. label shall be affixed to the control panel.

Properly sized, heavy duty, molded case thermal-magnetic air circuit breakers shall be provided for branch circuit disconnect service and for over-current protection of all control, motor and auxiliary circuits

Underground Packaged Booster Pump Station

An automatic alternator shall be provided to change the sequence of operation of the pumps upon completion of each pumping cycle to equalize running time on the motors. The alternator shall be provided with a manual On-Off selector switch.

Six digit, non-resettable elapsed time meters shall be provided to record the running time of each pump motor. These devices shall be mounted in die cut openings in the enclosure door.

Adjustable snap action diaphragm type pressure switches shall provide control of the booster pumps. Set points shall be easily adjusted after removing the weatherproof cast aluminum case cover. The repeatability shall be plus or minus .5% of range span. One switch shall be provided for the following operations:

1. Low suction pressure cut out, ___ to ___ psi.

Time delay relays shall be provided for the following functions: low suction pressure cut out timer, pump on timers, pump off timers, high discharge pressure cut out timer. The time delay relays shall be solid-state devices with pin type plug-in bases. Each time delay relay shall be provided with six time ranges, a selector dial capable of 0 to 100% of range, and an LED indicator to show that the unit is timing.

Hand-Off-Automatic switches shall be oil tight, 2 or 3 position, and grouped conveniently with oil tight, full voltage indicating lights, on the panel door. Indicating lights shall identify the following functions:

1. Red - Low suction pressure.
2. Green - Pump #1 running.
3. Green - Pump #2 running.

2.10 VARIABLE FREQUENCY DRIVES

Properly sized Safronics FP5 variable frequency drives shall be supplied for motor phase conversion and motor starts. The variable frequency drive shall be used for phase conversion only. The pumps/motor will not operate on a variable speed. The variable torque AC drive shall produce an output of adjustable voltage and frequency to control the speed of the motors. The overload rating of the drive shall be 125% for 60 seconds. Standard features shall include set point (PID) control, energy-saving mode, power consumption monitoring and methods for harmonic distortion reduction.

The variable frequency drive design shall include the following features:

Analog monitor outputs of 0 to 10 Vdc	Carrier frequency selectable to 15 kHz
Keypad operator controls	Multi-speed settings
Nema 1 enclosure or protected chassis	Multi-line LCED English keypad
PID sleep function	RS-232 communication port
Set point (PID) control with inverse input	Signal follower of bias and gain
Timer function: contact-innated	12 pulse ready
24 Vdc control logic	32 Bit microprocessor
DE bus reactor included: 30 to 125 HP at 230 Vac and 30 to 250 HP at 460 Vac	

Underground Packaged Booster Pump Station

LCD display: English alpha/numeric 2 lines x 1 character
Programmable contacts, one form C and one normally open
Remote speed reference: 0 to 10 Vdc or 4 to 20 mA

The variable frequency drives protection devices shall include the following:

Current and torque limit	Current limited stall prevention
DC bus CHARGE indicator	Electronic motor overload
Under torque protection	Over torque protection
Ground fault protection	
Phase to phase/ Phase to neutral short circuit protection	
Synchronized start into rotating motor via speed search	
Fault circuit: over current, over voltage and over temperature	

The variable frequency drives performance shall include:

Adjustable accel/decel of 0.1 to 3600 sec.
Controlled speed range of 40:1
Critical frequency rejection: 2 selectable, adjustable bands
DC injection braking: ramp or coast to stop, adjustable, current limited
Displacement power factor of 0.98
Drive efficiency of 96 to 98 percent inertia ride-thru
Energy saving control
Frequency regulation: 0:01% digital (-10 to 40C) and 0.1% analog (15 to C)
Frequency resolution: 0.01% Hz with digital reference and 0.1% HZ with reference
Output frequency of 0.1 to 400 Hz
Overload capacity of 125% for 30 sec (180% peak)
Power loss ride-thru of 2 sec
Selectable auto restart after momentary power loss
Torque boost: full range, auto
Torque limiting circuit: 30 to 180%
Programmable auto restart momentary power loss

2.11

WIRING

Power service to the water booster station shall be single phase, 60 hertz, 230 volt. Wiring of the station shall be in accordance with the National Electric Code. All internal wiring shall be installed in conduit. The station shall be completely wired at the factory, except for power feed lines

The sump pump, dehumidifier, heater, exhaust blower, and all 115-volt accessory items shall be supplied with suitable lengths of 660 volt, 14-3 rubber covered power cord. These items shall plug directly into outlets, which are identified by engraved, laminated plastic nameplates.

All wiring in the control panel shall be color-coded. All wiring from the control panel to the junction boxes adjacent to equipment served shall be in conduit. Short leads of flexible, polyvinyl covered steel conduit, with compatible grounding fittings, shall be used at the pump motors to enable the motors to be removed and laid down on the station floor. All conduit and

Underground Packaged Booster Pump Station

wires shall be adequately sized for the maximum anticipated load. All conduits shall be neatly arranged and securely clamped to slotted steel channel, welded to the structure.

2.12 VENTILATION BLOWER

As specified in the EQUIPMENT CHAMBER section above, the ventilation system shall work to exhaust air from the chamber and draw air into the chamber. The ventilator shall be direct driven by a shaded pole, 1 phase, 60-hertz, 115-volt motor. The ventilator shall be a high efficiency type blower with a capacity of 232 cubic feet per minute at 0.200 inches static pressure.

2.13 LIGHTS

Two, 40-watt fluorescent light fixtures shall be mounted on the ceiling to illuminate the station interior. Each fixture shall be enclosed with a gasketed protective wrap-around lens. A manual switch located in the entrance man way shall operate the lights.

2.14 DEHUMIDIFIER

A dehumidifier, incorporating a fan to circulate air over the evaporator coils, shall control humidity in the pump station. It shall be provided complete with a humidistat and a thermostat that will de-energize the chilling mechanism and allow the fan to operate, if the humidity and temperature conditions are such that the condenser coils freeze. The dehumidifier shall have a minimum rating of 25 pints per day at 80 degrees Fahrenheit and 60% relative humidity. Condensate shall be piped to the sump, using 1/2" polyethylene tubing.

2.15 HEATER

A 1500-watt electric space heater with a minimum capacity of 5120 BtuH and controlled by an adjustable thermostat shall be provided to regulate the temperature in the pump station. The heater shall have a fan to provide even heat distribution throughout the chamber.

2.16 SUMP PUMP

A submersible sump pump shall be installed in the chamber sump pit. It shall have a heavy duty, oil filled, close-coupled motor, in a cast iron housing and shall operate on 1 phase, 60 hertz, 115 volt power. The minimum capacity of the sump pump shall be 1200 gallons per hour at 20' total dynamic head. A mercury float switch, capable of operation in the depth of the sump pit, shall control the sump pump. The sump pump shall have a minimum 1 1/4 inch discharge.

2.17 PIPING AND VALVES

The pipe used in the booster station shall be black seamless steel pipe, Schedule 40, manufactured in accordance with the dimensional tolerances and material specifications of current AWWA standards for steel pipe and butt weld fittings.

Underground Packaged Booster Pump Station

Isolation valves used inside the station shall be wafer style butterfly valves with cast iron bodies and nickel-plated, ductile iron discs. Valve stems shall be 416 stainless steel, of one-piece design, and sealed from line flow and atmospheric corrosion. Valve seats shall be EPDM and shall be mechanically secured between the valve body and mating flange, making seat replacement simple and fast. Valves 6" and smaller shall be provided with 10 position lever lock handles with throttle plates incorporating an infinite position stop, a memory stop, and a padlocking device for either fully open or fully closed position. Valves 8" and larger shall be provided with worm gear operators, complete with crank handles and position indicators. The butterfly valves shall be rated for 200-psi working pressure.

Wafer style silent check valves shall be center guided, spring loaded, non-slam type and suitable for installation in any position. The plug, with integral shaft, shall be fully guided in bronze bearings at both ends, and shall be retained at both its fully opened and closed positions by a minimum length of one shaft diameter. Silent check valves shall be used in each pump discharge line to help suppress surges by returning the spring-assisted plug to its closed position before any reverse flow can occur.

Compression type couplings shall be used in each pump discharge pipe run, and as required, to enable easy dismantling of station pumps and piping for maintenance and service. Couplings shall consist of two steel follower rings, two resilient gaskets, one steel middle ring, and a set of steel follower trackhead bolts.

The sump pump discharge piping shall be 1 1/4" galvanized steel pipe and include one check valve, one union for disassembly, and 1/4" drain back tubing from just inside the chamber discharge coupling to the sump.

2.18 WATER METER

A 4" Neptune HP (high performance) turbo type water meter shall be provided in the inlet piping of the station. The meter shall comply with ANSI/AWWA Standard C701. The meter shall have a 125# flanged bronze body. The meter shall consist of a rugged bronze maincase, and AWWA Class II turbine measuring element, and a roll-sealed register. The Unitized Measuring Element (UME) shall allow for easy in-line interchangeability. The hydrodynamically balanced thrust compensated rotor shall relieve pressure on the thrust bearing to minimize wear and provide sustained accuracy over an extended operating life. The rotor shall be direct coupled to the gear train. A calibration vane shall allow for in-field calibration of the UME. A magnetic drive shall couple the register with the measuring element. A roll-sealed register shall eliminate leaking and fogging. On the suction side of the meter shall be a strainer. The strainer shall have a removable cover plate to permit easy access to the strainer for routine cleaning.

The meter shall be supplied with a Tricon E3 electronic digital pulse output. The electronic pulse output shall provide a 4-20 MA output that is proportional to the flow. The Tricon E3 transmitter shall mount between the meter maincase and the register. Stainless steel ball bearings shall minimize torque. A tamperproof seal pin shall prevent unauthorized access and in-line adaptability shall allow installation or service without interrupting the meter service.

2.19 PRESSURE GAUGES

Two pressure gauges, one for influent pressure and one for discharge pressure shall be mounted adjacent to the control pressure switches. These glycerin-filled gauges will be 4 ½" in diameter, graduated in psi. Rated accuracy will be $\pm 1/2\%$ of full scale. Standard features will include fiberglass reinforced polypropylene case, clear acrylic plastic window with fiberglass reinforced polypropylene threaded ring, stainless steel movement, phosphor bronze Bourdon tube, silver brazed to socket and tip. Connection will be bottom only with brass ¼" NPT.

2.20 FACTORY TEST

The water booster station shall be tested with water at the manufacturer's factory for leaks in the pumps and piping, excessive vibration, correct operation of all electrical appurtenances, and to ensure that all of the pump controls are operating properly. These tests shall, as closely as shop conditions permit, simulate field design conditions as specified under OPERATING CONDITIONS. Pump shall be tested, to insure compliance with its published head-capacity curve and insure full pumping capability. As applicable, pump tests shall include motor running amperage checks, at the design conditions, shut-off and other points along the curve, insuring non-overloading performance and pump efficiency.

2.21 INSTALLATION AND SERVICE INSTRUCTIONS

Installation of the water booster station shall be in accordance with the written instructions furnished by the manufacturer, and as recommended by the Engineer. In addition to the installation instructions, the manufacturer shall furnish six complete and detailed Operating Instructions, Service and Repair Sheets in a bound manual. This manual shall cover the initial start-up, operating procedures, maintenance and servicing procedures on the major component parts provided in the pump station. One manual shall be shipped in the station, the rest shall be sent direct to the contractor.

2.22 START-UP

The manufacturer shall provide the services of a factory-trained representative for a maximum period of one day, to assist the contractor with the initial start-up of the pump station. It shall be the responsibility of the contractor to inform all parties of this initial start-up, and to insure their attendance. The manufacturer's representative shall instruct all personnel attending the start-up in the correct and required operation, maintenance and service procedures for the water booster station. **(See Special Conditions)**

2.23 GUARANTEE

The manufacturer shall guarantee the booster station to be free from defects in materials and workmanship for a period of one year from the date of start-up. All consumable parts such as pump seals, filters, light bulbs, oil, grease, etc., shall be considered part of routine maintenance and shall not be covered under the terms of the manufacturer's warranty. **(See Special Conditions)**

2.24 GENERAL

The contractor is hereby notified that responsibility for the complete and satisfactory operation or function of all equipment and material is definitely a part of this contract, regardless of the manufacturer's guarantee on any item furnished. It is the contractor's responsibility to place all equipment in operation, furnish all lubrication, check all fittings for tightness, and see that proper operating and maintenance instructions are prepared and followed.

END OF SECTION

APPENDIX A
DOT PERMIT





TRANSPORTATION CABINET

Ernie Fletcher
Governor

Department of Highways District 7 Office
763 West New Circle Rd., Building 2
P.O. Box 11127
Lexington, KY 40512
(859) 246-2355

Bill Nighbert
Acting Secretary

Marc Williams
Commissioner of Highways

HMB Professional
Engineers, Inc.

OCT 31 2006

South Woodford Water District
Attn: George Withers
467D Wilson Ave.
Versailles, KY 40383

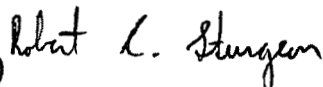

Subject: Woodford County RS 120-1967-001.300
KY 1967 (Shannon Run Road)
South Woodford Water District
Utility (APP NO 07-0178-06)

Dear Applicant:

Attached is your application for a permit that has been approved by the Department of Highways.

Please see that work is done in conformity with permit and applicable conditions. If you have any questions, please contact Kelly A. Baker, Permit Engineer, at (859) 246-2355.

Sincerely,


 Robert C. Sturgeon, P.E.
Chief District Engineer

4-17-06

Date

RCS/kab
Attachments



KENTUCKY TRANSPORTATION CABINET
 Department of Highways
 Permits Branch

TC 99-1E
 Rev. 02/01

Released Date March 21, 2006

ENCROACHMENT PERMIT

PERMIT NO. 07-0178-04

APPLICANT IDENTIFICATION: NAME: <u>South Woodford Water District</u> PERSON: <u>George Withers</u> ADDRESS: <u>467D Wilson Ave.</u> CITY: <u>Versailles</u> STATE: <u>Ky</u> ZIP CODE: <u>40383</u> PHONE: area code (<u>859</u>) <u>873-4003</u>	PROJECT IDENTIFICATION: ACCESS CONTROL: <input checked="" type="checkbox"/> By Permit <input type="checkbox"/> Partial <input type="checkbox"/> Full COUNTY: <u>Woodford</u> PRIORITY ROUTE NO: <u>Ky 1967</u> MILEPOINT: <u>1.30</u> <input type="checkbox"/> Left <input type="checkbox"/> Right <input checked="" type="checkbox"/> X-ing PROJECT STATUS: <input type="checkbox"/> Maint. <input type="checkbox"/> Const. <input checked="" type="checkbox"/> Design PROJECT # STATE: <u>RS-120-1967-001-300</u> PROJECT # FEDERAL: _____ ROAD/STREET NAME: <u>SHANNON RIVER RD</u>
--	--

TYPE OF ENCROACHMENT:

COMMERCIAL ENTRANCE - BUSINESS _____

PRIVATE ENTRANCE: Single Family Farm

UTILITY: Overhead Underground

GRADE: Fill Landscape on R/W

AIRSPACE: Agreement Lease

OTHER: (Specify) _____

ATTACHMENTS:

Standard Drawings (List on TC 99-21 under Misc.)

Applicant's Plans

Highway Plan and Profile Sheets

TC 99-3 (Ponding Encroachment Specs. and Conditions)

TC 99-4 (Rest Area Usage Specs. and Conditions)

TC 99-5 (Tree Cutting/Trimming Specs. and Conditions)

TC 99-6 (Chemical Use of Specs. and Conditions)

TC 99-10 (Typical Highway Bond Crossing Detail)

TC 99-12 (Overhead Utility Encroachment Diagram)

TC 99-13 (Surface Restoration Methods)

TC 99-21 (Encroachment Permit General Notes and Specs.)

TC 99-22 (Agreement for Services to be Performed)

TC 99-23 (Mass Transit Shelter Specs. and Conditions)

Other Attachments (Specify): _____

TYPE OF IDEMINITY: Bond Cash

SELF-INSURED AMOUNT ENCUMBERED \$ 5000

OTHER _____

NAME AND ADDRESS OF LOCAL INSURANCE AGENCY OR SELF-INSURED REPRESENTATIVE:

INDEMNITY: The applicant, in order to secure this obligation, has deposited with the Transportation Cabinet as a guarantee of conformance with the Department's Encroachment Permit requirements, an indemnity in the amount of \$ _____ as determined by the Department. It shall be the responsibility of the applicant or permittee, his heirs and assignees to keep all indemnities in full force until construction or reconstruction has been completed and duly accepted by an authorized agent of the Transportation Cabinet, Department of Highways.

BRIEF DESCRIPTION OF WORK TO BE DONE.

The South Woodford Water District is in the process of extending water service to rural areas of Woodford County. As part of this project, the water line will cross Ky 1967 near the intersection of McGee Road.

IMPORTANT (PLEASE READ): Applicant does does not intend to apply for excess RW.

When the work is completed in accordance with the terms of this encroachment permit, your idemnity will be released. However, the permit is effective until revoked by the Transportation Cabinet and the terms on the permit accompanying permit documents and drawings remain in effect as long as the encroachment exists. **FUTURE MAINTENANCE OF THE ENCROACHMENT IS THE RESPONSIBILITY OF THE PERMITEE.** It is important that you understand the requirements of this encroachment permit application and accompanying documents. If you have not done so, it is suggested that you review these documents and place the permit package in a safe place for future reference.

A copy of this permit and all documents shall be given to your contractor and shall be readily available at the work site for the encroachment permit inspector to review at all times. Failure to meet this requirement may result in cancellation of this permit.

IN THE EVENT THIS APPLICATION IS APPROVED, THIS DOCUMENT SHALL CONSTITUTE A PERMIT FOR THE APPLICANT TO USE THE RIGHT-OF-WAY, BUT ONLY IN THE MANNER AUTHORIZED BY THIS DOCUMENT AND REGULATIONS OF THE DEPARTMENT AND THE DRAWINGS, PLANS, ATTACHMENTS, AND OTHER PERTINENT DATA ATTACHED HERETO AND MADE A PART HEREOF.

The permittee agrees to the following terms and conditions:

1. The permittee shall comply with and is bound by the requirements of the Department's Permits Manual as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.
2. Permittee agrees that if the Department determines that vehicular capacity deficiencies or over capacity conditions develop as a result of the installation and use of this facility, the permittee shall adjust, relocate, or reconstruct the facilities and/or provide and bear the expenses for signs, auxiliary lanes, or other corrective measures reasonably deemed necessary by the Department and as set forth in the Department's Permit Manual within a reasonable length of time after receipt of written notice regarding such adjustments, relocation, additions, modifications, and/or corrective measures, such time to be specified in the notice. In cases where traffic signals are permitted or required, as determined by the Department, the costs for signal equipment and installation(s) shall be borne by the permittee and/or the Department in accordance with Department policy then in force as set forth in the Traffic Manual. Any modifications to the permittee's entrance necessary for access to the site shall be made at the expense of the permittee. (This applies only to entrance Permits.)
3. The said encroachment will infringe on the frontage rights of an adjoining owner without written consent of the said owner as hereinafter set forth: (This does not apply to utilities which serve the general public.)
4. Any permit granted hereunder shall be with the full understanding that it shall not interfere with any similar rights or permits heretofore granted to any other party except as otherwise provided by law.
5. A plan prepared by HMB Professional Engineers, Inc. and dated January 01, 2006 is attached hereto and made a part hereof, which describes the facilities to be constructed by the permittee for which facilities this permit is granted. The permittee agrees as a condition to the issuance of the permit to construct and maintain such facilities in accordance with said plan, and the permittee shall not use the facilities authorized herein in any manner contrary to that prescribed by this permit and plan. Normal usage and routine maintenance only are authorized under this permit.
6. Permittee shall comply with the Manual on Uniform Traffic Control Devices as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.
7. Permittee shall at all times from date when work is first commenced and until such time as all facilities are removed from the right-of-way premise, defend, protect and save harmless the Department from all liability claims, and demands arising out of work undertaken by the permittee pursuant to this permit, due to any negligent act or omission by the permittee, its servants, agents, employees, or contractors. This provision shall not inure to the benefit of any third party or operate to enlarge any liability of the Department beyond that existing at common law with this right of indemnity did not exist.
8. Upon acquisition of any of the provisions of this permit, the Department may revoke the permit by giving notice to the permittee in writing to remove from the right-of-way any facilities placed thereon within a reasonable time as set forth in the notice, and in the event said facilities are not so removed, and the right-of-way restricted, the Department may cause same to be removed, and the costs thereof shall be charged to the permittee.
9. The permittee, his successors and assigns shall use the encroachment premises in compliance with all Federal requirements imposed pursuant to the provisions of the Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000-1) and regulations of the U.S. Department of Transportation as set forth in Title 49 C.F.R., Part 21, and as said regulations may be amended.
10. Permittee agrees that in the event it should become necessary, as may be reasonably determined by the Department, for the facilities covered by this permit to be removed or relocated in connection with the reconstruction, relocation, or improvement of the abutting highway, the Department may revoke this permit and require removal or relocation by the permittee at his own expense according and pursuant to the procedures provided in Paragraph 8 above except in those cases where the Department is required by law to pay any or all the same.
11. The permittee understands and agrees that this permit is personal to the permittee and shall not inure to his successors and assigns without the written approval of the Department that he is bound by the provisions of this permit as long as the encroachment exists unless a written release has been obtained from the Department. (Does not apply to utilities serving the general public.)
12. If the work authorized by this permit is on a project in the construction phase it shall be the responsibility of the permittee to make personal contact with the Resident Engineer on the project to coordinate the permitted work with the State's prime contractor on the project.
13. This permit does not alleviate any requirements of any other Government agency.
14. Permittee agrees to keep the priority route in which this permit was issued clear of dirt, mud, and debris during construction and for the life of this permit.

THE UNDERSIGNED APPLICANT (being duly authorized representative/owner) DOES AGREE TO ALL TERMS AND CONDITIONS SET FORTH HEREIN.

January 1st July 1st, 20 07

Completion Date: 03/23/06

Attempt to alter this form constitutes a

PERMIT ENCL

Wall A. Bab

Title _____ Signature _____

Robert C. Johnson

Chief District Engineer

Date

4-17-06

PRIVATE ENTRANCE: TO BE COMPLETED BY PERSONNEL INSTALLING FACILITY **VOID** permit.

Installed By: _____ Title _____ Signature _____ Date _____



ENCROACHMENT PERMIT GENERAL NOTES & SPECIFICATIONS

I. SAFETY

A. General Requirements

- All signs and control of traffic shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition, Part VI, and safety requirements shall comply with the Permits Manual.
- All work necessary in shoulder or ditchline areas of a state highway is to be scheduled to be promptly completed so that hazards adjacent to the traveled-way are kept to an absolute minimum.
- No more than one (1) traveled-lane is to be blocked or obstructed during normal working hours. All signs and flagmen during lane closure shall conform to the Manual on Uniform Traffic Control Devices.
- When it is necessary to block one (1) traveled-lane of a state highway, the normal working hours shall be as directed by the Department. No lanes are to be blocked or obstructed during adverse weather conditions (i.e., rain, snow, fog, etc.) with specific permission from the Department. Working hours shall be between 9:00 a.m. and 3:30 p.m.
- The traveled-way and shoulders shall be kept clear of mud and other construction debris at all times during construction of the permitted facility.
- No nonconstruction equipment or vehicles or office trailers will be allowed on the right-of-way during working hours.
- The right-of-way shall be left free and clear of equipment, material, and vehicles during non-working hours.

B. Explosives

- No explosive devices or explosive material shall be used within state right-of-way without proper license and approval of Kentucky Department of Mines and Minerals, Explosive Division.

C. Other Safety Requirements

- _____
- _____
- _____
- _____

II. UTILITIES

- *All work necessary within the right-of-way shall be behind a temporary fence erected prior to a boring operation.
- *The temporary woven wire fence shall be removed immediately upon completion of work on the right-of-way and control of access immediately restored to original condition, in accordance with applicable Kentucky Department of Highways Standard Drawings.
- *All vents, valves, manholes, etc. are to be located outside the right-of-way.
- *Encasement pipe shall extend from right-of-way line to right-of-way line and shall be one continuous run of pipe. The encasement pipe shall be welded at all joints.
- The boring pit and tail ditch shall extend past the existing toe of slope or bottom of ditch line and shall be a minimum of 30" deep.
- Encasement pipe shall conform to current standards for highway crossings in accordance with the Permits Manual.
- Parallel lines shall be constructed between back slope of ditch line and right-of-way line and shall have a minimum of 30 " cover above top of pipe or conduit. (30" preferred)
- All pavement cuts shall be restored per Kentucky Transportation Cabinet Form No. TC 99-13.
- Aerial crossing of this utility line shall have a minimum clearance of _____ feet from the high point of the roadway to the low point of the line (calculated at the coefficient for expansion of 120 degrees Fahrenheit).
- The 30' clear zone requirement will be met to the extent possible in accordance with Chapter 99-02.0313 of the Permits Manual.
- Special Requirements:

*Applies to Fully Controlled Access Highways ONLY

II. GENERAL

TC 99-21
Rev. 7/95

A. OSHA

Kentucky Occupational Safety and Health Standards for the construction industry which has the effect of law states in part: (page 5 1926.651 Specific Excavation Requirements) "Prior to opening an excavation, effort shall be made to determine whether underground installations: i.e., sewer, telephone, water, fuel, electric lines, etc., will be encountered, and if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation."

B. Archaeological

Whenever materials of an archaeological nature are discovered during the course of construction work or maintenance operations, contact shall be made immediately with the Division of Environmental Analysis which maintains an archaeologist on its staff, or with the Office of the State Archaeologist located at the University of Kentucky. Following this consultation, further action shall be decided on a case-by-case basis by the State Highway Engineer or the Transportation Planning Engineer or their designated representative.

C. Utilities in the Work Areas

The permittee is to be responsible for any damage to existing utilities and any utility modifications or relocations within State right-of-way necessary, as determined by the Department or by the owner of the utility, are to be at the expense of the permittee and subject to the approval of the Department.

All existing manholes and valve boxes are to be adjusted to be flush with finished grade.

IV. RIGHT-OF-WAY RESTORATION

All disturbed portions of the right-of-way are to be restored to grass as per Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition). A satisfactory turf, as determined by the Department, is to be established by the permittee prior to release of indemnity. Sodding or seeding as follows:

Lawn or High Maintenance Situation	-70% Lawn Fescue (e.g., variety - Falcon)
	-30% Bluegrass or
	70% Lawn Rye (e.g., variety - Derby)
	30% Bluegrass
Right-off-Way Lawn Maintenance Situation	-70% KY 31 Fescue
	-30% Perennial Rye Grass or
	100% KY Fescue

Two tons clean straw mulch per acre of seeding.

Prior to seeding, the ground must be prepared in accordance with Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).

Substitutes for sod such as artificial turf or rocked mulch or paved areas may be acceptable if they are aesthetically pleasing.

All ditch flow lines and all ditch side slopes are to be sodded.

Existing concrete right-of-way markers are not to be disturbed, but if damaged in any way, they are to be entirely replaced by the permittee with new concrete markers to match the original markers, in accordance with Kentucky Department of Highways Standard Drawings. Markers which are entirely removed are to be re-established in the proper locations by the permittee and to the satisfaction of the Department.

Other right-of-way restoration requirements are as follows:

V. DRAINAGE

All pipe is to be laid in a straight alignment, to proper grades, and with all materials and methods of installation including bedding and joint seating in accordance with Department Standard Specifications for Road and Bridge Construction, latest edition. Pipe is not to be covered until inspected by the Department and express permission obtained to make backfill.

All gutter lines at the base of new curbs are to be on continuous grades, and pockets of water along curbs, or in entrance areas or other paved areas within the right-of-way, are not acceptable.

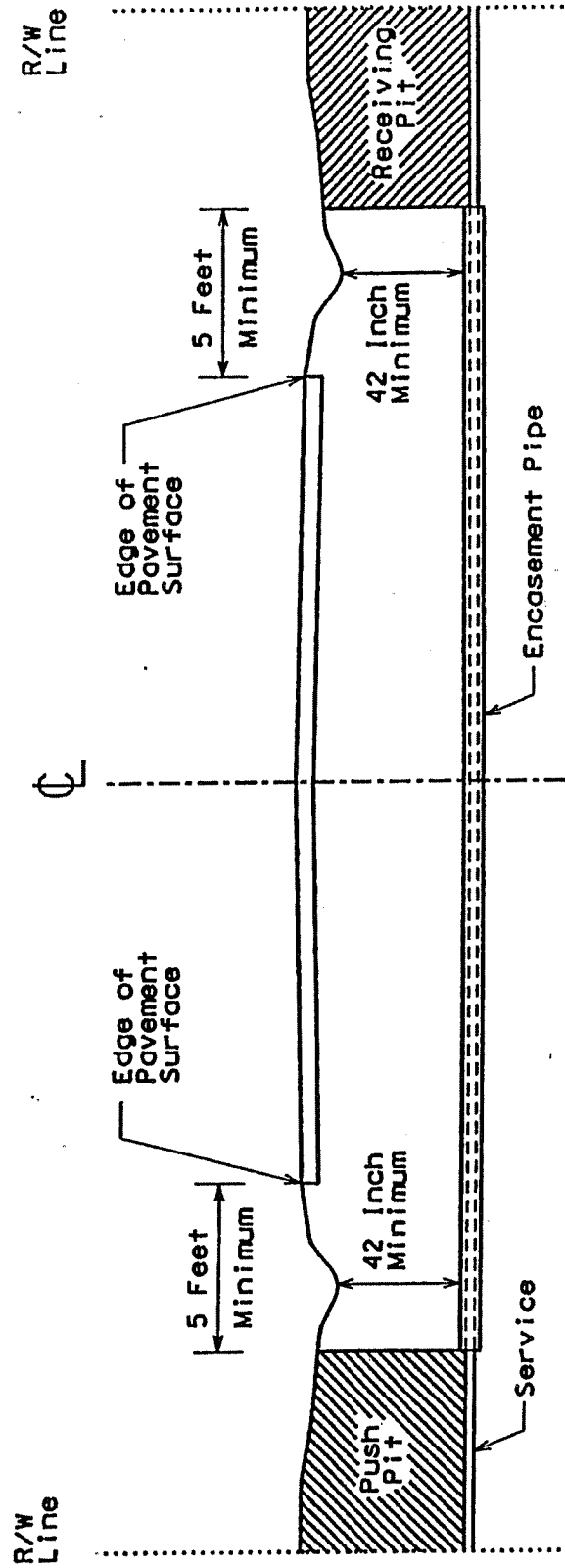
All drainage structures and appurtenances (manholes, catch basins, curbing, inlet basins, etc.) shall conform to Department specifications and shall be constructed in accordance with the Department Standard Drawings. Type required:

Kentucky Transportation Cabinet
 Department of Highways
 Permits Branch

EXHIBIT 8
 TC 99-10
 Rev. 9/2004

TYPICAL HIGHWAY BORING CROSSING DETAIL

Permit No. _____
 Route No. _____
 Pavement Width _____



1. Push Pit and Receiving Pit shall be backfilled and thoroughly compacted.
2. All ditch lines are to remain open at all times.
3. Seed and straw all disturbed areas immediately after completing the work.
4. Provide traffic control as required to insure the safety of the traveling public in accordance with the current edition of the "Manual on Uniform Traffic Control Devices".

ALL SERVICES OVER 2" IN DIAMETER SHALL REQUIRE ENCASEMENT.



NOTICE OF COMPLETION OF ENCROACHMENT PERMIT WORK

Please return this form to the District Office when work is completed and ready for final inspection.

Applicant Identification

Name: SOUTH WOODFORD WATER DISTRICT
Contact Person: GEORGE WITHERS
Address: 460 WILSON AVENUE
City: VERSAILLES
State: KY Zip: 40383
Telephone: 606-873-1308

Project Identification

Permit Number: 07-0179-06
County: Woodford
Route Number: 33
Road Name: TROY PIKE
Milepoint: 2.125

I wish to notify the Department of Highways that the above mentioned permit work and any necessary right of way restoration have been completed and are ready for final inspection.

Applicant

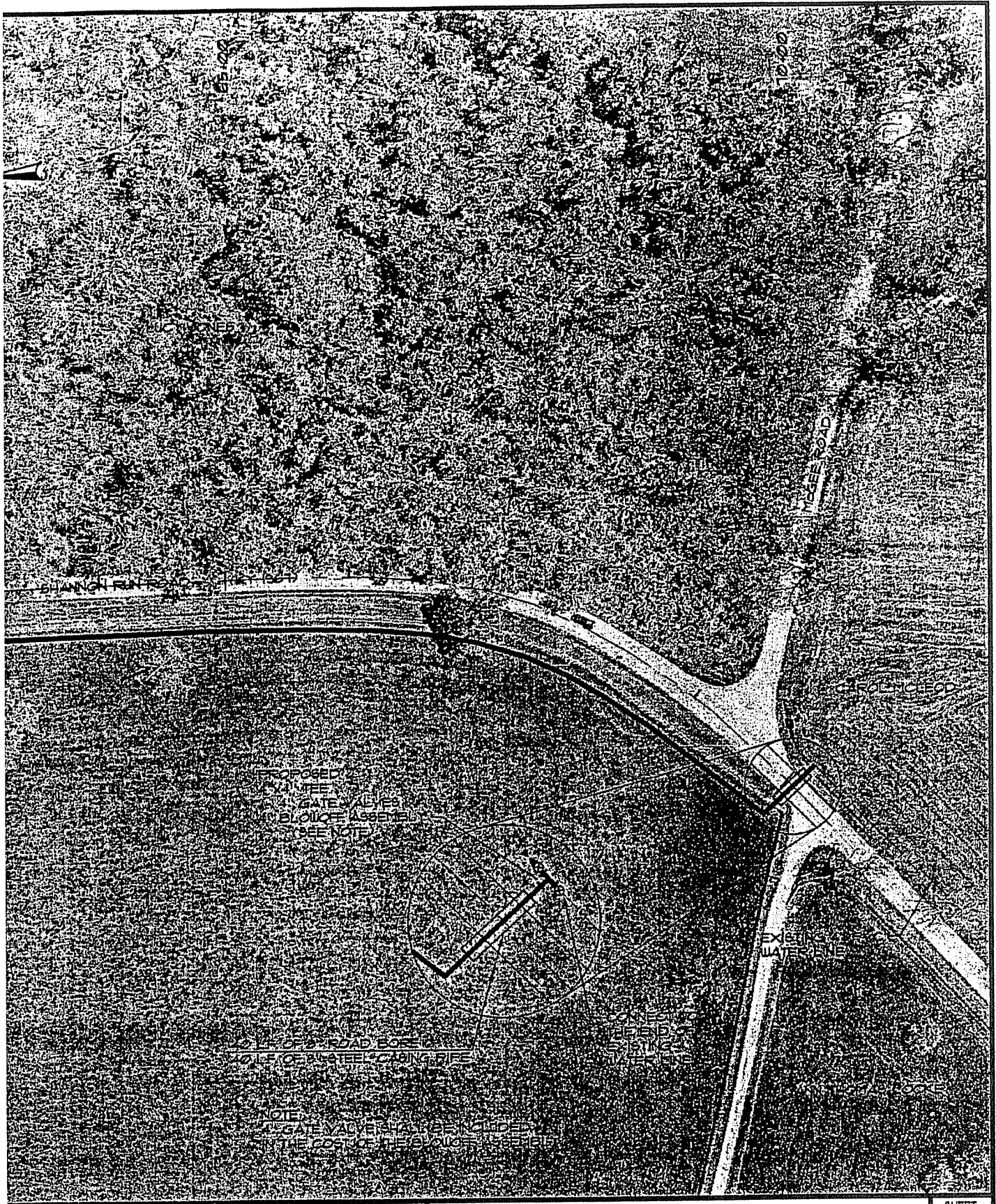
Please Return To:

Department of Highways
District 7 Lexington
P.O. Box 11127
Lexington, Ky. 40512-1127

Attention:

Kelly A. Baker, P.E.





PROPOSED
 WATER MAIN
 PROPOSED GATE VALVE
 PROPOSED 12" WATER MAIN
 SEE NOTE

12" OF ROAD BORE
 12" OF GATE VALVE

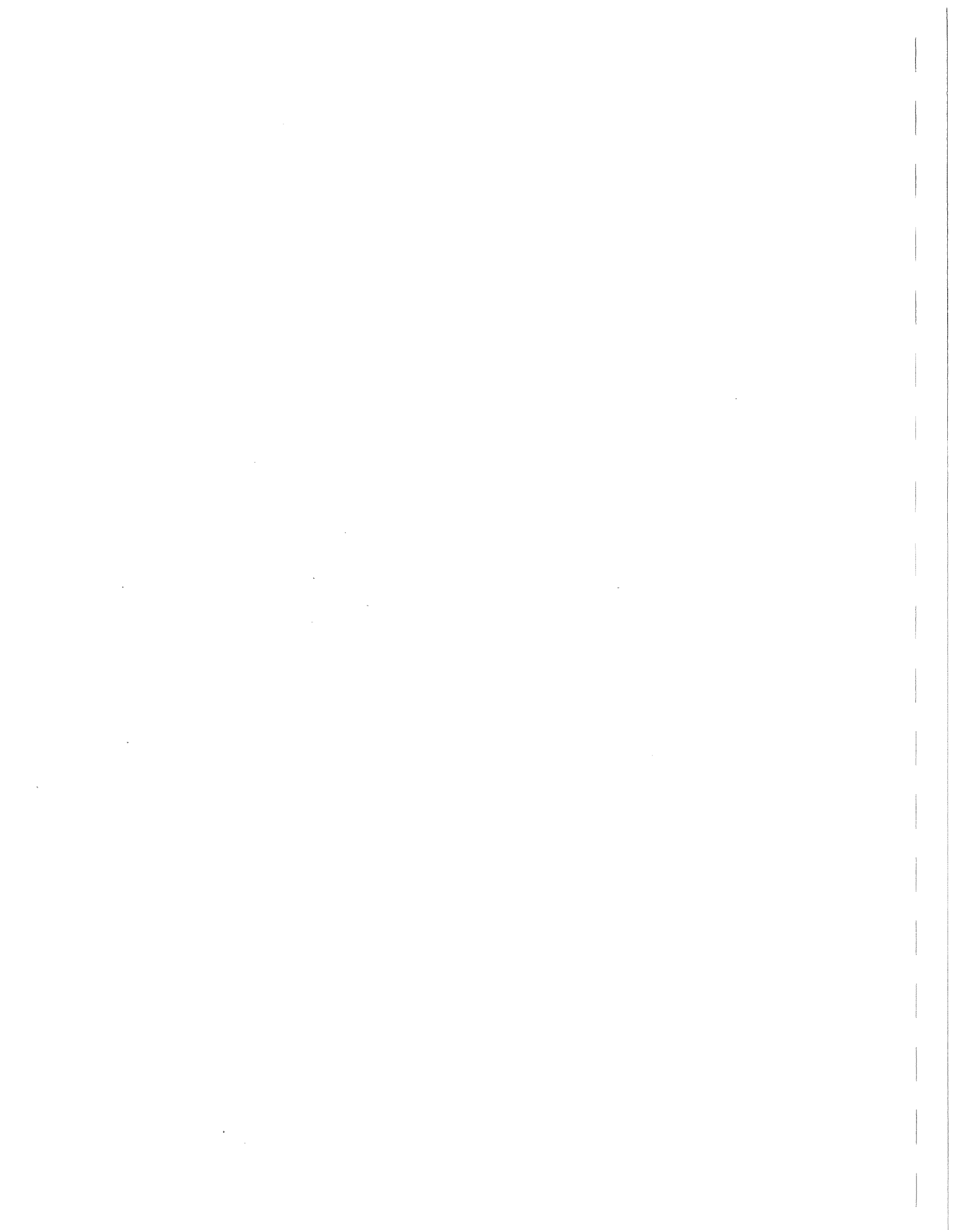
NOTE:
 GATE VALVE SHALL BE COVERED
 AT THE COST OF THE BIDDING CONTRACTOR

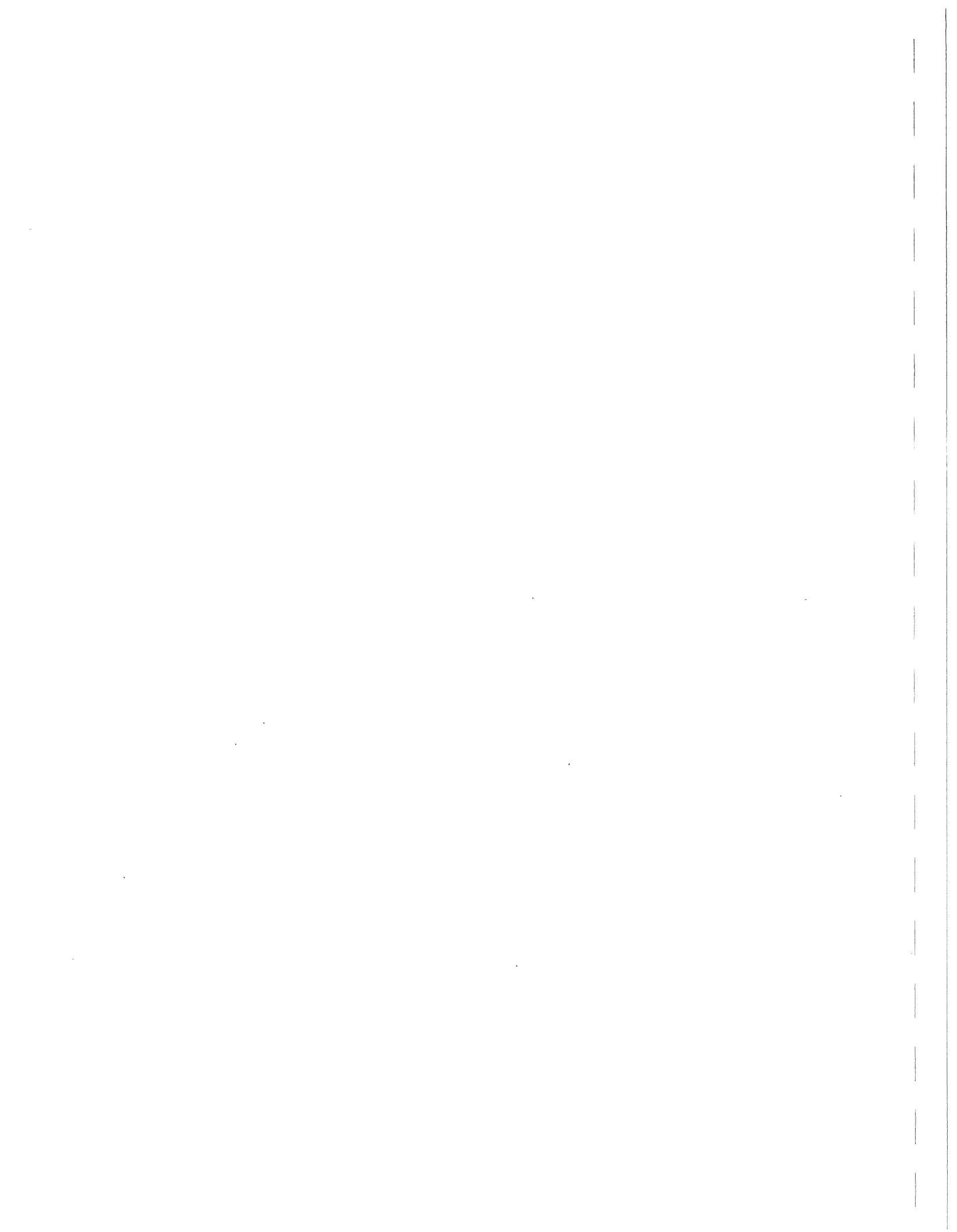
118B CIRCLE
 ANKFORT, KENTUCKY
 22) 695-9800
 22) 695-9810 FAX

**PHASE IV WATER PROJECT
 SOUTH WOODFORD WATER DISTRICT
 WOODFORD COUNTY, KENTUCKY**

SHANNON RUN ROAD (KY 1967)

SHEET	6
OF	??





KENTUCKY TRANSPORTATION CABINET
 Department of Highways
 Permits Branch

TC 99-1E
 Rev. 02/01

Released Date March 21, 2006

ENCROACHMENT PERMIT

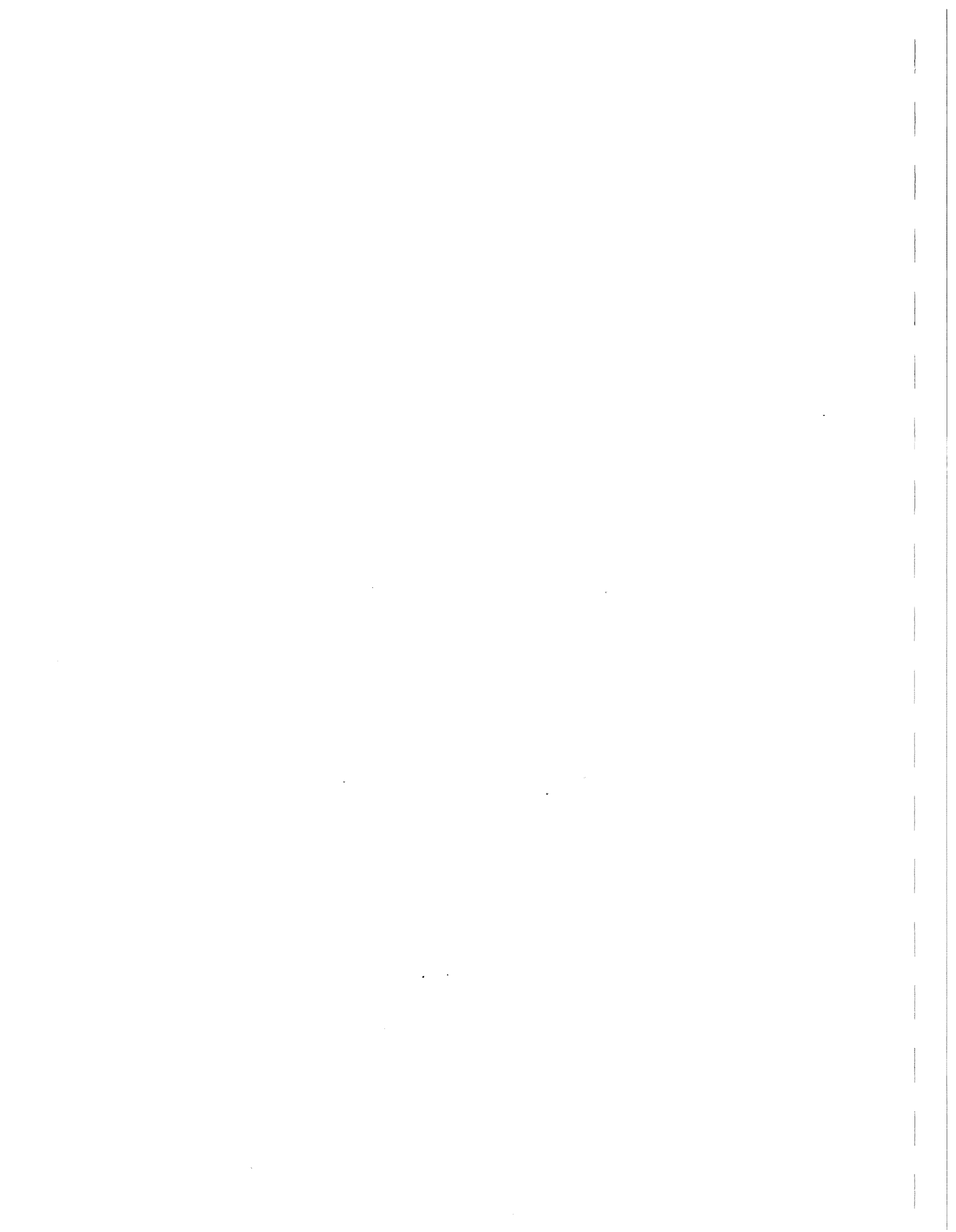
PERMIT NO. 07-0179-06

<p>APPLICANT IDENTIFICATION: NAME: <u>South Woodford Water District</u> PERSON: <u>George Withers</u> ADDRESS: <u>467D Wilson Ave.</u> CITY: <u>Versailles</u> STATE: <u>Ky</u> ZIP CODE: <u>40383</u> PHONE: area code (<u>859</u>) <u>873-4003</u></p>	<p>PROJECT IDENTIFICATION: ACCESS CONTROL: <input checked="" type="checkbox"/> By Permit <input type="checkbox"/> Partial <input type="checkbox"/> Full COUNTY: <u>Woodford</u> PRIORITY ROUTE NO: <u>Ky 33</u> MILEPOINT: <u>2.125</u> <input type="checkbox"/> Left <input type="checkbox"/> Right <input checked="" type="checkbox"/> X-ing PROJECT STATUS: <input type="checkbox"/> Maint. <input type="checkbox"/> Const. <input checked="" type="checkbox"/> Design PROJECT # STATE: <u>MP120-0033-002-125</u> PROJECT # FEDERAL: _____ ROAD/STREET NAME: <u>TROY PK</u></p>
<p>TYPE OF ENCROACHMENT: <input type="checkbox"/> COMMERCIAL ENTRANCE - BUSINESS _____ <input type="checkbox"/> PRIVATE ENTRANCE: <input type="checkbox"/> Single Family <input type="checkbox"/> Farm <input checked="" type="checkbox"/> UTILITY: <input type="checkbox"/> Overhead <input checked="" type="checkbox"/> Underground <input type="checkbox"/> GRADE: <input type="checkbox"/> Fill <input type="checkbox"/> Landscape on R/W <input type="checkbox"/> AIRSPACE: <input type="checkbox"/> Agreement <input type="checkbox"/> Lease <input type="checkbox"/> OTHER: (Specify) _____</p>	<p>ATTACHMENTS: <input type="checkbox"/> Standard Drawings (List on TC 99-21 under Misc.) <input checked="" type="checkbox"/> Applicant's Plans <input type="checkbox"/> Highway Plan and Profile Sheets <input type="checkbox"/> TC 99-3 (Ponding Encroachment Specs. and Conditions) <input type="checkbox"/> TC 99-4 (Rest Area Usage Specs. and Conditions) <input type="checkbox"/> TC 99-5 (Tree Cutting/Trimming Specs. and Conditions) <input type="checkbox"/> TC 99-6 (Chemical Use of Specs. and Conditions) <input checked="" type="checkbox"/> TC 99-10 (Typical Highway Bond Crossing Detail) <input type="checkbox"/> TC 99-12 (Overhead Utility Encroachment Diagram) <input type="checkbox"/> TC 99-13 (Surface Restoration Methods) <input type="checkbox"/> TC 99-21 (Encroachment Permit General Notes and Specs.) <input type="checkbox"/> TC 99-22 (Agreement for Services to be Performed) <input type="checkbox"/> TC 99-23 (Mass Transit Shelter Specs. and Conditions) <input type="checkbox"/> Other Attachments (Specify): _____</p>
<p>TYPE OF IDEMINITY: <input checked="" type="checkbox"/> Bond <input type="checkbox"/> Cash <input type="checkbox"/> SELF-INSURED AMOUNT ENCUMBERED \$ <u>5000</u> <input type="checkbox"/> OTHER _____</p>	
<p>NAME AND ADDRESS OF LOCAL INSURANCE AGENCY OR SELF-INSURED REPRESENTATIVE: _____</p>	
<p>INDEMNITY: The applicant, in order to secure this obligation, has deposited with the Transportation Cabinet as a guarantee of conformance with the Department's Encroachment Permit requirements, an indemnity in the amount of \$ _____ as determined by the Department. It shall be the responsibility of the applicant or permittee, his heirs and assignees to keep all indemnities in full force until construction or reconstruction has been completed and duly accepted by an authorized agent of the Transportation Cabinet, Department of Highways.</p>	
<p>BRIEF DESCRIPTION OF WORK TO BE DONE. The South Woodford Water District is in the process of extending water service to rural areas of Woodford County. As part of this project, the water line will cross Ky 33 near the intersection of Pauls Mill Road.</p>	
<p>IMPORTANT (PLEASE READ): Applicant <input type="checkbox"/> does <input checked="" type="checkbox"/> does not intend to apply for excess R/W.</p>	

When the work is completed in accordance with the terms of this encroachment permit, your idemnity will be released. However, the permit is effective until revoked by the Transportation Cabinet and the terms on the permit accompanying permit documents and drawings remain in effect as long as the encroachment exists. **FUTURE MAINTENANCE OF THE ENCROACHMENT IS THE RESPONSIBILITY OF THE PERMITEE.** It is important that you understand the requirements of this encroachment permit application and accompanying documents. If you have not done so, it is suggested that you review these documents and place the permit package in a safe place for future reference.

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1. The permittee shall comply with and is bound by the requirements of the Department's Permits Manual as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.
2. Permittee agrees that if the Department determines that vehicular capacity deficiencies or over capacity conditions develop as a result of the installation and use of this facility, the permittee shall adjust, relocate, or reconstruct the facilities and/or provide and bear the expenses for signs, auxiliary lanes, or other corrective measures reasonably deemed necessary by the Department and as set forth in the Department's Permit Manual within a reasonable length of time after receipt of written notice regarding such adjustments, relocation, additions, modifications, and/or corrective measures, such time to be specified in the notice in cases where traffic signals are permitted or required, as determined by the Department, the costs for signal equipment and installation(s) shall be borne by the permittee and/or the Department in accordance with Department policy then in force as set forth in the Traffic Manual. Any modifications to the permittee's entrance necessary to accommodate signage (including necessary easement(s) on private property) shall be the responsibility of the permittee at no expense to the Department. (This applies only to Entrance Permits.)
3. The said encroachment within the right-of-way shall be the responsibility of the permittee without written consent of the said owner as hereon. (This does not apply to utilities which serve the general public.)
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9. The permittee, his successors and assigns shall use the encroachment premises in compliance with all Federal requirements imposed pursuant to the provisions of the Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000-1) and regulations of the U.S. Department of Transportation as set forth in Title 49 C.F.R., Part 21, and as said regulations may be amended.
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January 1st July 1st, 20 07 03/23/06 Date

Attempt to alter this form constitutes a RECOMMENDED FOR APPROVAL

PERMIT ENCL Title Robert C. Bengen Chief District Engineer Signature 4-17-06 Date

PRIVATE ENTRANCE: TO BE COMPLETED BY PERSONNEL INSTALLING FACILITY

Installed By: _____ Title _____ Signature _____ Date _____



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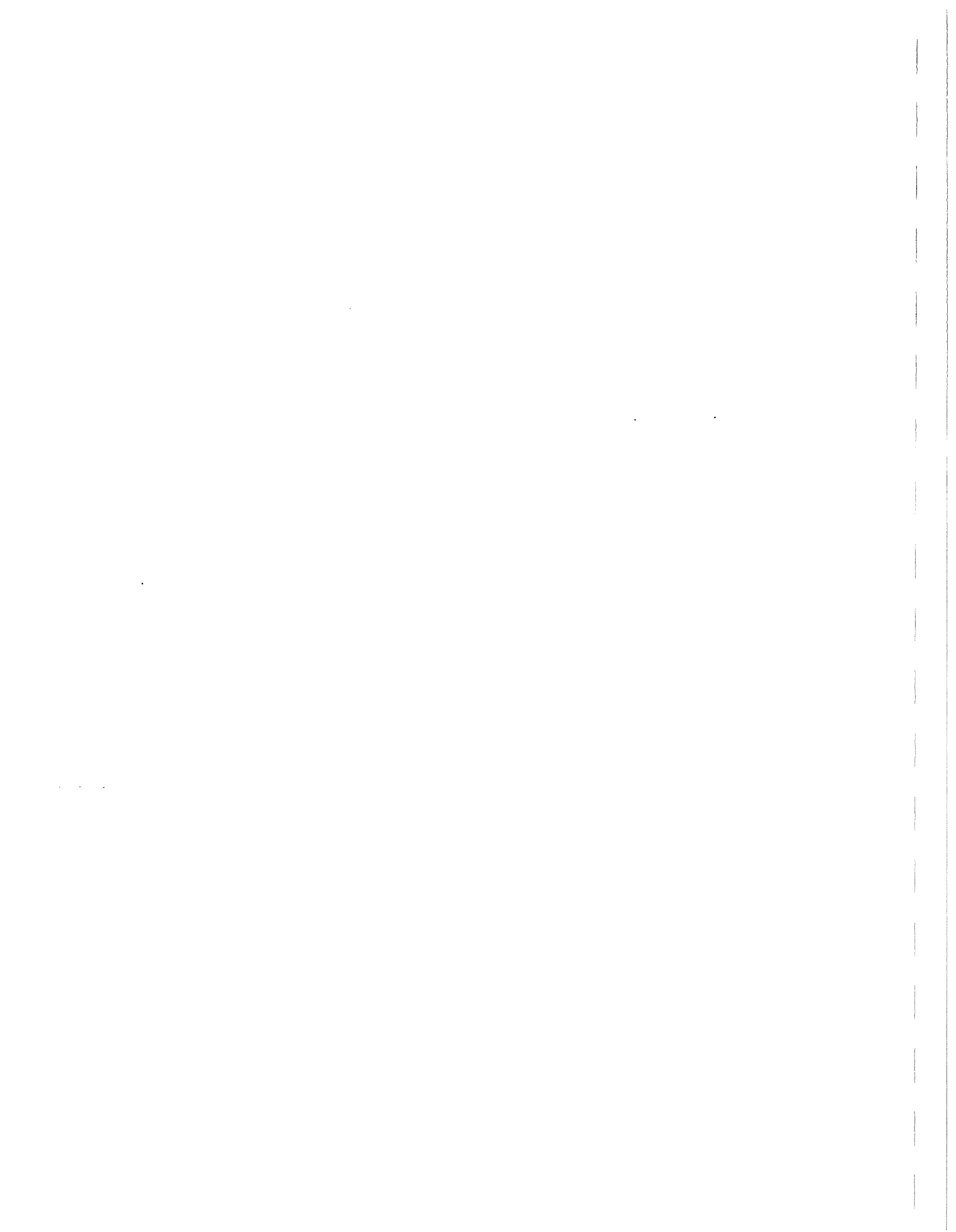
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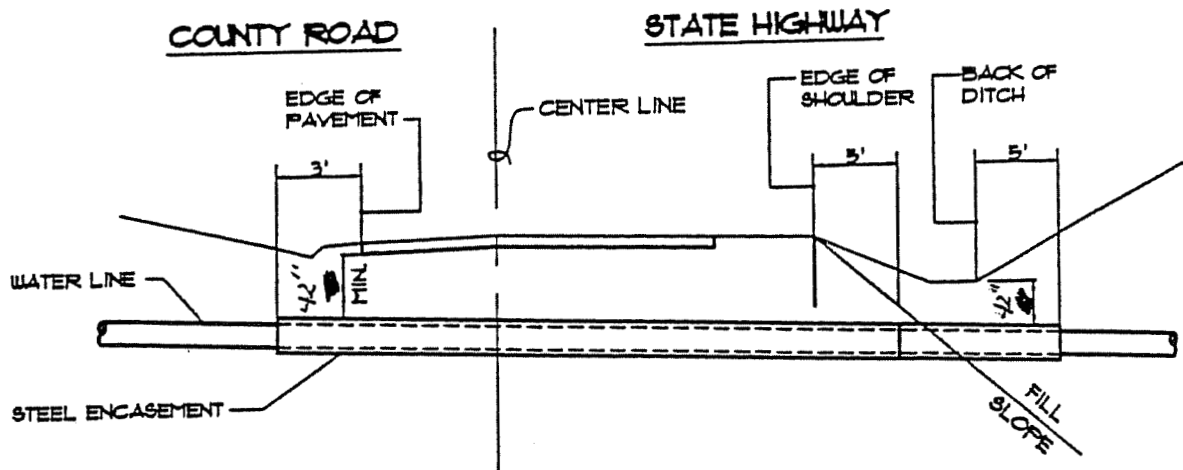
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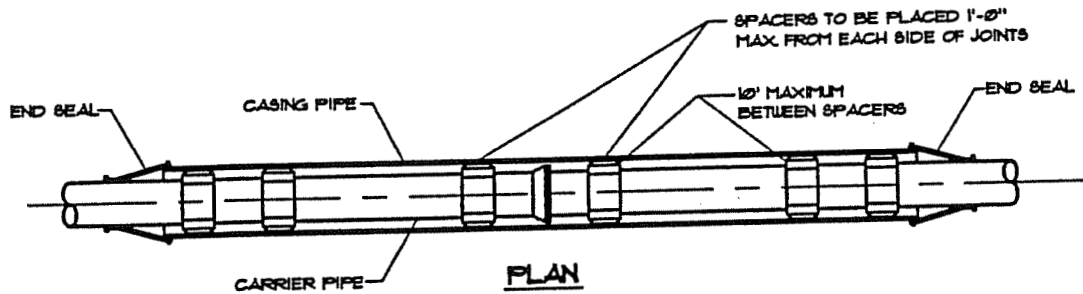
*Applies to Fully Controlled Access Highways **ONLY**





TYPICAL ROAD CROSSING

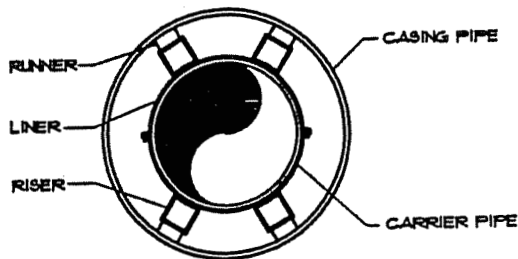
NOT TO SCALE



PLAN

TYPICAL ROAD CROSSING NOTES:

1. ALL JOINTS SHALL BE SOLIDLY WELDED. END OF CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. MINIMUM DEPTHS MAY INCREASE IN AREAS WHICH REQUIRE MINIMUM SEPARATION WITH OTHER FACILITIES.
3. OPEN TRENCH NO CLOSER THAN THE DITCH LINE OR TOE OF FILL FROM THE EDGE OF THE PAVEMENT OR AS DIRECTED BY STATE, COUNTY OR MUNICIPAL SPECIFICATIONS.
4. HIGHWAY CROSSINGS SHALL UTILIZE STEEL CASING PIPE. STEEL CASING PIPES 4" AND LESS SHALL BE NEW SCHEDULE 40. STEEL CASING PIPES LARGER THAN 4" SHALL HAVE MINIMUM WALL THICKNESS OF 0.25". ALL BORED AND JACKED ENCASEMENT PIPE SHALL BE INSTALLED IN BORE HOLES NO LARGER THAN THE OUTSIDE DIAMETER OF THE ENCASEMENT PIPE.



ELEVATION

TYPICAL STREAM CROSSING NOTES:

1. END CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. CONCRETE CAP SHALL END A MINIMUM OF ONE FOOT FROM EDGE OF CASING PIPE.
3. STREAM CROSSINGS SHALL UTILIZE PVC SDR 35 CASING PIPE.

ENCASEMENT PIPE SPACER



GENERAL

TC 99-21
Rev. 7/95

OSHA

Kentucky Occupational Safety and Health Standards for the construction industry which has the effect of law states in part: (page 5 1926.651 Specific Excavation Requirements) "Prior to opening an excavation, effort shall be made to determine whether underground installations: i.e., sewer, telephone, water, fuel, electric lines, etc., will be encountered, and if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation."

Archaeological

Whenever materials of an archaeological nature are discovered during the course of construction work or maintenance operations, contact shall be made immediately with the Division of Environmental Analysis which maintains an archaeologist on its staff, or with the Office of the State Archaeologist located at the University of Kentucky. Following this consultation, further action shall be decided on a case-by-case basis by the State Highway Engineer or the Transportation Planning Engineer or their designated representative.

Utilities in the Work Areas

The permittee is to be responsible for any damage to existing utilities and any utility modifications or relocations within State right-of-way necessary, as determined by the Department or by the owner of the utility, are to be at the expense of the permittee and subject to the approval of the Department.

All existing manholes and valve boxes are to be adjusted to be flush with finished grade.

RIGHT-OF-WAY RESTORATION

All disturbed portions of the right-of-way are to be restored to grass as per Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition). A satisfactory turf, as determined by the Department, is to be established by the permittee prior to release of indemnity. Sodding or seeding as follows:

Lawn or High Maintenance Situation	-70% Lawn Fescue (e.g., variety - Falcon)
	-30% Bluegrass or
	70% Lawn Rye (e.g., variety - Derby)
	30% Bluegrass
Right-off-Way Lawn Maintenance Situation	-70% KY 31 Fescue
	-30% Perennial Rye Grass or
	100% KY Fescue

Two tons clean straw mulch per acre of seeding.

Prior to seeding, the ground must be prepared in accordance with Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).

Substitutes for sod such as artificial turf or rocked mulch or paved areas may be acceptable if they are aesthetically pleasing.

All ditch flow lines and all ditch side slopes are to be sodded.

Existing concrete right-of-way markers are not to be disturbed, but if damaged in any way, they are to be entirely replaced by the permittee with new concrete markers to match the original markers, in accordance with Kentucky Department of Highways Standard Drawings. Markers which are entirely removed are to be re-established in the proper locations by the permittee and to the satisfaction of the Department.

Other right-of-way restoration requirements are as follows:

DRAINAGE

All pipe is to be laid in a straight alignment, to proper grades, and with all materials and methods of installation including bedding and joint seating in accordance with Department Standard Specifications for Road and Bridge Construction, latest edition. Pipe is not to be covered until inspected by the Department and express permission obtained to make backfill.

All gutter lines at the base of new curbs are to be on continuous grades, and pockets of water along curbs, or in entrance areas or other paved areas within the right-of-way, are not acceptable.

All drainage structures and appurtenances (manholes, catch basins, curbing, inlet basins, etc.) shall conform to Department specifications and shall be constructed in accordance with the Department Standard Drawings. Type required:

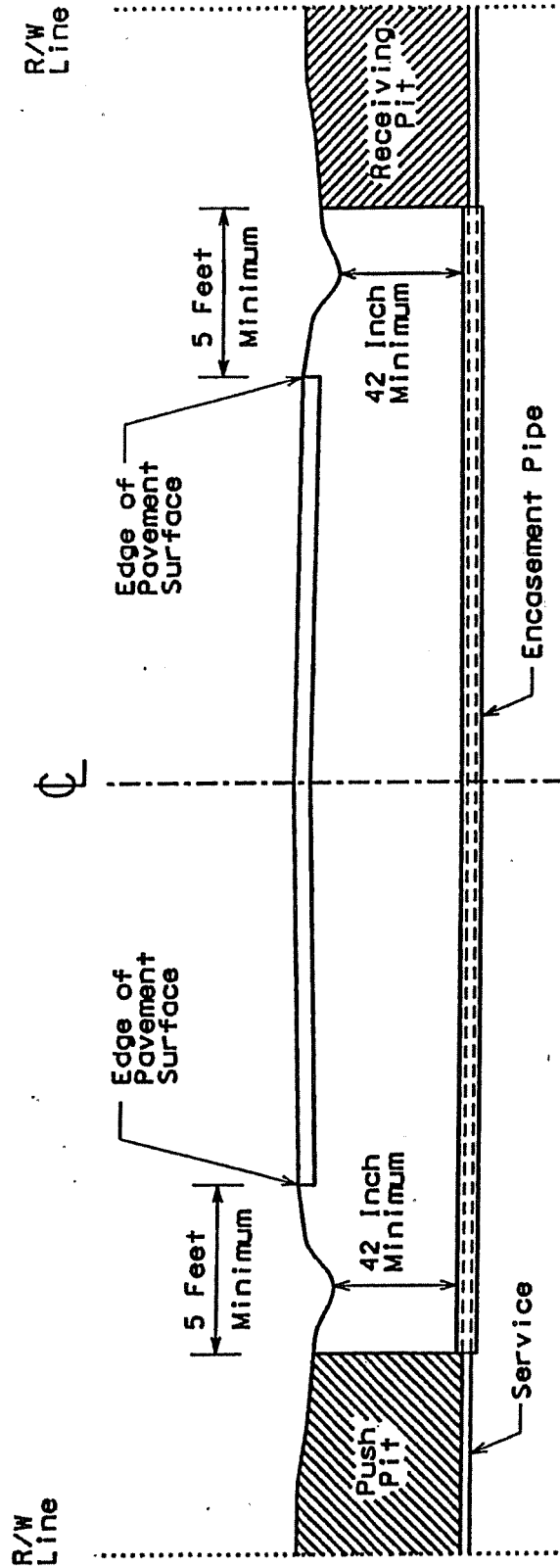


Kentucky Transportation Cabinet
 Department of Highways
 Permits Branch

EXHIBIT 8
 TC 99-10
 Rev. 9/2004

TYPICAL HIGHWAY BORING CROSSING DETAIL

Permit No. _____
 Route No. _____
 Pavement Width _____

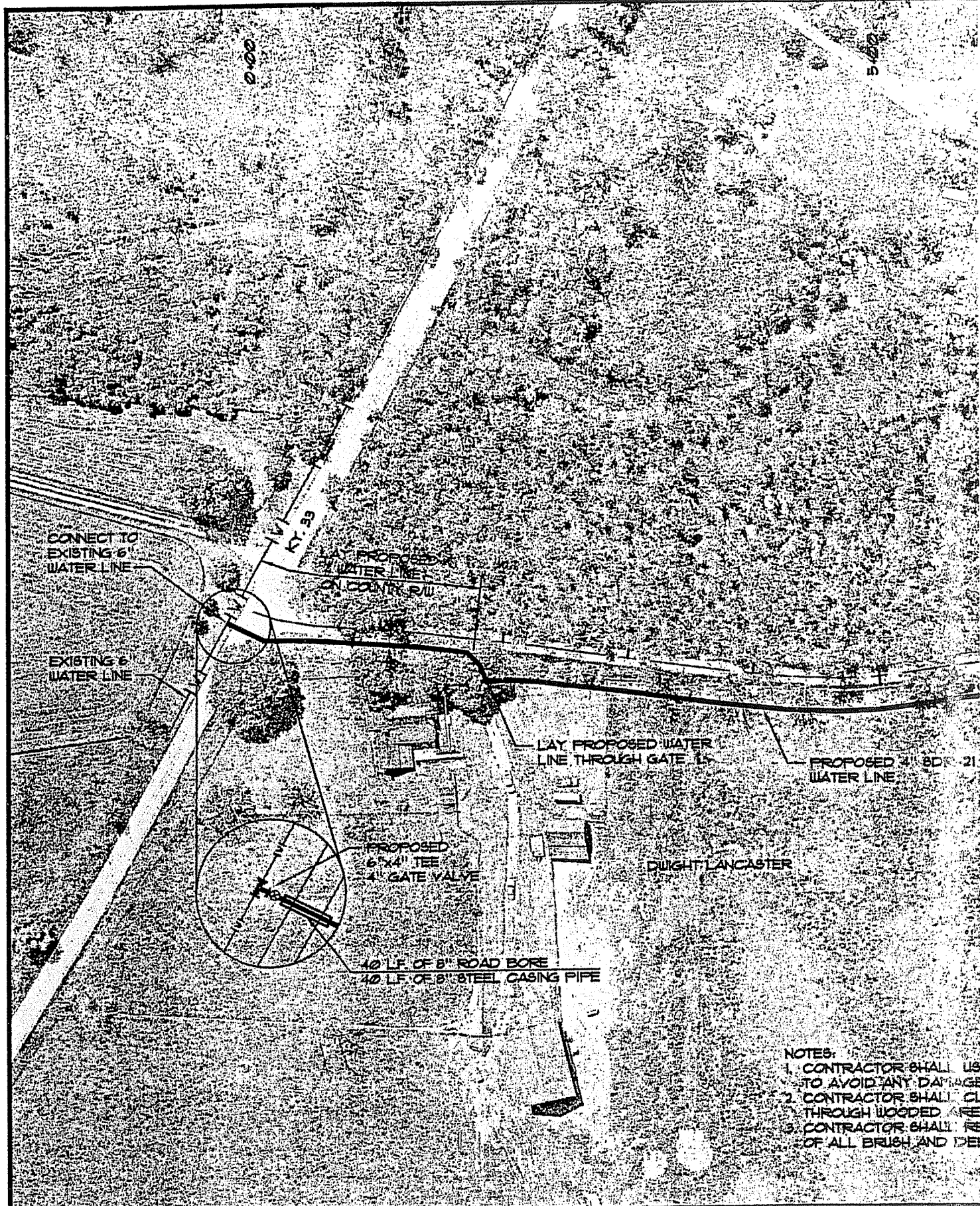


1. Push Pit and Receiving Pit shall be backfilled and thoroughly compacted.
2. All ditch lines are to remain open at all times.
3. Seed and straw all disturbed areas immediately after completing the work.
4. Provide traffic control as required to insure the safety of the traveling public in accordance with the current edition of the "Manual on Uniform Traffic Control Devices".

ALL SERVICES OVER 2" IN DIAMETER SHALL REQUIRE ENCASEMENT.



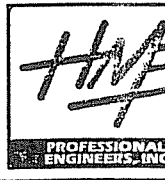
141Cz .erilint .dwg, 2005 09 AM .prt



- NOTES:
1. CONTRACTOR SHALL USE TO AVOID ANY DAMAGE
 2. CONTRACTOR SHALL CL THROUGH WOODED ARE
 3. CONTRACTOR SHALL BE OF ALL BRUSH AND DEE

NO.	DATE	REVISIONS	CHK'D	APPR'D	DATE

PROJECT: 404400		
SCALE: 1" = 100'		DATE: JULY 2005
DESIGNED BY:	JDR	NAME
DRAWN BY:	GAR	DATE
CHECKED BY:	JDR	
RECORD DWSG.		



NOTICE OF COMPLETION OF ENCROACHMENT PERMIT WORK

Please return this form to the District Office when work is completed and ready for final inspection.

Applicant Identification

Name: SOUTH WOODFORD WATER DISTRICT

Contact Person: GEORGE WITHERS

Address: 460 WILSON AVENUE

City: VERSAILLES

State: KY Zip: 40383

Telephone: 606-873-1308

Project Identification

Permit Number: 07-0178-06

County: Woodford

Route Number: 1967

Road Name: SHANNON RUN ROAD

Milepoint: 1.3

I wish to notify the Department of Highways that the above mentioned permit work and any necessary right of way restoration have been completed and are ready for final inspection.

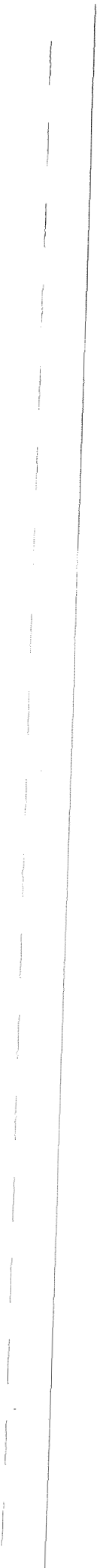
Applicant

Please Return To:

Department of Highways
District 7 Lexington
P.O. Box 11127
Lexington, Ky. 40512-1127

Attention:

Kelly A. Baker, P.E.



APPENDIX B
COUNTY ROAD PERMIT

WOODFORD COUNTY ENGINEER

BUAN SMITH III, P.E.
160 Beasley Road
Versailles, Kentucky 40383
859-873-4231

HMB Professional
Engineers, Inc.

MAR 21 2006

March 16, 2006

HMB Professional Engineers, Inc.
3 HMB Circle
U.S. 460
Frankfort, Kentucky 40601

Attn: Jeff Reynolds, P.E.

Re: Phase 4 Water Project
South Woodford Water District
HMB # 4044

Dear Mr. Reynolds,

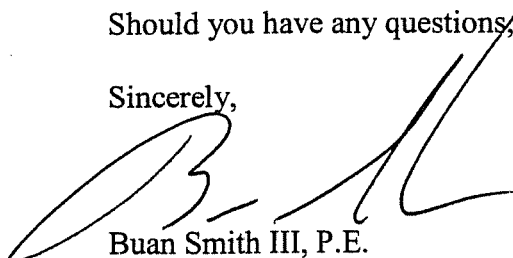
I have enclosed signed copies of the Encroachment Permits requested. The Woodford County Fiscal Court approved issuing these permits contingent on the requirements either listed on, or attached to the individual permit.

As for the 15 service line bores the following conditions can apply:

- All locations shall be reported to this office.
- For crossing that will be bored, the line shall be encased as shown in your Typical Road Crossing schematic and any damage to the roadway shall be repaired by the Applicant.
- For those crossing in which a road cut is deemed necessary this office shall be notified, the line shall be encased and the trenching shall be accomplish as shown in your Typical Road Crossing and Flowable Fill schematics. The elevation of the black top surface over the trench shall be smooth with the existing roadway elevation from one side of the trench to the other.

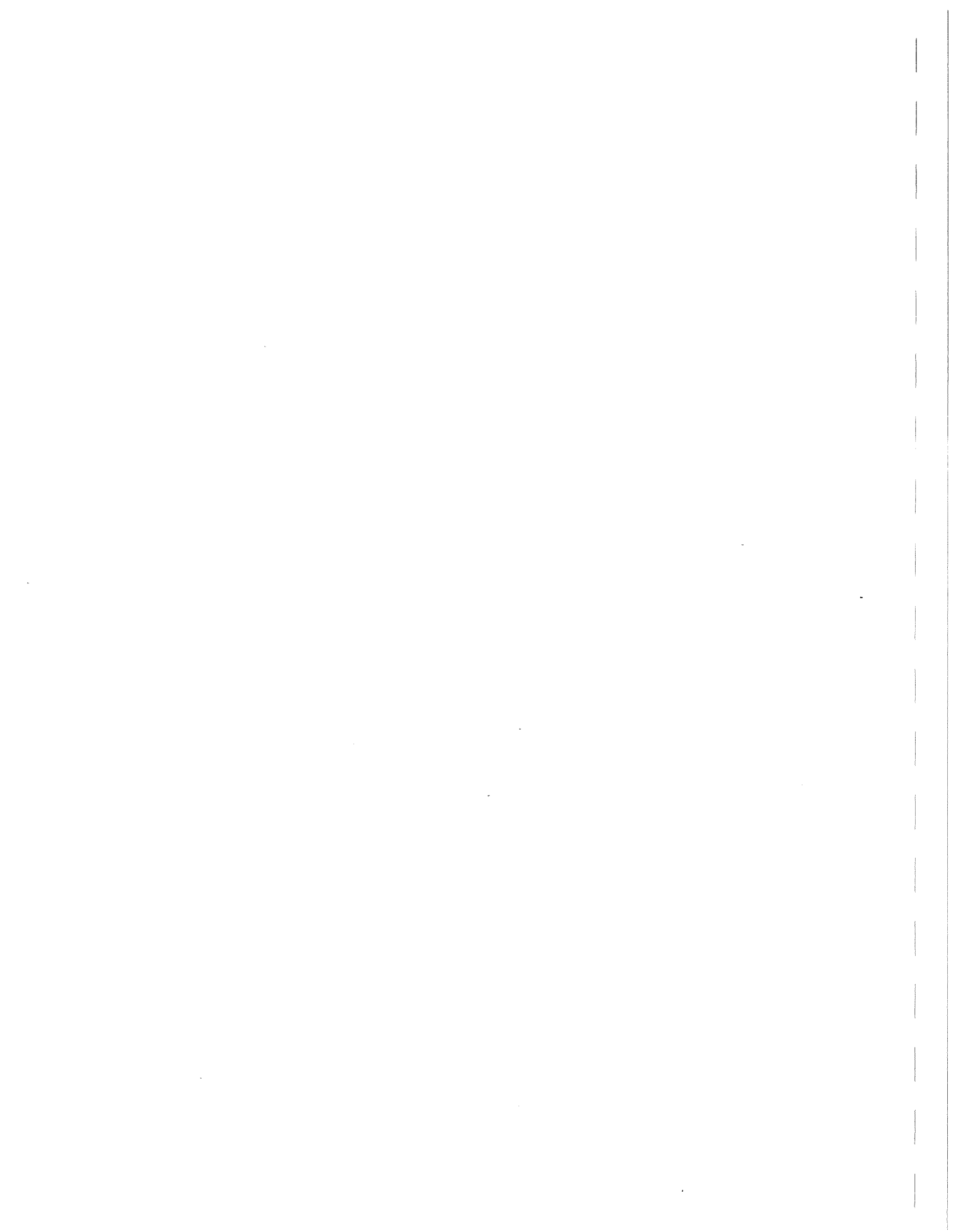
Should you have any questions, feel free to contact me.

Sincerely,



Buan Smith III, P.E.
County Engineer

Enclosures



WOODFORD COUNTY ROAD DEPARTMENT

ENCROACHMENT PERMIT

NAME & ADDRESS OF APPLICANT

DATE _____

South Woodford Water District
467 D Wilson Ave.
Versailles, Ky. 40383

PHONE NUMBER 859-873-4003

TYPE OF PERMIT:

PRIVATE ACCESS
 UTILITY
 OTHER (SPECIFY)

COMMERCIAL
 AIR SPACE

LOCATION: ROAD NAME

Pauls Mill Road (Near Ky 33)

_____ MILES

LEFT OR

RIGHT FROM _____

See attached plan sheet

DESCRIPTION OF WORK TO BE DONE:

Lay approx. 150' of water line on county R/W parallel to Pauls Mill Rd.

THIS PERMIT IS GRANTED SUBJECT TO THE FOLLOWING CONDITIONS:

THE APPLICANT UNDERSTANDS THAT IF THIS PERMIT IS GRANTED, HE WILL FULFILL ALL REQUIREMENTS AND FURNISH ANY AND ALL MATERIALS NEEDED AND REQUESTED BY THE COUNTY ENGINEER.

MAINTAIN EXISTING GROUNDLINE ALONG R/W.

APPROX. COMPLETION DATE

[Signature]

SIGNATURE OF APPLICANT

[Signature]
COUNTY ENGINEER

MARCH 16, 2006

DATE



Bowman Road

Description

Install approximately 800 feet of 4" water line on county right-of-way parallel to Bowman Road. Flowable fill concrete as shown on the attached detail will be used where the water line is laid within 3 feet of the pavement.

Bowman Road

The existing ditch line shall be maintained with a one foot vertical depth from the elevation of the pavement edge (minimum).

The ditchline above the waterline trench shall be stabilized by use of flowable fill to prevent "wash-out" of the trench/ditchline during heavy rain events.

Pavement damaged during construction shall be repaired by the Applicant.

WOODFORD COUNTY ROAD DEPARTMENT

ENCROACHMENT PERMIT

NAME & ADDRESS OF APPLICANT

DATE _____

South Woodford Water District
467 D Wilson Ave.
Versailles, Ky. 40383

PHONE NUMBER 859-873-4003

TYPE OF PERMIT:

PRIVATE ACCESS
 UTILITY
 OTHER (SPECIFY)

COMMERCIAL
 AIR SPACE

LOCATION: ROAD NAME Bowman Road

 MILES LEFT OR RIGHT FROM

See attached plan sheet

DESCRIPTION OF WORK TO BE DONE:

See attached description

THIS PERMIT IS GRANTED SUBJECT TO THE FOLLOWING CONDITIONS:

THE APPLICANT UNDERSTANDS THAT IF THIS PERMIT IS GRANTED, HE WILL FULFILL ALL REQUIREMENTS AND FURNISH ANY AND ALL MATERIALS NEEDED AND REQUESTED BY THE COUNTY ENGINEER.

APPROX. COMPLETION DATE

X [Signature]
SIGNATURE OF APPLICANT

[Signature]
COUNTY ENGINEER

March 16, 2006
DATE

WOODFORD COUNTY ROAD DEPARTMENT

ENCROACHMENT PERMIT

NAME & ADDRESS OF APPLICANT

DATE _____

South Woodford Water District
467 D Wilson Ave.
Versailles, Ky. 40383

PHONE NUMBER 859-873-4003

TYPE OF PERMIT:

PRIVATE ACCESS
 UTILITY
 OTHER (SPECIFY)

COMMERCIAL
 AIR SPACE

LOCATION: ROAD NAME Hifner Road

 MILES LEFT OR RIGHT FROM

See attached pln sheets

DESCRIPTION OF WORK TO BE DONE:

35' of 8" roadbed w/steel casing and approx. 150' of water line on County R/W

THIS PERMIT IS GRANTED SUBJECT TO THE FOLLOWING CONDITIONS:
THE APPLICANT UNDERSTANDS THAT IF THIS PERMIT IS GRANTED, HE WILL FULFILL ALL REQUIREMENTS AND FURNISH ANY AND ALL MATERIALS NEEDED AND REQUESTED BY THE COUNTY ENGINEER.

PAVEMENT DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE APPLICANT.

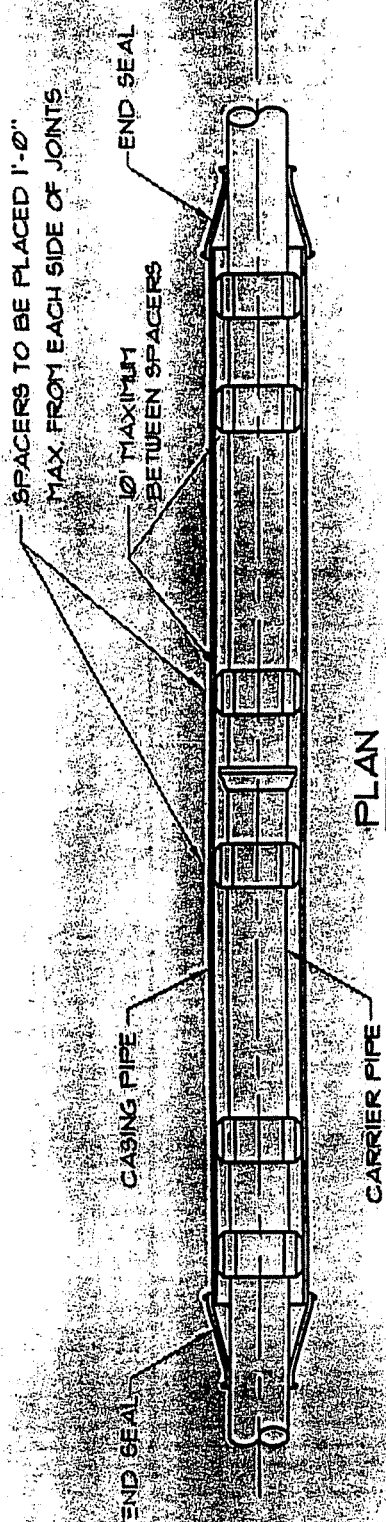
APPROX. COMPLETION DATE

[Signature]

SIGNATURE OF APPLICANT

[Signature]
COUNTY ENGINEER

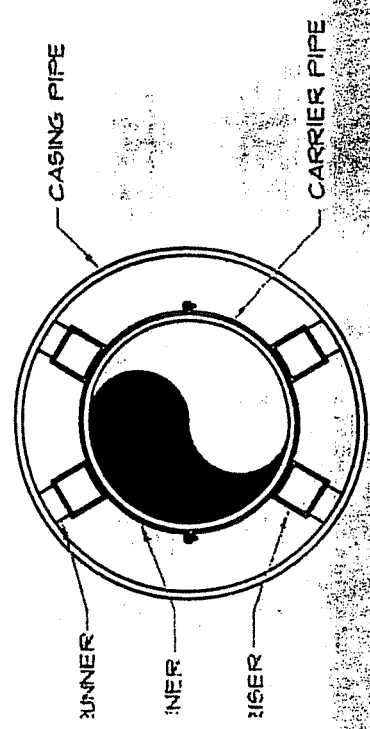
March 16, 2006
DATE



PLAN

TYPICAL ROAD CROSSING NOTES:

1. ALL JOINTS SHALL BE SOLIDLY WELDED. END OF CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. MINIMUM DEPTHS MAY INCREASE IN AREAS WHICH REQUIRE MINIMUM SEPARATION WITH OTHER FACILITIES.
3. OPEN TRENCH NO CLOSER THAN THE DITCH LINE OR TOE OF FILL FROM THE EDGE OF THE PAVEMENT OR AS DIRECTED BY STATE, COUNTY OR MUNICIPAL SPECIFICATIONS.
4. HIGHWAY CROSSINGS SHALL UTILIZE STEEL CASING PIPE. STEEL CASING PIPES 4" AND LESS SHALL BE NEW SCHEDULE 40. STEEL CASING PIPES LARGER THAN 4" SHALL HAVE MINIMUM WALL THICKNESS OF 0.25". ALL BORED AND JACKED ENCASEMENT PIPE SHALL BE INSTALLED IN BORE HOLES NO LARGER THAN THE OUTSIDE DIAMETER OF THE ENCASEMENT PIPE.
5. SDR-21 SHALL BE USED FOR PVC CASING FOR COUNTY ROADS, WHERE PVC CASING PIPE IS REQUIRED.



ELEVATION

TYPICAL STREAM CROSSING NOTES:

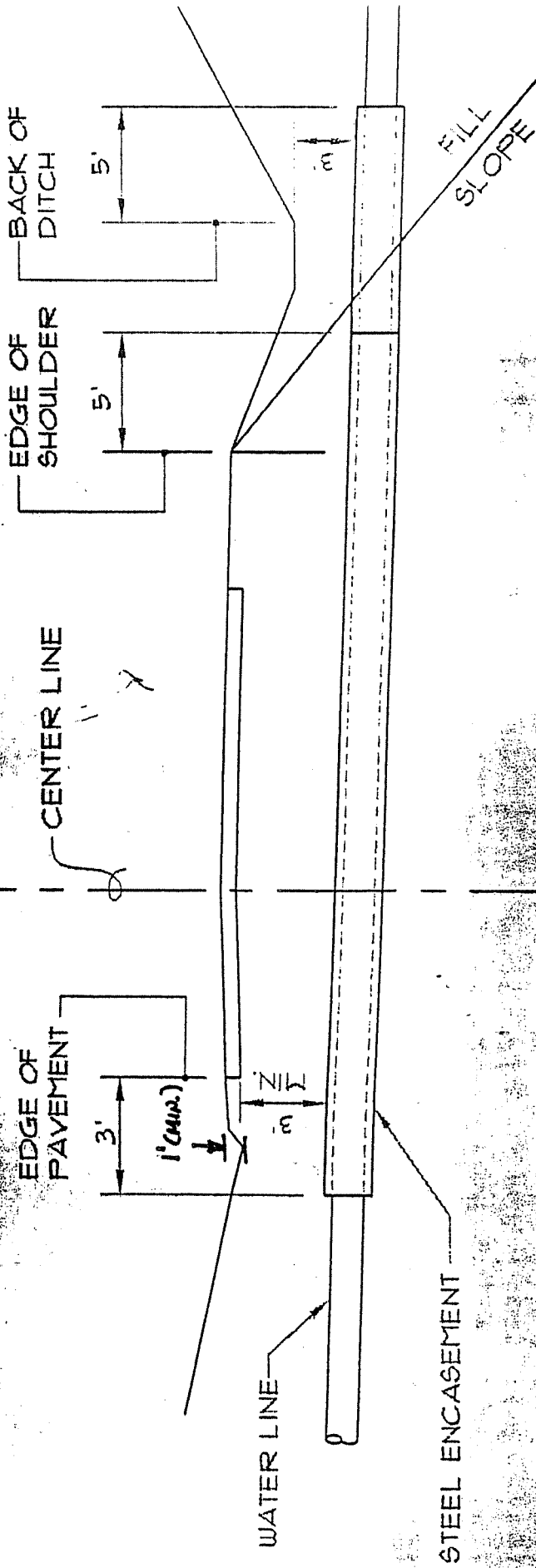
1. END CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. CONCRETE GAP SHALL END A MINIMUM OF ONE FOOT FROM EDGE OF CASING PIPE.
3. STREAM CROSSINGS SHALL UTILIZE PVC SDR 35 CASING PIPE.

ENGAGEMENT PIPE SPACER

NOT TO SCALE

COUNTY ROAD

STATE HIGHWAY



TYPICAL ROAD CROSSING

NOT TO SCALE

WOODFORD COUNTY ROAD DEPARTMENT

ENCROACHMENT PERMIT

NAME & ADDRESS OF APPLICANT

DATE _____

South Woodford Water District
467 D Wilson Ave.
Versailles, Ky. 40383

PHONE NUMBER 859-873-4003

TYPE OF PERMIT:

PRIVATE ACCESS
 UTILITY
 OTHER (SPECIFY)

COMMERCIAL
 AIR SPACE

LOCATION: ROAD NAME Craigs Creek Rd

 MILES LEFT OR RIGHT FROM

See attached plan sheets

DESCRIPTION OF WORK TO BE DONE:

See attached description

THIS PERMIT IS GRANTED SUBJECT TO THE FOLLOWING CONDITIONS:


THE APPLICANT UNDERSTANDS THAT IF THIS PERMIT IS GRANTED, HE WILL FULFILL ALL REQUIREMENTS AND FURNISH ANY AND ALL MATERIALS NEEDED AND REQUESTED BY THE COUNTY ENGINEER.

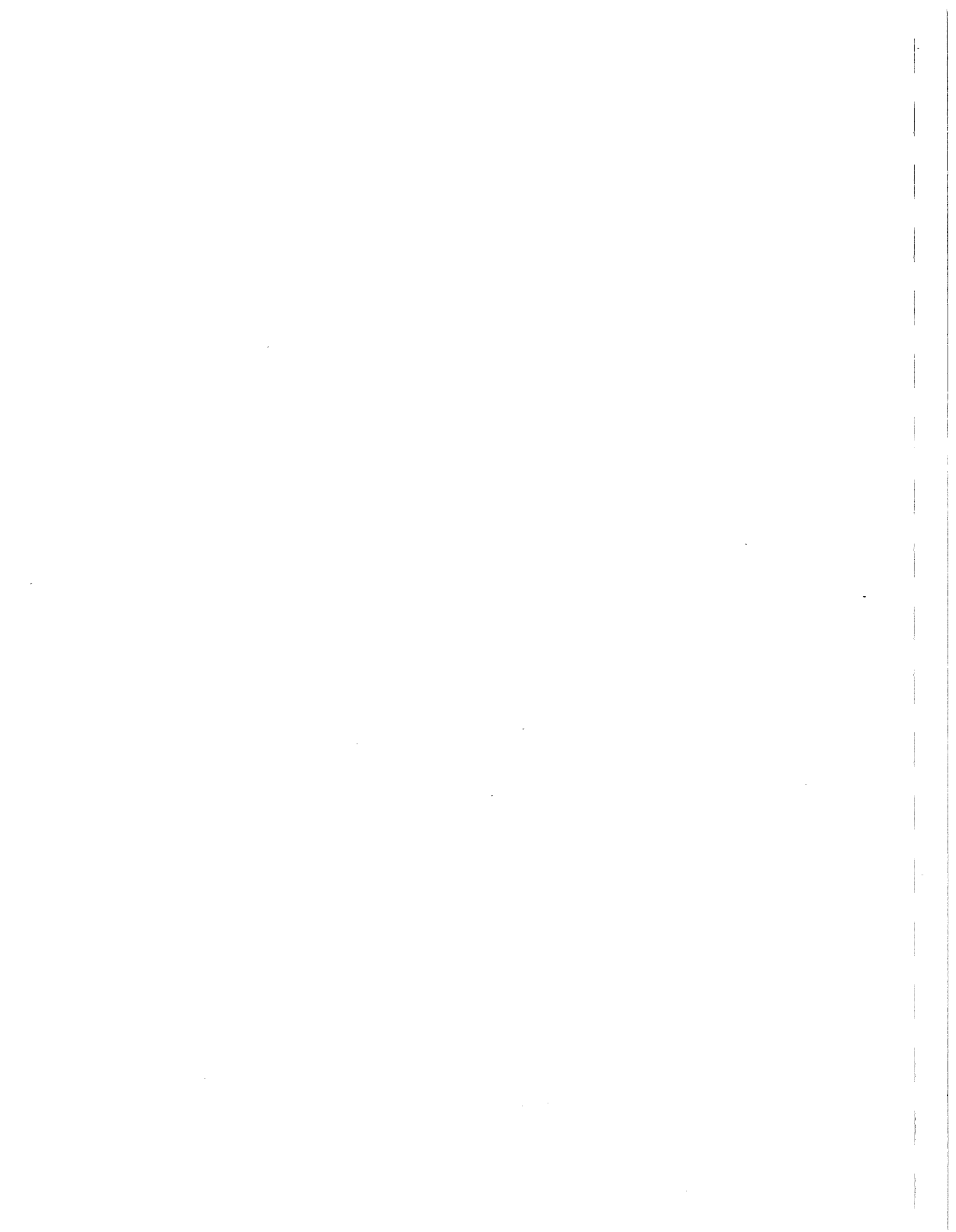
*SEE ATTACHED NOTE 5
AND SCHEMATICS*

APPROX. COMPLETION DATE

X 
SIGNATURE OF APPLICANT

COUNTY ENGINEER


March 16, 2006
DATE



Craigs Creek Road

Description

Install approximately 4,300 feet of 4" water line on county right-of-way parallel to Craigs Creek Road. Flowable fill concrete as shown on the attached detail will be used where the water line is laid within 3 feet of the pavement.

Install approximately 60 feet of 8" steel casing by open cut to cross Craigs Creek Road. Open cut is necessary due to a creek on one side of the road and a cliff on the other side of the road. Flowable fill concrete will be used for the full depth of the trench with a black top cap.

Install approximately 100 feet of water line in the road. This is necessary due to a creek on one side of the road and house on the other side of the road. Flowable fill concrete as shown on the attached detail with a black top cap will be used for the entire length.

Craigs Creek Road

The existing ditch line shall be maintained with a one foot vertical depth from the elevation of the pavement edge (minimum).

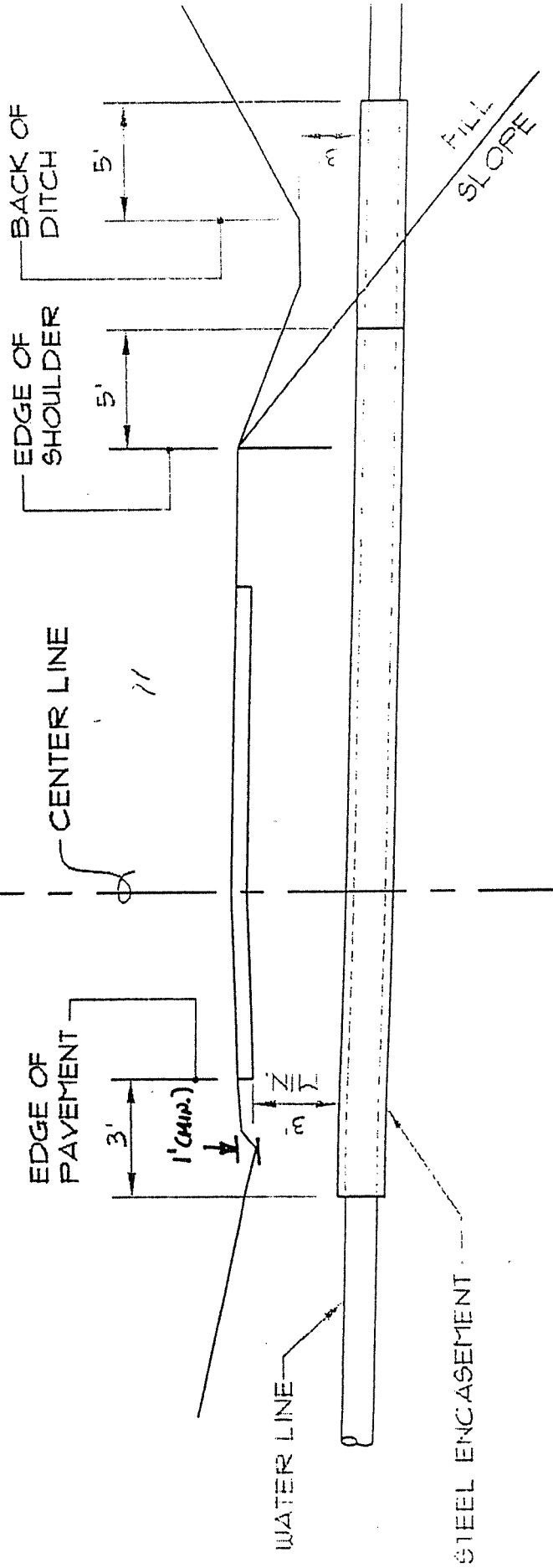
Pavement damaged during construction shall be repaired by the Applicant.

The existing bridges over Craigs Creek shall not be impacted or altered for placement of the proposed waterline.

Every effort should be made to bore road crossing under the pavement. Should it be necessary to open cut the roadway the Woodford County Engineer shall be notified. The road shall also remain passable either by use of roadway metal plates or part-width construction. Backfill of the road cut trench shall be as detailed in the in the Flowable Fill schematic with the final surface course elevation to traverse smoothly from one side of the roadway cut to the other.

STATE HIGHWAY

COUNTY ROAD



TYPICAL ROAD CROSSING

NOT TO SCALE

8" COMPACTED CRUSHED STONE
OR EARTH BACKFILL

1" COMPACTED BIT. CC
SURFACE TYPE "A"

4" BIT. CONC. BASE
2 - 2" COURSES

9"

FLOWABLE BACKFILL

12"

12"

6" MIN.

12"

MECHANICAL
EARTHWORK

12"

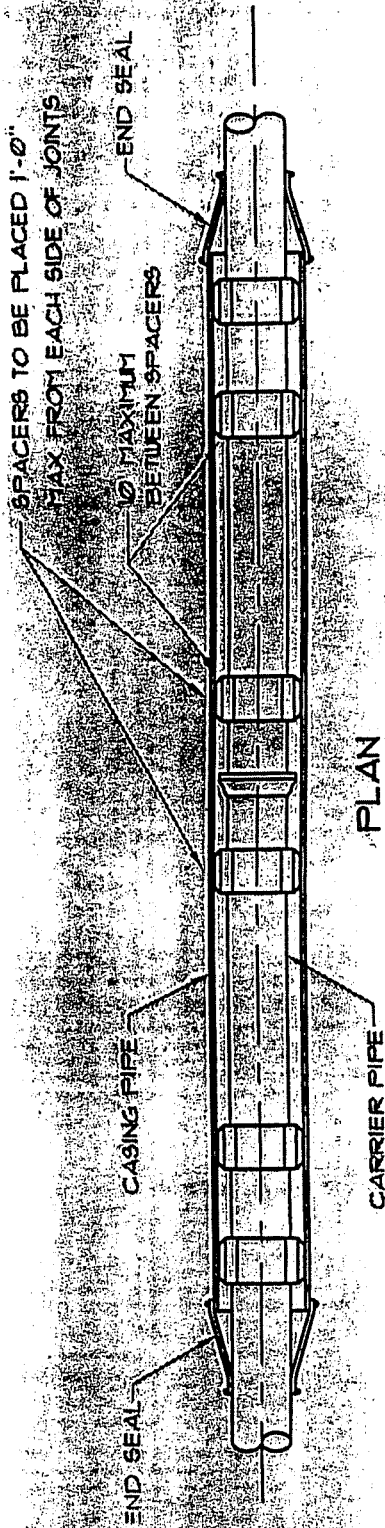
6" MIN.

GRAVEL OR EARTH SURFACE
BITUMINOUS SURFACE

FLOWABLE FILL

NOT TO SCALE





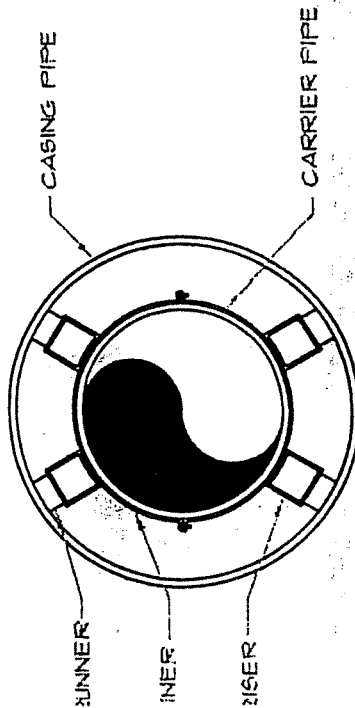
PLAN

TYPICAL ROAD CROSSING NOTES:

1. ALL JOINTS SHALL BE SOLIDLY WELDED. END OF CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. MINIMUM DEPTHS MAY INCREASE IN AREAS WHICH REQUIRE MINIMUM SEPARATION WITH OTHER FACILITIES.
3. OPEN TRENCH NO CLOSER THAN THE DITCH LINE OR TOE OF FILL FROM THE EDGE OF THE PAVEMENT OR AS DIRECTED BY STATE, COUNTY OR MUNICIPAL SPECIFICATIONS.
4. HIGHWAY CROSSINGS SHALL UTILIZE STEEL CASING PIPE. STEEL CASING PIPES 4" AND LESS SHALL BE NEW SCHEDULE 40 STEEL CASING PIPES LARGER THAN 4" SHALL HAVE MINIMUM WALL THICKNESS OF 0.25". ALL BORED AND JACKED ENCASMENT PIPE SHALL BE INSTALLED IN BORE HOLES NO LARGER THAN THE OUTSIDE DIAMETER OF THE ENCASMENT PIPE.
5. SDR-21 SHALL BE USED FOR PVC CASING FOR COUNTY ROADS, WHERE PVC CASING PIPE IS REQUIRED.

TYPICAL STREET CROSSING NOTES:

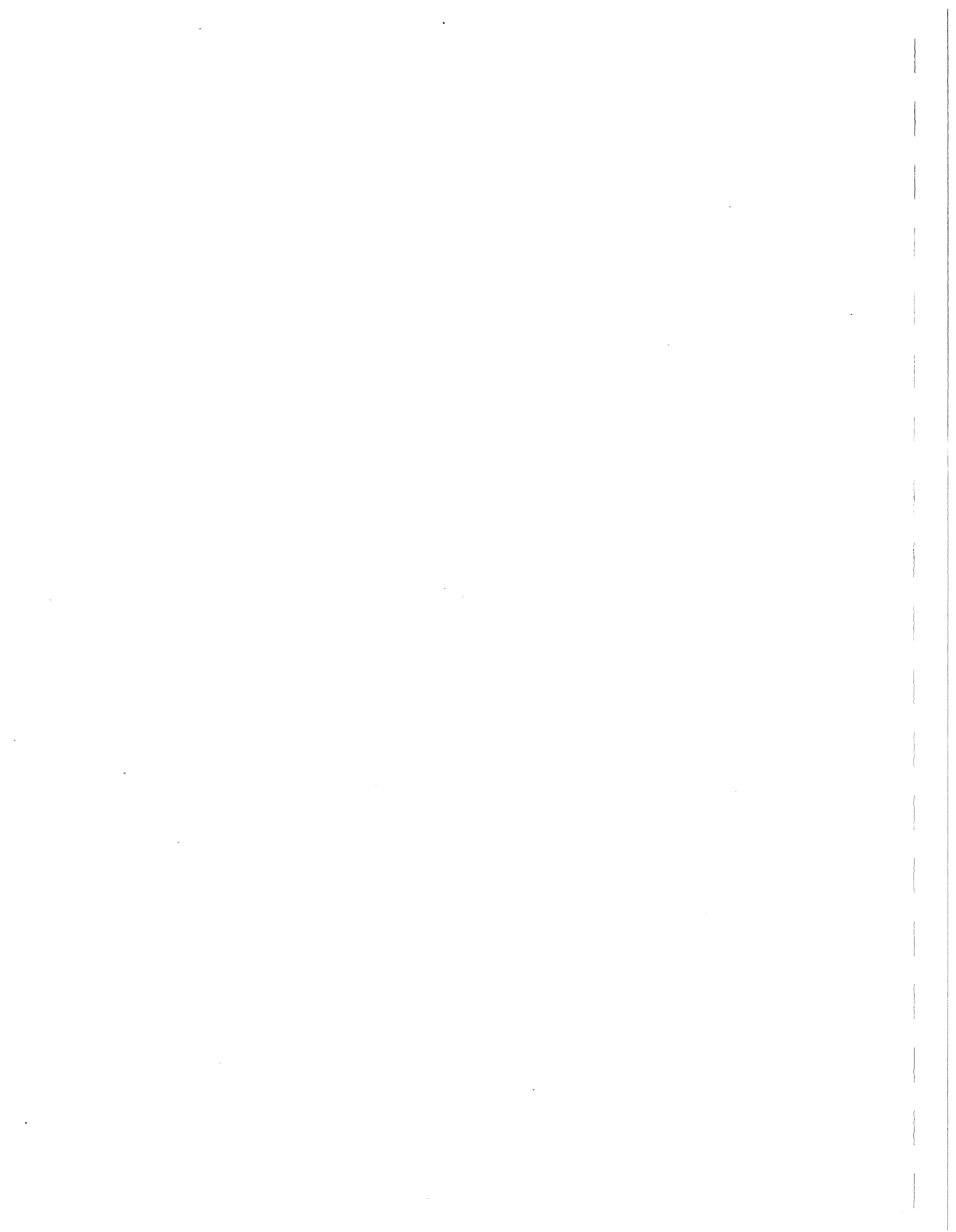
1. END CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. CONCRETE GAP SHALL END A MINIMUM OF ONE FOOT FROM EDGE OF CASING PIPE.
3. STREET CROSSINGS SHALL UTILIZE PVC SDR 95 CASING PIPE.



ELEVATION

ENCASMENT PIPE SPACER

NOT TO SCALE



WOODFORD COUNTY ROAD DEPARTMENT

ENCROACHMENT PERMIT

NAME & ADDRESS OF APPLICANT

DATE _____

South Woodford Water District
467 D Wilson Ave.
Versailles, Ky. 40383

PHONE NUMBER 859-873-4003

TYPE OF PERMIT:

PRIVATE ACCESS
 UTILITY
 OTHER (SPECIFY)

COMMERCIAL
 AIR SPACE

LOCATION: ROAD NAME Griers Creek Road

 MILES LEFT OR RIGHT FROM

See attached plan sheet

DESCRIPTION OF WORK TO BE DONE:

See attached description

THIS PERMIT IS GRANTED SUBJECT TO THE FOLLOWING CONDITIONS:

THE APPLICANT UNDERSTANDS THAT IF THIS PERMIT IS GRANTED, HE WILL FULFILL ALL REQUIREMENTS AND FURNISH ANY AND ALL MATERIALS NEEDED AND REQUESTED BY THE COUNTY ENGINEER.

THE EXISTING DITCH LINE SHALL BE MAINTAINED WITH A ONE FOOT VERTICAL DEPTH FROM THE EDGE OF PAVEMENT (MINIMUM).

PAVEMENT DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE APPLICANT

APPROX. COMPLETION DATE

X [Signature]

SIGNATURE OF APPLICANT

[Signature]
COUNTY ENGINEER

MARCH 16, 2006
DATE



Griers Creek Road

Description

Install approximately 1,050 feet of 6" water line on county right-of-way parallel to Griers Creek Road. Flowable fill concrete as shown on the attached detail will be used where the water line is laid within 3 feet of the pavement.



CONTRACT I
PHASE IV WATER PROJECT
SOUTH WOODFORD WATER DISTRICT
WOODFORD COUNTY, KENTUCKY
OCTOBER 2006

Proposal of _____ (hereinafter called "BIDDER"), organized and existing under the laws of the State of _____ doing business as _____.* To the _____ (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all work for the construction of Contract I – Phase IV Water Project – South Woodford Water District in strict accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

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

BIDDER hereby agrees to commence work under this contract on or before a date to be specified in the Notice to Proceed and to fully complete the project within 120 consecutive calendar days thereafter. BIDDER further agrees to pay as liquidated damages, the sum of \$500.00 for each consecutive calendar day that the work remains incomplete after the expiration date of the contract.

BIDDER acknowledges receipt of the following Addenda:

Addendum No. _____ Addendum No. _____ Addendum No. _____

The BIDDER hereby proposes to furnish and do all that is required by the contract to which this refers for the construction of all structures listed at the prices shown for each bid item on the following Bid Schedule. (The Bid Schedule attached lists the various divisions of construction contemplated in the Plans and Specifications, together with an estimate of the units of each. With these units as the basis, the BIDDER will extend each item, using the cost he inserts in the unit column. Any total cost found inconsistent with the unit cost when the bids are examined will be deemed in error and corrected to agree with the unit cost which shall be considered correct).

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



The undersigned BIDDER does hereby declare and stipulate that this proposal is made in pursuance of and subject to all terms and conditions of the Instructions to Bidders, the Construction Contract, the Technical Specifications, and the Plans pertaining to the work to be done, all of which have been examined by the undersigned.

Accompanying this proposal is a certified check or standard bid bond (5% of the Total Bid) in the sum of _____ dollars and cents (\$ _____) in accordance with the Instructions to Bidders.

The undersigned BIDDER agrees to execute the contract and Performance and Payment Bond for the amount of the total of this bid within 10 calendar days from the date when the written Notice of Award of the contract is delivered to him at the address given in this proposal. The name and address of the corporate surety with which the BIDDER proposes to furnish the specified Performance and Payment Bond is as follows:

All the various phases of work enumerated in the Technical Specifications with their individual jobs and overhead, whether specifically mentioned, included by implication or appurtenant thereto, are to be performed by the Contractor under one of the items listed in the Bid Schedule, irrespective of whether it is named in said list.

Payment for work performed will be in accordance with the Bid Schedule, subject to changes as provided for the Construction Contract.

The BIDDER understands that the OWNER reserves the right to reject any or all bids and to waive any informalities in the bidding.

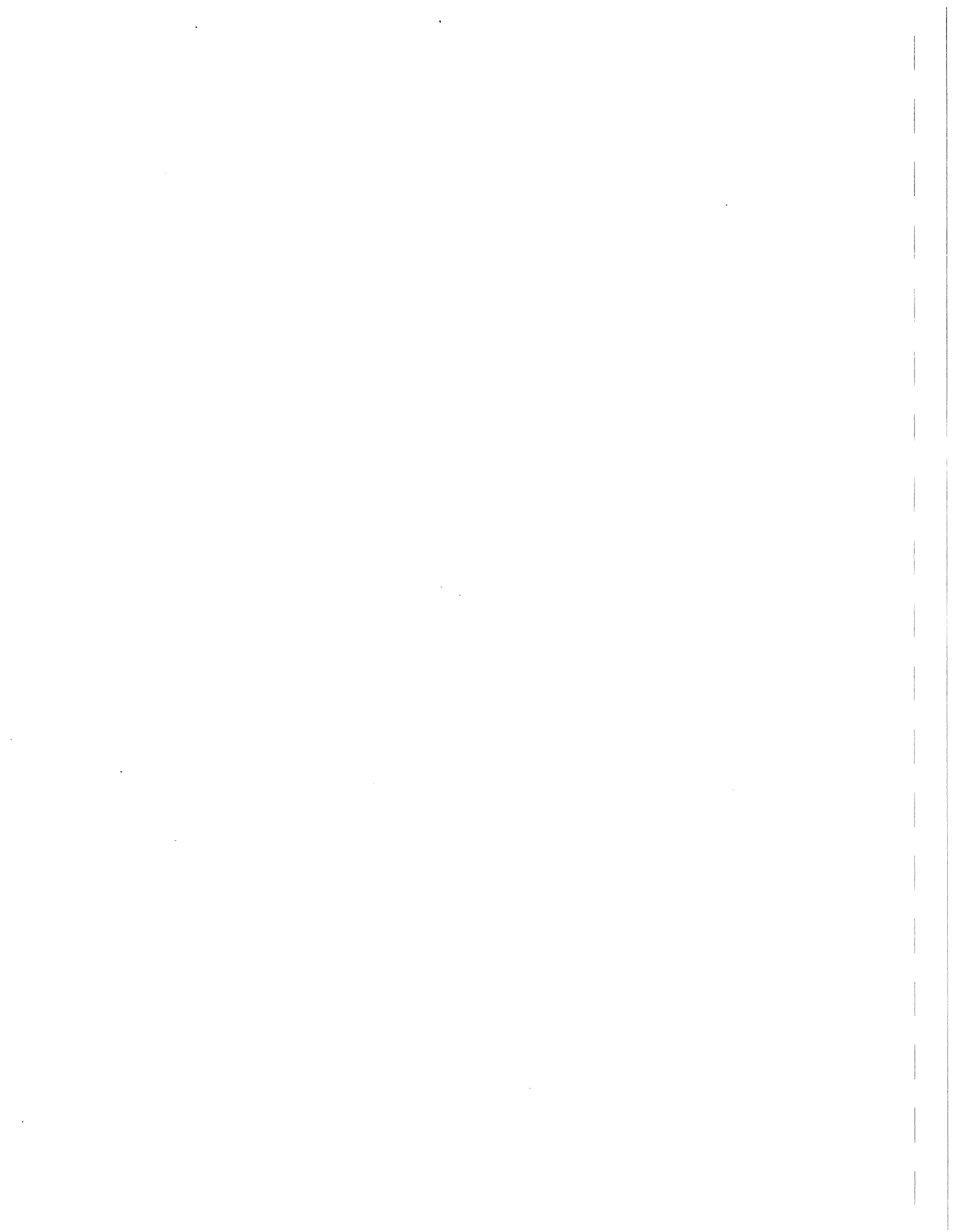
The BIDDER agrees that this bid shall be good and may not be withdrawn for a period of 90 calendar days after the scheduled closing time for receiving bids.

Bids shall include sales tax and all other applicable taxes and fees.



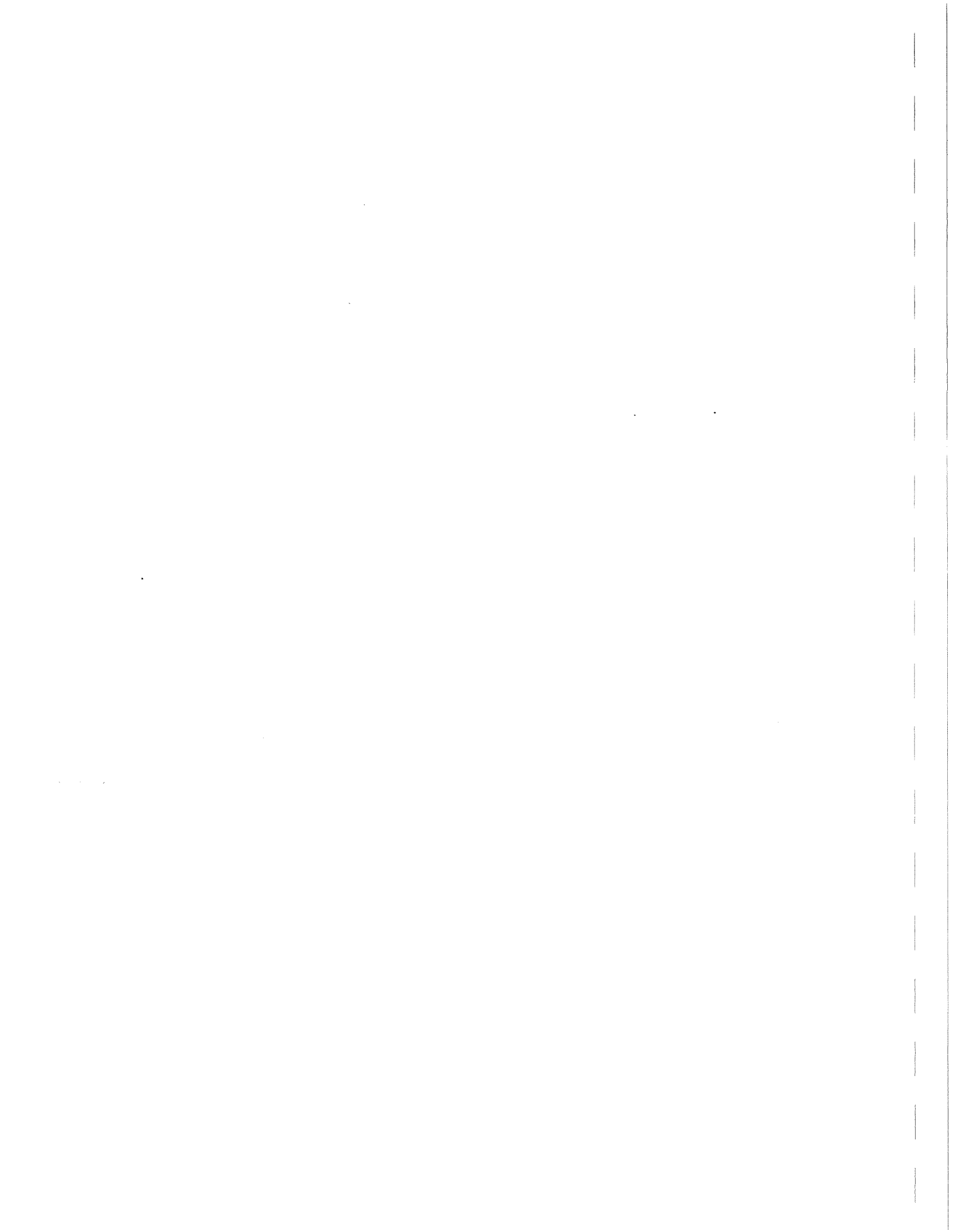
BID SCHEDULE

<u>Item No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
1.	6" D.I. Class 350 Pipe, Furnishing, Trenching, Laying and Backfilling. (Unclassified Excavation)	1,200	L.F.	_____	_____
2.	4" PVC, Class 200 Pipe, DR-14, AWWA C-900 Furnishing, Trenching, Laying and Backfilling. (Unclassified Excavation)	9,200	L.F.	_____	_____
3.	4" PVC, Class 200 Pipe, SDR-21 Furnishing, Trenching, Laying and Backfilling. (Unclassified Excavation)	17,800	L.F.	_____	_____
4.	8" Steel Cover Pipe, Furnishing and Installing Under State and County Maintained Roads, Including Unclassified Boring and/or Jacking (Water Pipe Not Included)	100	L.F.	_____	_____
5.	Open Cut Furnishing and Installing 8" Steel Casing Pipe (Water Pipe Not Included)	60	L.F.	_____	_____
6.	Open Cut Furnishing and Installing 8" PVC Casing Pipe (Water Pipe Not Included)	20	L.F.	_____	_____



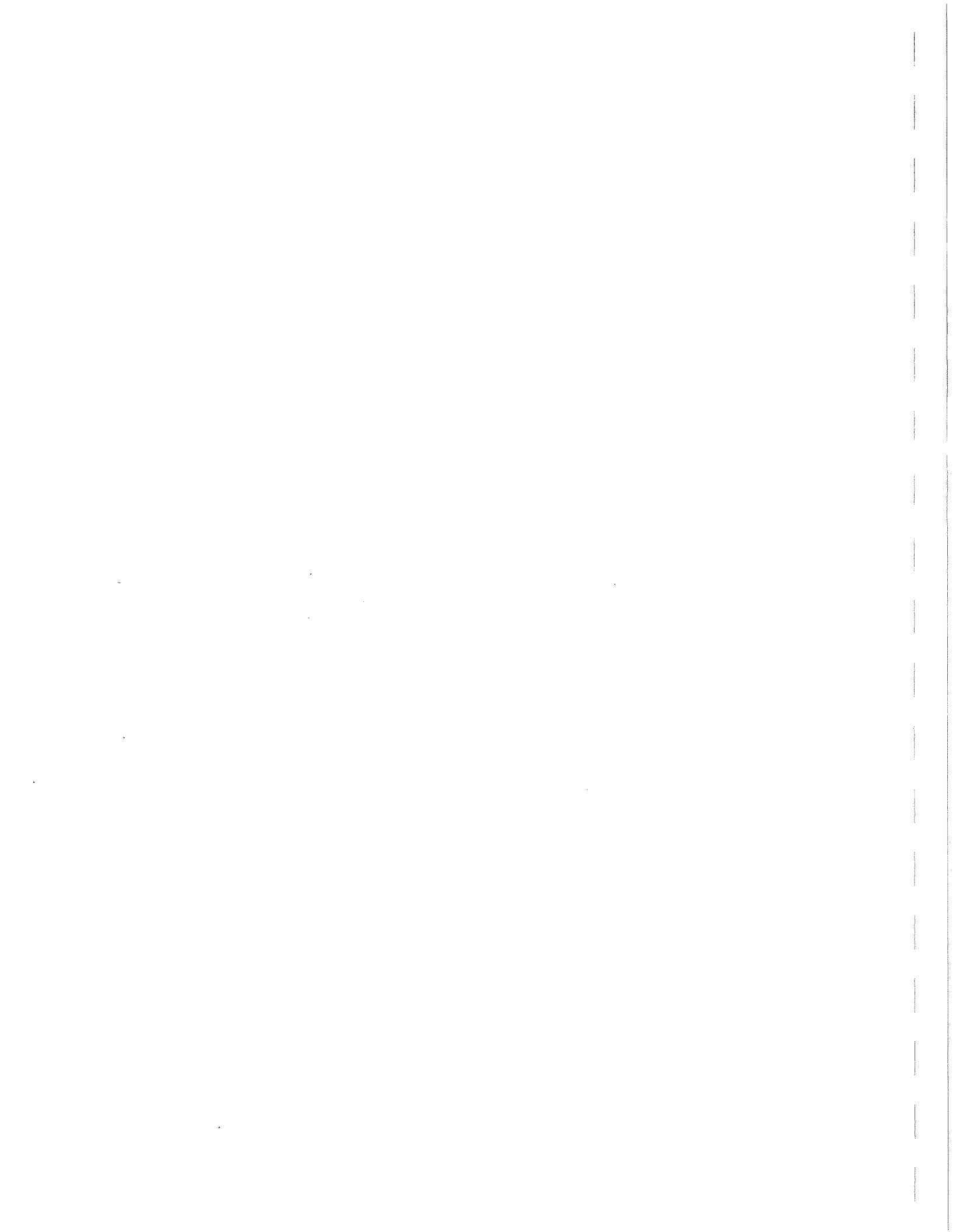
Continued

<u>Item</u> <u>No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit</u> <u>Price</u>	<u>Total</u>
7.	4" Unclassified Bore and/or Jack under improved surfaces, including drive-ways, no casing required (Water Pipe not Included)	100	L.F.	_____	_____
8.	6" C.I. AWWA N.R.S. Gate Valve and Box, Conc. Pad, Complete in Place	1	Ea.	_____	_____
9.	4" C.I. AWWA NRS Gate Valve and Box, Conc. Pad, Complete in Place	12	Ea.	_____	_____
10.	Customer Services with 5/8" Meter, Pressure Regulator, Tandem Copper Setter, Meter Box, Lid, PVC Casing, Opposite Side of Road as Main, 70 feet service tubing (maximum)	10	Ea.	_____	_____
11.	Customer services with 5/8" Meter, Pressure Regulator, Tandem Copper Setter, Meter Box, Lid Same Side of Road as Main, 10 feet service tubing (maximum)	10	Ea.	_____	_____



Continued

<u>Item</u>				<u>Unit</u>	<u>Price</u>	<u>Total</u>
<u>No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Unit</u>			
12.	Customer Services with 5/8" Meter, Copper Setter, Meter Box, Lid, PVC Casing Opposite Side of Road, 70 feet Service tubing. (maximum)	5	Ea.		_____	_____
13.	Customer Services with 5/8" Meter, Copper Setter, Meter Box, Lid, Same Side of Road, 10 feet Service tubing (maximum)	5	Ea.		_____	_____
14.	Additional 3/4" PE Service Tubing, Furnishing, Laying, Trenching and Backfilling Where required in Addition to Maximum lengths Included 10 through 13	250	L.F.		_____	_____
15.	4" Type "B" Creek Crossing Including Fittings, Concrete Casing, Casing Pipe, Complete in Place as shown on the detail sheet	250	L.F.		_____	_____
16.	Single Nozzle Blowoff Hydrant Assembly, Including Tee, Valve, Valve Box, Mechanical Joint Anchoring, Pipe and Fittings, Complete in place	3	Ea.		_____	_____
17.	4" Blowoff Assembly Including valve, pipe and Fittings, complete in place	2	Ea.		_____	_____



Continued

<u>Item</u> <u>No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit</u> <u>Price</u>	<u>Total</u>
18.	Automatic Air Release Valve Assembly and Box, Complete in Place	5	Ea.	_____	_____
19.	Crushed Stone on trench, full depth On driveways, roadway crossings and streets	1,000	L.F.	_____	_____
20.	Bituminous Paving Replacement on State and County Maintained roads and Driveways. Including gravel backfill	300	L.F.	_____	_____
21.	Concrete Paving Replacement, 6" Thick, including gravel backfill	300	L.F.	_____	_____
22.	Flowable Fill Concrete, including sand and flowable backfill as shown on detail sheet and described in specs. (Bit. replacement not included)	3,500	L.F.	_____	_____
23.	Booster Pump Station Including but not limited to furnishing and installing 2-225 gpm pumps, all piping, valves, controls, concrete, site work, fence, access road, power pole, electric to site, etc. (Complete in Place)		L.S.		_____



TOTAL BID PRICE (Items 1 through 23) _____

*Contractor shall note that apparent low bidder shall be determined by the Total Bid Price of Items 1 through 23.

Method of Payment shall be by bid unit. Contractor should review the Standard Details and the Specifications, especially the Special Conditions, when bidding this project.

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

(Contractor)

(Date)

By _____

(Title)

(Business Address)

(Phone Number)



BID BOND

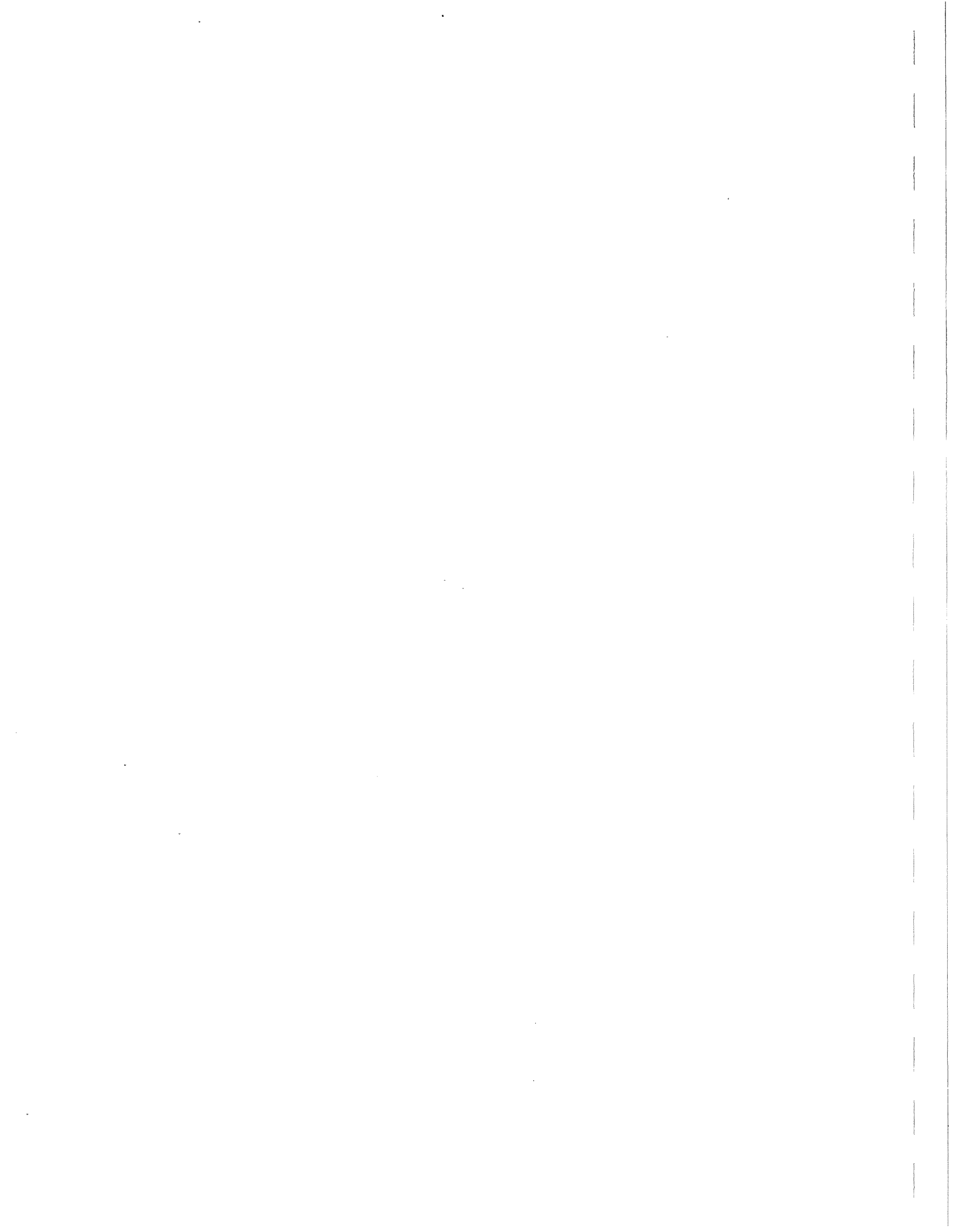
KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____
_____ as Principal, and _____
as Surety, are hereby held and firmly bound unto _____
_____ as OWNER in the penal sum of ____
_____ for the payment of which, well
and truly to be made, we hereby jointly and severally bind ourselves, successors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

Signed, this ____ day of _____, 20 ____.

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

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attachment hereto (properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said contract, and for the payment of all persons performing labor, furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect;



it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal (L.S.)

Surety

By: _____

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

SECTION 01610
Transportation and Handling

PART 1 GENERAL

1.1 SCOPE

- A. The Contractor shall provide transportation of all equipment, materials and products furnished under these Contract Documents to the Work site. In addition, the Contractor shall provide preparation for shipment, loading, unloading, handling and preparation for installation and all other work and incidental items necessary or convenient to the Contractor for the satisfactory prosecution and completion of the Work.
- B. All equipment, materials and products damaged during transportation or handling shall be repaired or replaced by the Contractor at no additional cost to the Owner prior to being incorporated into the Work.

1.2 TRANSPORTATION

- A. All equipment shall be suitably boxed, crated or otherwise protected during transportation.
- B. Where equipment will be installed using existing cranes or hoisting equipment, the Contractor shall ensure that the weights of the assembled sections do not exceed the capacity of the cranes or hoisting equipment.
- C. Small items and appurtenances such as gauges, valves, switches, instruments and probes which could be damaged during shipment shall be removed from the equipment prior to shipment, packaged and shipped separately. All openings shall be plugged or sealed to prevent the entrance of water or dirt.

1.3 HANDLING

- A. All equipment, materials and products shall be carefully handled to prevent damage or excessive deflections during unloading or transportation.
- B. Lifting and handling drawings and instructions furnished by the manufacturer or supplier shall be strictly followed. Eyebolts or lifting lugs furnished on the equipment shall be used in handling the equipment. Shafts and operating mechanisms shall not be used as lifting points. Spreader bars or lifting beams shall be used when the distance between lifting points exceeds that permitted by standard industry practice.

- C. Under no circumstances shall equipment or products such as pipe, structural steel, castings, reinforcement, lumber, piles, poles, etc., be thrown or rolled off of trucks onto the ground.
- D. Slings and chains shall be padded as required to prevent damage to protective coatings and finishes.

END OF SECTION

SECTION 01630
Substitutions and Options

PART 1 GENERAL

1.1 SCOPE

This Section outlines the restrictions and requirements for substitutions, product and manufacturer options, and construction method options.

1.2 DEFINITIONS

A. For the purposes of these Contract Documents, a "substitute item" shall be defined as one of the following:

1. A product or manufacturer offered as a replacement to a specified product or manufacturer.
2. A product or manufacturer offered in addition to a specified product or manufacturer.

B. For the purposes of these Contract Documents, a "substitute construction method" shall be defined as one of the following:

1. A mean, method, technique, sequence or procedure of construction offered as a replacement for a specified mean, method, technique, sequence or procedure of construction.
2. A mean, method, technique, sequence or procedure of construction offered in addition to a specified mean, method, technique, sequence or procedure of construction.

1.3 GENERAL

A. An item or construction method, which is offered where no specific product, manufacturer, mean, method, technique, sequence or procedure of construction is specified or shown on the Drawings, shall not be considered a substitute and shall be at the option of the Contractor, subject to the provisions in the Contract Documents for that item or construction method.

B. For products specified only by a referenced standard, the Contractor may select any product by any manufacturer, which meets the requirements of the Specifications, unless indicated otherwise in the Contract Documents.

- C. If the manufacturer is named on the Drawings or in the Specifications as an acceptable manufacturer, products of that manufacturer meeting all requirements of the Specifications and Drawings are acceptable.
- D. Whenever the Engineer's design is based on a specific product of a particular manufacturer, that manufacturer will be shown on the Drawings and/or listed first in the list of approved manufacturers in the Specifications. Any Bidder intending to furnish products of other than the first listed manufacturer, or furnish substitute items, shall
 - 1. Verify that the item being furnished will fit in the space allowed, perform the same functions and have the same capabilities as the item specified.
 - 2. Include in its Bid the cost of all accessory items which may be required by the other listed substitute product,
 - 3. Include the cost of any architectural, structural, mechanical, piping, electrical or other modifications required, and
 - 4. Include the cost of required additional work by the Engineer, if any, to accommodate the item.

1.4 APPROVALS

- A. Approval, of a substitution as an acceptable manufacturer, of the Engineer is dependent on determination that the product offered
 - 1. is essentially equal in function, performance, quality of manufacture, ease of maintenance, reliability, service life and other criteria to that on which the design is based, and
 - 2. will require no major modifications to structures, electrical systems, control systems or piping systems.

1.5 SUBSTITUTIONS AND OPTIONS

- A. See Bid Schedule for allowance of substitutions.
- B. After Notice to Proceed
 - 1. Substitute items will be considered for acceptable manufacturers in the Specification.

2. Where items are specified by referenced standard or specified as indicated in Article 1.3, Paragraph A. above, such items shall be submitted to the Engineer for review.
3. The Contractor shall submit shop drawings on the substitute item for the Engineer's review in accordance with the Section 01340.

C. Prior to Opening of Bids

1. No consideration or approvals will be made for products specified by a referenced standard, or specified as indicated in Article 1.3, Paragraph A. above. Such consideration may occur only after the Notice to Proceed.
2. No consideration or approvals will be made for products being offered where the term "equal to" precedes the name of an approved product. Such substitution consideration may occur only after the Notice to Proceed.

END OF SECTION



SECTION 01710

Cleaning

PART 1 GENERAL

1.1 SCOPE

This Section covers the general cleaning which the Contractor shall be required to perform both during construction and before final acceptance of the Project unless otherwise shown on the Drawings or specified elsewhere in these Specifications.

1.2 QUALITY ASSURANCE

- A. Daily, and more often if necessary, conduct inspections verifying that requirements of cleanliness are being met.
- B. In addition to the standards described in this Section, comply with all pertinent requirements of governmental agencies having jurisdiction.

1.3 HAZARDOUS MATERIAL AND WASTE

- A. The Contractor shall handle hazardous waste and materials in accordance with applicable local, state, and federal regulations. Waste shall also be disposed of in WFPA approved landfills as applicable.
- B. The Contractor shall prevent accumulation of wastes which create hazardous conditions.
- C. Burning or burying rubbish and waste materials on the site shall not be allowed.
- D. Disposal of hazardous wastes or materials into sanitary or storm sewers shall not be allowed.

1.4 DISPOSAL OF SURPLUS MATERIALS

Unless otherwise shown on the Drawings, specified or directed, the Contractor shall legally dispose off the site all surplus materials and equipment from demolition and shall provide suitable off-site disposal site, or utilize a site designated by the Owner.

PART 2 PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT

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

2.2 COMPATIBILITY

Use only the cleaning materials, methods and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material or as approved by the Engineer.

PART 3 EXECUTION

3.1 PROGRESS CLEANING

A. General

1. Do not allow the accumulation of scrap, debris, waste material and other items not required for construction of this Work.
2. At least each week, and more often if necessary, completely remove all scrap, debris and waste material from the job site.
3. Provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the environment.

B. Site

1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris and waste material. Remove all such items to the place designated for their storage.
2. Restack materials stored on site weekly.
3. At all times maintain the site in a neat and orderly condition which meets the approval of the Engineer.

C. Structures

1. Weekly, and more often if necessary, inspect the structures and pick up all scrap, debris and waste material. Remove all such items to the place designated for their storage.
2. Weekly, and more often if necessary, sweep all interior spaces clean. "Clean", for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by using a hand-held broom.
3. As required preparatory to installation of successive materials, clean the structures or pertinent portions as recommended by the manufacturer of the successive material.
4. Following the installation of finish floor materials, clean the finish floor daily. "Clean", for the purpose of this paragraph, shall be interpreted as meaning free from all foreign material which, in the opinion of the Engineer, may be injurious to the finish floor material.
5. Schedule cleaning operation so that dust and other contaminants resulting from cleaning operations will not fall on wet, recently painted surfaces.

3.2 FINAL CLEANING

- A. Definitions: Unless otherwise specifically specified, "clean" for the purpose of this Article shall be interpreted as the level of cleanliness generally provided by commercial building maintenance subcontractors using commercial quality building maintenance equipment and materials.
- B. General: Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris and waste. Conduct final progress cleaning as described in 3.01 above.
- C. Site: Unless otherwise specifically directed by the Engineer, hose down all paved areas on the site and all public sidewalks directly adjacent to the site; rake clean other surfaces of the grounds. Completely remove all resultant debris.
- D. Structures
 1. Remove all traces of soil, waste material, splashed material, and other foreign matter to provide a uniform degree of exterior cleanliness. Visually inspect all exterior surfaces and remove all traces of soil, waste material, and other foreign matter. Remove all traces of splashed materials from adjacent surfaces. If necessary to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure. In the event of

stubborn stains not removable with water, the Engineer may require light sandblasting or other cleaning at no additional cost to the Owner.

2. Visually inspect all interior surfaces and remove all traces of soil, waste material, smudges and other foreign matter. Remove all paint droppings, spots, stains and dirt from finished surfaces.
 3. Clean all glass inside and outside.
 4. Polish all surfaces requiring the routine application of buffed polish. Provide and apply polish as recommended by the manufacturer of the material being polished.
- E. **Post-Construction Cleanup:** All evidence of temporary construction facilities, haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other evidence of construction, as directed by the Engineer.
- F. **Restoration of Landscape Damage:** Any landscape feature damaged by the Contractor shall be restored as nearly as possible to its original condition at the Contractor's expense. The Engineer will decide what method of restoration shall be used.
- G. **Timing:** Schedule final cleaning as approved by the Engineer to enable the Owner to accept the Project.

3.3 CLEANING DURING OWNER'S OCCUPANCY

Should the Owner occupy the Work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning of the occupied spaces shall be as determined by the Engineer in accordance with the Supplementary Conditions of the Contract Documents.

END OF SECTION

SECTION 01720
Record Documents

PART 1 GENERAL

1.1 SCOPE

- A. The work under this Section includes, but is not necessarily limited to, the compiling, maintaining, recording and submitting of project record documents as herein specified.
- B. Record documents include, but are not limited to:
 - 1. Drawings;
 - 2. Specifications;
 - 3. Change orders and other modifications to the Contract;
 - 4. Engineer field orders or written instructions, including Requests for Information (RFI) and Clarification Memorandums;
 - 5. Reviewed shop drawings, product data and samples;
 - 6. Test records.
- C. The Contractor shall maintain on the Project site throughout the Contract Time an up to date set of Record Drawings.

1.2 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Storage
 - 1. Store documents and samples in the Contractor's field office, apart from documents used for construction.
 - 2. Provide files and racks for storage of documents.
 - 3. Provide locked cabinet or secure storage space for storage of samples.
- B. File documents and samples in accordance with format of these Specifications.

C. Maintenance

1. Maintain documents in a clean, dry, legible condition and in good order.
2. Do not use record documents for construction purposes.
3. Maintain at the site for the Owner one copy of all record documents.

D. Make documents and samples available at all times for inspection by Engineer.

E. Failure to maintain the Record Documents in a satisfactory manner may be cause for withholding of a certificate for payment.

1.3 QUALITY ASSURANCE

A. Unless noted otherwise, Record Drawings shall provide dimensions, distances and coordinates to the nearest 0.1 foot.

B. Unless noted otherwise, Record Drawings shall provide elevations to the nearest 0.01 foot for all pertinent items constructed by the Contractor.

1.4 RECORDING

A. Label each document "PROJECT RECORD" in neat, large printed letters.

B. Recording

1. Record information concurrently with construction progress.
2. Do not conceal any work until required information is recorded.

1.5 RECORD DRAWINGS

A. Record Drawings shall be reproducible, shall have a title block indicating that the drawings are Record Drawings, the name of the company preparing the Record Drawings, and the date the Record Drawings were prepared. The Contractor will be provided paper sepias of the Drawings, or it may elect to provide reproducible drawings via another method. Reproducible shall be defined as being translucent so as to allow a blueline print to be produced.

B. Legibly mark drawings to record actual construction, including:

1. All Construction

- a. Changes of dimension and detail.

- b. Changes made by Requests for Information (RFI), field order, clarification memorandums or by change order.
 - c. Details not on original Drawings.
2. Site Improvements, Including Underground Utilities
- a. Horizontal and vertical locations of all exposed and underground utilities and appurtenances, both new facilities constructed and those utilities encountered, referenced to permanent surface improvements.
 - b. Location of and dimensions of roadways and parking areas, providing dimensions to back of curb when present.
 - c. The locations shall be referenced to at least two easily identifiable, permanent landmarks (e.g., power poles, valve markers, etc.) or benchmarks.
 - d. The Record Drawings shall include the horizontal angle and distance between manhole covers.
3. Structures
- a. Depths of various elements of foundation in relation to finish first floor datum or top of wall.
 - b. Location of internal and buried utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.

1.6 SPECIFICATIONS

- A. Legibly mark 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 Requests for Information (RFI), field order, clarification memorandums, or by change order.

1.7 SUBMITTAL

- A. At contract closeout, deliver Record Documents to the Engineer for the Owner.
- B. Accompany submittal with transmittal letter, in duplicate, containing:
 - 1. Date
 - 2. Project title and number
 - 3. Contractor's name and address
 - 4. Title and number of each record document
 - 5. Signature of Contractor or Contractor's authorized representative

END OF SECTION

SECTION 01740
Warranties and Bonds

PART 1 GENERAL

1.1 PROJECT MAINTENANCE AND WARRANTY

- A. Maintain and keep in good repair the Work covered by these Drawings and Specifications until acceptance by the Owner.
- B. The Contractor shall warrant for a period of one year from the date of Owner's written acceptance of certain segments of the Work and/or Owner's written final acceptance of the Project, as defined in the Contract Documents, that the completed Work is free from all defects due to faulty products or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects. The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect throughout the warranty period.
- C. The Contractor shall not be obligated to make replacements which become necessary because of ordinary wear and tear, or as a result of improper operation or maintenance, or as a result of improper work or damage by another Contractor or the Owner, or to perform any work which is normally performed by a maintenance crew during operation.
- D. In the event of multiple failures of major consequences prior to the expiration of the one year warranty described above, the affected unit shall be disassembled, inspected and modified or replaced as necessary to prevent further occurrences. All related components which may have been damaged or rendered non-serviceable as a consequence of the failure shall be replaced. A new 12 month warranty against defective or deficient design, workmanship, and materials shall commence on the day that the item is reassembled and placed back into operation. As used herein, multiple failure shall be interpreted to mean two or more successive failures of the same kind in the same item or failures of the same kind in two or more items. Major failures may include, but are not limited to, cracked or broken housings, piping, or vessels, excessive deflections, bent or broken shafts, broken or chipped gear teeth, premature bearing failure, excessive wear or excessive leakage around seals. Failures which are directly and clearly traceable to operator abuse, such as operations in conflict with published operating procedures or improper maintenance, such as substitution of unauthorized replacement parts, use of incorrect lubricants or chemicals, flagrant over-or under-lubrication and using maintenance procedures not conforming with

published maintenance instructions, shall be exempted from the scope of the one year warranty. Should multiple failures occur in a given item, all products of the same size and type shall be disassembled, inspected, modified or replaced as necessary and rewarranted for one year.

- E. The Contractor shall, at Contractor's own expense, furnish all labor, materials, tools and equipment required and shall make such repairs and removals and shall perform such work or reconstruction as may be made necessary by any structural or functional defect or failure resulting from neglect, faulty workmanship or faulty materials, in any part of the Work performed by the Contractor. Such repair shall also include refilling of trenches, excavations or embankments which show settlement or erosion after backfilling or placement.
- F. Except as noted on the Drawings or as specified, all structures such as embankments and fences shall be returned to their original condition prior to the completion of the Contract. Any and all damage to any facility not designated for removal, resulting from the Contractor's operations, shall be promptly repaired by the Contractor at no cost to the Owner.
- G. The Contractor shall be responsible for all road and entrance reconstruction and repairs and maintenance of same for a period of one year from the date of final acceptance. In the event the repairs and maintenance are not made immediately and it becomes necessary for the owner of the road to make such repairs, the Contractor shall reimburse the owner of the road for the cost of such repairs.
- H. In the event the Contractor fails to proceed to remedy the defects upon notification within 15 days of the date of such notice, the Owner reserves the right to cause the required materials to be procured and the work to be done, as described in the Drawings and Specifications, and to hold the Contractor and the sureties on Contractor's bond liable for the cost and expense thereof.
- I. Notice to Contractor for repairs and reconstruction will be made in the form of a registered letter addressed to the Contractor at Contractor's home office.
- J. Neither the foregoing paragraphs nor any provision in the Contract Documents, nor any special guarantee time limit implies any limitation of the Contractor's liability within the law of the place of construction.

END OF SECTION

SECTION 02010
Subsurface Conditions

PART 1 GENERAL

1.1 DESCRIPTION

- A. Investigation: The Contractor shall visit the site and become acquainted with site conditions. Prior to bidding, prospective Contractors may make their own site and subsurface investigations to satisfy themselves with site and subsurface conditions. The Contractor shall be responsible for obtaining rights of ingress and egress to private property for site and subsurface investigation and shall assume all responsibility for any damage to property caused as a result of the Contractor's investigation.
- B. No geotechnical investigation has been performed on this site. The Contractor is responsible for making their own determination of subsurface conditions.

END OF SECTION



SECTION 02140

Dewatering

PART 1 GENERAL

1.1 SCOPE

- A. This Section shall apply to all excavation, except trench excavation.
- B. Construct all permanent work in areas free from water. Design, construct and maintain all dikes, levees, cofferdams and diversion and drainage channels as necessary to maintain the areas free from water and to protect the areas to be occupied by permanent work from water damage. Remove temporary works after they have served their purpose.
- C. The Contractor shall be responsible for the stability of all temporary and permanent slopes, grades, foundations, materials and structures during the course of the Contract. Repair and replace all slopes, grades, foundations, materials and structures damaged by water, both surface and subsurface, to the lines, grades and conditions existing prior to the damage, at no additional cost to the Owner.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 CARE OF WATER

- A. Except where the excavated materials are designated as materials for permanent work, material from required excavation may be used for dikes, levees, cofferdams and other temporary backfill.
- B. Furnish, install, maintain and operate necessary pumping and other equipment for dewatering the various parts of the work and for maintaining the foundation and other parts free from water as required for constructing each part of the work.
- C. Install all drainage ditches, sumps and pumps to control excessive seepage on excavated slopes, to drain isolated zones with perched water tables and to drain impervious surfaces at final excavation elevation.
- D. Dewater by means which will insure dry excavations, preserve final lines and grades, do not disturb or displace adjacent soil.
- E. All pumping and drainage shall be done with no damage to property or structures and without interference with the rights of the public, owners of private property,

pedestrians, vehicular traffic or the work of other contractors, and in accordance with all pertinent laws, ordinances and regulations.

- F. Do not overload or obstruct existing drainage facilities.
- G. After they have served their purpose, remove all temporary protective work at a satisfactory time and in a satisfactory manner. All diversion channels and other temporary excavations in areas where the compacted fill or other structures will be constructed shall be cleaned out, backfilled and processed under the same Specifications as those governing the compacted fill.
- H. When the temporary works will not adversely affect any item of permanent work or the planned usage of the Project, the Contractor may be permitted to leave such temporary works in place. In such instances, breaching of dikes, levees and cofferdams may be required.

3.2 DEWATERING

- A. By the use of well points, pumps, tile drains or other approved methods, the Contractor shall prevent the accumulation of water in excavated areas. Should water accumulate, it shall be promptly removed.
- B. Excavations shall be continuously dewatered to maintain a ground water level no higher than three to four feet below the lowest point in the excavation. Dewatering shall be accomplished well enough in advance of excavation to ensure that groundwater is already lowered prior to completing the final excavation to finish subgrade.
- C. All destabilized subgrade conditions caused by inadequate or untimely dewatering operations shall be undercut and backfilled with suitable backfill material at no additional cost to the Owner.
- D. Piezometric observation wells are required to monitor the ground water level to insure proper dewatering prior to excavation below the static water table. The number of wells required will vary depending on the size and depth of structures.

END OF SECTION

SECTION 02200
Earthwork

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. Extent of earthwork is indicated on the Drawings.
 - 1. Preparation of subgrade for tanks, basins, building slabs, walks, and pavements is included as part of this work.
 - 2. Engineered fill course for support of building or basin slabs is included as part of this work.
 - 3. Backfilling of tanks, basins, basements, and trenches within building lines is included as part of this work.
- B. Excavation for Mechanical/Electrical Work: Excavation and backfill required in conjunction with underground mechanical and electrical utilities, and buried mechanical and electrical appurtenances is included as work of this Section.
- C. Definition: "Excavation" consists or removal of all material encountered to subgrade elevations indicated and subsequent disposal of materials removed.

1.2 QUALITY ASSURANCE

- A. Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Testing and Inspection Services: Employ, at Contractor's expense, testing laboratory acceptable to the Owner to perform soil testing and inspection service for quality control testing during earthwork operations.

1.3 SUBMITTALS

- A. Test Reports-Excavating

Submit following reports directly to the Engineer from the testing services, with copy to Contractor:

- 1. Test reports on borrow material.
- 2. Verification of each footing subgrade.
- 3. Field density test reports.

4. One optimum moisture-maximum density curve for each type of soil encountered.
5. Report of actual unconfined compressive strength and/or results of bearing tests on each strata tested.

1.4 JOB CONDITIONS

A. Site Information

1. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil bearings. It is expressly understood that Owner will not be responsible for interpretation or conclusions drawn therefrom by Contractor. Data are made available for convenience of Contractor.
2. Additional test borings and other exploratory operations may be made by Contractor at no cost to Owner.

B. Existing Utilities: Prior to commencement of work, the Contractor shall locate existing underground utilities in areas of the work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.

C. Use of Explosives: The Contractor (or any of his subcontractors) shall not bring explosives onto site or use in work without prior written permission from the Owner. All activities involving explosives shall be in compliance with the rules and regulations of the Kentucky Department of Mines and Minerals, Division of Explosives and Blasting. Contractor is solely responsible for handling, storage, and use of explosive materials when their use is permitted.

D. Protection of Persons and Property

1. Barricade open excavations occurring as part of this work and post with warning lights.
 - a. Operate warning lights as recommended by authorities having jurisdiction.
 - b. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

A. Definitions

1. Satisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups GW, GP, GM, SM, SW, SP, GC, SC, ML and CL.
2. Unsatisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups MH, CH, OL, OH and PT.
3. Subbase Material: Naturally and artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand.
4. Drainage fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100 percent passing a 1-1/2 inch sieve and not more than 5 percent passing a No. 4 sieve.
5. Backfill and fill materials: Satisfactory soil materials free of debris, waste, frozen materials, vegetable, and other deleterious matter.
6. Engineered fill: (Refer to this Section, paragraph 3.7 A.1.)

PART 3 EXECUTION

3.1 STRIPPING AND TOPSOILING

- A. Before excavation and grading is commenced for buildings, structures or other work described hereinafter (except pipelines and manholes), the material meeting the topsoil specification of these Specifications shall be removed from the areas affected and stock-piled. When final grading is accomplished, particularly around buildings and other structures, the topsoil shall be spread evenly over the excavated area. Rough grading above excavated areas shall have been carried approximately 6 inches below finished grade (except solid rock, where it shall be carried 12 inches below finished grade) and brought back up to grade with topsoil as set out herein.

3.2 EXCAVATION

- A. Excavation includes excavation to subgrade elevations indicated including excavation of earth, rock, bricks, wood, cinders, and other debris. All excavation of materials in the lump sum portion of the work will be unclassified and no additional payment will be made regardless of type material encountered.
- B. Excavation Classifications (Not Used)
- C. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be at Contractor's expense.
 - 1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to the Engineer.
 - 2. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classifications.
- D. Additional Excavation
 - 1. When excavation has reached required subgrade elevations, notify the Engineer who will make an inspection of conditions.
 - a. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed in writing by the Engineer.
 - b. Removal of unsuitable material and its replacement as directed will be paid on basis of Contract conditions relative to changes in work.
- E. Stability of Excavations
 - 1. Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
 - 2. Maintain sides and slopes of excavations in safe condition until completion of backfilling.
- F. Shoring and Bracing

-
1. Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross-braces, in good serviceable condition.
 - a. Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.
 - b. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.
 - c. Provide permanent steel sheet piling or pressure creosoted timber sheet piling wherever subsequent removal of sheet piling might permit lateral movement of soil under adjacent structures. Cut off tops as required and leave permanently in place. In the event the Owner directs the Contractor to leave shoring materials in place, the Owner will reimburse the Contractor for the reasonable cost of leaving such materials in place.
 - G. Dewatering: Refer to this Division, Section 02140 for dewatering requirements.
 - H. Material Storage
 1. Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage.
 - a. Dispose of excess soil material and waste materials as herein specified.
 - I. Excavation for Structures
 1. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 feet and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.
 2. In excavating for footings and foundations, take care not to disturb bottom of excavation. All loose material shall be removed from the excavation just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - J. Excavation for Pavements

1. Cut surface under pavements to comply with cross-sections, elevations, and grades as shown.

K. Trench Excavation

1. The Contractor shall include in his lump sum bid all trenching and backfill necessary for installation of all pipelines as planned and specified. Trenching shall include clearing and grubbing of all trash, weeds, briars, trees, stumps encountered in trenching. The Contractor shall dispose of such material at no extra cost to the Owner. Shrubs shall be removed, maintained and replanted in the same or adjacent location as the Engineer may direct. Trenching also included such items as railroad, street, road, sidewalk, pipe, and small creek crossings; cutting, moving or repairing damage to fences, posts, gates, and other surface structures regardless of whether shown on the Drawings.
2. All existing facilities shall be protected from danger or damage while pipelines are being constructed and backfilled, and from damage due to settlement of the backfill.
3. In the event any existing structure is damaged, repair and restoration shall be made at once and backfill shall not be replaced until this is done. Restoration and repair shall be such that the damaged structure is equal to or better than its original condition and can serve its purpose as completely as before. All such restoration and repair shall be done without extra cost to the Owner.
4. Trenches must be dug to lines and grades shown on the Drawings. Hand trenching may be required in areas where machine trenching would result in undue damage to existing structures and facilities.
5. Excavation shall be open trenches, except where otherwise shown on the Drawings, for tunneling, boring, or jacking under structures, railroad, sidewalks and roads.
6. Sheeting and shoring of trenches shall be provided at the expense of the Contractor where necessary to protect life, property and the new or existing structures from damage or to maintain maximum permissible trench widths at top of pipe. All necessary materials, including, but not limited to, sheeting, sheet piling, trench jacks, braces, shores and stringers, shall be used to hold trench walls. Sheeting and shoring may be withdrawn as the trenches are being backfilled, after backfill has been tamped over top of the pipe at least 18 inches. If removal before backfill is completed to surface endangers adjacent structures, such as buildings, pipelines, street paving, and sidewalks, then the sheeting and shoring shall be left in place until such danger has passed, and then pulled if practical. Voids caused by sheeting

- withdrawal shall be backfilled and tamped. If not withdrawn, sheeting shall be cut off at least 18 inches below final surface grade, so there is no obstruction at the ground level. In the event the Owner directs the Contractor to leave shoring materials in place, the Owner will reimburse the Contractor for the reasonable cost of leaving such materials in place.
7. Where subgrade of trench has insufficient stability to support the pipeline and hold it to its original grade, the Engineer may order stabilization by various means. Exclusive of dewatering normally required for construction, and instability caused by neglect of the Contractor, the necessary stabilization shall be paid for at unit prices established in the Contract. In the event no particular bid price is applicable, then the payment for stabilization will be negotiated.
 8. The location of the pipelines and their appurtenances as shown are those intended for the final construction. However, conditions may present themselves before construction on any line is started that would indicate desirable changes in location. The Owner reserves the right to make reasonable changes in line and structure locations without extra cost, except as may be determined by extra units of materials and construction actually involved. The Owner is under no obligation to locate pipelines, so they may be excavated by machine.
 9. Tunneling may be used at the Contractor's option as an alternate to open-cut trenching, at no extra cost to the Owner. The annular space between plates and excavation shall be either permanently placed pea gravel or sand, pumped grout (3 parts sand and 1 part Portland cement by volume) or other suitably installed material approved by the Engineer. Backfilling shall be kept close to the heading and completed after each day's work. Where grout is used for backfill, injection holes with threaded plugs shall be provided in linear plates at various levels and in sufficient number of effectively grout to void around the tunnel. A minimum of 3 grout holes shall be provided in each 8 feet of tunnel length. Grout shall be injected in the lower holes first, proceeding upward as the void is filled. Plugs shall be installed after each hole is filled and grout stops shall be provided behind plates as necessary to ensure complete filling of the void. In tunneling under buildings, the Contractor will be responsible for all damage resulting from his operations and methods of excavation and backfilling. Boring may also be used at the Contractor's option as an alternate to tunneling or open-cut trenching, at no extra cost to the Owner.
 10. Dig trenches to the uniform width required for the particular item to be installed, sufficiently wide to provide ample working room. Provide 6" to 9" clearance on both sides of pipe or conduit.

- a. Excavate trenches to depth indicated or required. Carry depth of trenches for piping to establish indicated flow lines and invert elevations. Beyond building perimeter, keep bottoms of trenches sufficiently below finish grade to avoid freeze-ups.
- b. Where rock is encountered, carry excavation 6 inches below required elevation and backfill with a 6-inch layer of crushed stone or gravel prior to installation of pipe.
- c. For pipes or conduit 3 inches or less in nominal size and for flat-bottomed, multiple-duct conduit units, excavate to subbase depth indicated or, if not indicated, then to 4 inches below bottom of work to be supported.
- d. For pipes or conduit 6 inches or larger in nominal size, tanks, and other mechanical/electrical work indicated to receive subbase, excavate to subbase depth indicated or, if not otherwise indicated, to 6 inches below bottom of work to be supported.
- e. Except as otherwise indicated, excavation for exterior water-bearing piping (water, steam, condensate, drainage) so top of piping is no less than 3 feet 0 inches below finish grade.
- f. Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.
- g. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and which are carried below bottom of such footings, or which pass under wall footings. Place concrete to level of bottom of adjacent footing.
- h. Concrete is specified in Division 3.
- i. Do not backfill trenches until tests and inspections have been made and backfilling authorized by the Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.
- j. For piping or conduit less than 3 feet 0 inches below surface of roadways, furnish and install steel casing pipe, minimum wall thickness of 1/4", or sufficient diameter to carry the pipe or conduit to at least two feet beyond outside edge of pavement.

L. Cold Weather Protection

1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35°F (1°C).

3.3 COMPACTION

A. General

1. Control soil compaction during construction providing minimum percentage of density specified for each area classification indicated below.
 - a. Percentage of maximum density requirements: Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D698 and not less than the following percentages of relative density, determined in accordance ASTM D4253 and D4254, for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils).
 - b. Structures, building slabs and steps, pavements: Compact top 12 inches of subgrade and each layer of backfill or fill material at 95 percent standard proctor density.
 - c. Lawn or unpaved areas: Compact top 6 inches of subgrade and each layer of backfill or fill material at 90 percent standard proctor density.
 - d. Walkways: Compact top 6 inches of subgrade and each layer of backfill or fill material at 95 percent standard proctor density.

B. Moisture Control

1. Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface or subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.
2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
3. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value.

3.4 BACKFILL AND FILL

A. General

1. Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below. Backfill material shall be no larger than the specified depth of the layer to be placed and/or compacted.
 - a. In excavations, use satisfactory excavated or borrow material.
 - b. Under grassed areas, use satisfactory excavated or borrow material.
 - c. Under walks and pavements, use subbase material, or satisfactory excavated or borrow material, or combination of both.
 - d. Under steps, use subbase material.
 - e. Under building slabs, use subbase material for a minimum depth of 6 inches.

B. Backfill excavations as promptly as work permits, but not until completion of the following:

1. Acceptance of construction below finish grade including, where applicable, damproofing, waterproofing, and perimeter insulation.
2. Inspection, testing, approval, and recording locations of underground utilities.
3. Removal of concrete formwork.
4. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in manner to prevent settlement of the structure or utilities, or leave in place if required.
5. Removal of trash and debris.
6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.

C. Ground Surface Preparation

1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow,

strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

2. When existing ground surface has a density less than that specified under "Compaction" for particular area classification, break up ground surface, pulverize, moisture condition to optimum moisture content, and compact to required depth and percentage of maximum density.

D. Placement and Compaction

1. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers. Crushed stone shall be installed in accordance with Section 02255.
 - a. Before compaction, add moisture or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
 - b. Place backfill and fill materials evenly adjacent to structures, piping, or conduit to required elevations. Take care to prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping, or conduit to approximately same elevation in each lift.

E. Backfilling Trenches

1. Backfilling shall be accomplished as soon as practical after pipe has been laid and jointing and alignment approved. Packing of crushed rock between joints shall be the usual procedure as the laying progresses. This is in order to avoid danger of misalignment from slides, flooding or other causes. The Engineer shall be given a maximum of 24 hours for inspection before backfilling.
2. Any special requirements of the Railroad Company or Highway Department in regard to backfilling will take precedence over the following general Specifications.
3. The backfill over the pipe shall be in accordance with the standard details shown on the Drawings for bedding and backfilling pipe.

4. In case maximum permissible trench widths (as designated by the pipe manufacturer) are exceeded, the Contractor shall furnish crushed rock backfill to a minimum of 12 inches over the top of pipe at no extra cost to the Owner.
5. After the foregoing cover requirements over top of the pipe have been met, rock may be used in the backfill in pieces no larger than 12 inches in any dimension and to an extent not greater than one-half the backfilling materials used. If additional earth is required for backfilling, it must be obtained and placed by the Contractor. Filling with rock and earth shall proceed simultaneously, such that no voids are left in the rock. After cover requirements over top of pipe have been met, backfilling may be employed without tamping, provided caution is used in quantity per dump and uniformity of level of backfilling. Surplus material shall be uniformly ridged over trench and excess rock hauled away, with no rock over 1-1/2 inch diameter in the top 6 inches. Ridged backfill shall be confined to the width of the trench and no higher than needed for replacement of settlement of backfill.
6. In the case of street, highway, railroad, sidewalk and driveway crossings; or within any roadway paving; or about manholes, valve and meter boxes; the backfill must be mechanically tamped in not over 6 inch layers, measured loose. Alternate method of compacting backfill shall be used, if refill material is in large hard lumps (crushed rock excepted) which cannot be consolidated without leaving voids.
7. In the case of tunnels, the annular space between plates and excavation shall be either permanently placed pea gravel or sand, pump grout (3 parts sand and 1 part Portland cement by volume) or other suitably installed material approved by the Engineer. Backfilling shall be kept close to the heading and completed after each day's work. Where grout is used for backfill, injection holes with threaded plugs shall be provided in liner plates at various levels and in sufficient number to effectively grout the void around the tunnel. A minimum of 3 grout holes shall be provided in each 8 feet of tunnel length. Grout shall be injected in the lower holes first, proceeding upward as the void is filled. Plugs shall be installed after each hole is filled and grout stops shall be provided behind plates as necessary to ensure complete filling of the void.
8. Where traffic on streets, driveways, railroads, sidewalks and highways requires temporary surfacing, backfilling shall be terminated 4 inches below original ground level and 4 inches to 6 inches of dense graded aggregate shall be placed on the trench. Backfills shall be maintained easily passible to traffic at original ground level, until acceptance of project or replacement of paving or sidewalks.

9. The Contractor shall protect all sewer, gas, electric, telephone, water and drain pipes or conduits from damage while pipelines are being constructed and backfilled, and from danger due to settlement of trench backfill.
10. No extra pavement shall be made for backfilling of any kind, except as specified hereinbefore. Backfilling shall be included as a part of the lump sum bid. No extra payment will be made to the Contractor for supplying outside materials for backfill.
11. On completion of the project, all backfills shall be dressed; holes filled; and surplus material hauled away. All permanent walks, street paving, roadway, etc., shall be restored and seeding and sodding performed as required.

3.5 GRADING

A. General

1. Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

B. Grading Outside Building Lines

1. All materials used for backfill around structures shall be of a quality acceptable to the Engineer and shall be free from large or frozen lumps, wood and other extraneous material. All spaces excavated and not occupied by footings, foundations walls or other permanent work shall be refilled with earth up to the surface of the surrounding ground, unless otherwise specified, with sufficient allowance for settlement. In making the fills and terraces around the structures, the fill shall be placed in layers not exceeding 12 inches in depth and shall be kept smooth as the work progresses. Each layer of the fill shall be rolled with an approved type roller and/or be compacted. When it is not practicable to compact sections of the fill immediately adjacent to buildings or structures by rolling, then such section shall be thoroughly compacted by means of mechanical tamping or hand tamping as may be required by the conditions encountered. All fills shall be placed so as to load structures symmetrically.
2. As set out hereinbefore, rough grading shall be held below finished grade and then the topsoil which has been stockpiled shall be evenly spread over the surface. The grading shall be brought to the levels shown on the

Drawings or to the elevations established by the Engineer. Final dressing shall be accomplished by hand work or machine work, or a combination of these methods as may be necessary to produce a uniform and smooth finish to all parts of the regrade. The surface shall be free from clods greater than 2 inches in diameter. Excavated rock may be placed in the fills, but it shall be thoroughly covered. Rock placed in fills shall not be closer than 12 inches from finished grade.

3. Grade areas adjacent to building lines to drain away from structures and to prevent ponding.
 - a. Finish surfaces free from irregular surface changes, and as follows:
 - (1) Lawn or unpaved areas: Finish areas to receive topsoil to within not more than 0.10 ft. above or below required subgrade elevations.
 - (2) Walks: Shape surface of areas under walks to line, grade, and cross-section, with finish surface not more than 0.0 inch above or 1.0 inch below required subgrade elevation.
 - (3) Pavements: Shape surface of areas under pavement to line, grade, and cross-section, with finish surface not more than 0.0 inch above or 1 inch below required subgrade elevation.
 - C. Grading Surface of Fill Under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 0.0 inch above or 1 inch below required subgrade elevation when tested with a 10 ft. straightedge.
 - D. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or standard proctor density for each area classification.

3.6 PAVEMENT SUBBASE COURSE

- A. General
 1. Subbase course consists of placing subbase material, in layers of specified thickness, over subgrade surface to support a pavement base course.
 2. See other Division 2 sections for paving specifications.

- B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.
- C. Shoulders
 - 1. Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each subbase course layer. Compact and roll at least a 12 inch width of shoulder simultaneously with compacting and rolling of each layer of subbase course.
- D. Placing
 - 1. Place subbase course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations.
 - 2. When a compacted subbase course is shown to be 6 inches thick or less, place material in a single layer. When shown to be more than 6 inches thick, place material in equal layers, except no single layer more than 6 inches or less than 3 inches in thickness when compacted.

3.7 BUILDING SLAB ENGINEERED FILL COURSE

- A. General
 - 1. Engineered fill course consists of placement of crushed stone, size and type shown on drawings, in layers of indicated thickness, over subgrade surface to support concrete building slabs.
- B. Placing
 - 1. Place fill material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting material during placement operations.
 - 2. When a compacted course is shown to be 6 inches or less, place material in a single layer. When shown to be more than 6 inches thick, place material in equal layers, except no single layer shall be more than 6 inches or less than 3 inches in thickness when compacted.

3.8 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction

1. Allow testing service to inspect and report to the Engineer on findings and approve subgrades and fill layers before further construction work is performed.
 - a. Perform field density tests in accordance with ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2992 (nuclear density method), as applicable.
 - b. Footing subgrade: For each strata of soil on which footings will be placed, conduct at least one test to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata, when acceptable to Engineer.
 - c. Paved areas and building slab subgrade: Make at least one field density test of subgrade for every 2,000 square feet of paved area or building slab, but in no case less than three tests. In each compacted fill layer, make one field density test for every 2,000 square feet of overlaying building slab or paved area, but in no case less than three tests.
 - d. Foundation wall backfill: Take at least two field density tests, at locations and elevations as directed.

- B. If in opinion of the Engineer, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense.

3.9 MAINTENANCE

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
- B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.

- C. Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

END OF SECTION



SECTION 02255
Crushed Stone and Dense Graded Aggregate

PART 1 GENERAL

1.1 SCOPE

- A. Furnish and install crushed stone for miscellaneous uses as shown on the Drawings, as called for in the Specifications.
- B. Sizes, types, and quality of crushed stone are specified in this Section, but its use for replacement of unsuitable material, pavement base, and similar uses is specified in detail elsewhere in the Specifications. The Engineer may order the use of crushed stone for purposes other than those specified in other sections, if, in his opinion, such use is advisable. Payment for same will be subject to negotiation.

PART 2 PRODUCTS

2.1 MATERIALS

- A. When referred to in these Specifications, crushed stone shall be Number 57 graded in accordance with the Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Latest Edition, unless otherwise noted.
- B. When referred to in these Specifications, dense graded aggregate (DGA) shall be crushed stone classified by the Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Latest Edition, and conforming to the following requirements:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 inch	100
3/4 inch	70-100
3/8 inch	50-80
#4	35-65
#10	25-50
#40	15-30
#200	5-12

PART 3 EXECUTION

3.1 INSTALLATION

- A. Crushed stone shall be placed in uniform layers not greater than 6 inches deep and shaped by power equipment to required lines, grades, cross sections, and depths. No minimum compacted density, method of compaction, or compaction equipment is required since a nominal amount of compaction effort with vibration can establish the desired intergranular locking of the aggregate under controlled placement depth. Acceptable compaction can be achieved with pneumatic-tired and tracked equipment and rollers.
- B. All compaction operation shall be performed to the satisfaction of the Engineer.
- C. Crushed stone shall be placed in those areas as shown on the Drawings and as may be directed by the Engineer.

END OF SECTION

SECTION 02513
Bituminous Concrete Paving

PART 1 GENERAL

1.1 GENERAL

A. RELATED DOCUMENTS

1. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

B. DESCRIPTION OF WORK

1. Extent of bituminous concrete paving work is shown on drawings.
2. Prepared aggregate subbase is specified in earthwork sections.

C. SUBMITTALS

1. Material Certificates: Provide copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceed, specified requirements.

D. QUALITY ASSURANCE

1. Codes and Standards: Comply with Kentucky Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, and with local governing regulations if more stringent than herein specified.

E. SITE CONDITIONS

1. Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 deg. F (10 deg. C), and when temperature has not been below 35 deg. F (1 deg. C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

2. Construct asphalt concrete surface course when atmospheric temperature is above 40 deg. F (4 deg. C), and when base is dry. Base course may be placed when air temperature is above 30 deg. F (-1 deg. C) and rising.
3. Grade Control: Establish and maintain required lines and elevations.

1.2 PRODUCTS

A. MATERIALS

1. General: Use locally available material and gradations which exhibit a satisfactory record of previous installations.
2. Base Course Aggregate: Sound, angular crushed stone, crushed gravel, or crushed slag, sand, stone or slag screenings.
3. Surface Course Aggregate: Crushed stone, crushed gravel, crushed slag, and sharp-edged natural sand.
4. Mineral Filler: Rock or slag dust, hydraulic cement, or other inert material complying with AASHTO M 17 (ASTM D 242).
5. Asphalt Cement: AASHTO M 226 (ASTM D 3381) for viscosity-graded material.
6. Prime Coat: Cut-back asphalt type; AASHTO M 82 (ASTM D 2027) MC-30, MC-70 or MC-250.
7. Tack Coat: Emulsified asphalt; AASHTO M 140 (ASTM D 977) or M 208 (D 2397); SS-1, SS-1h, CSS-1 or CSS-1h, diluted with one part water to one part emulsified asphalt.
8. Lane Marking Paint: Chlorinated rubber-alkyd type, AASHTO M 248 (FS TT-P-115), Type III.

B. ASPHALT-AGGREGATE MIXTURE

1. Provide plant-mixed, hot-laid asphalt-aggregate mixture complying with Kentucky State Specification Section 400.

1.3 EXECUTION

A. SURFACE PREPARATION

1. Remove loose material from compacted subbase surface immediately before applying prime coat.
2. Proof roll prepared subbase surface to check for unstable areas and areas requiring additional compaction.
3. Notify Contractor of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.
4. Prime Coat: Apply at rate of 0.20 to 0.50 gal. per sq. yd., over compacted subgrade. Apply material to penetrate and seal, but not flood, surface. Cure and dry as long as necessary to attain penetration and evaporation of volatile.
5. Tack Coat: Apply to contact surfaces of previously constructed asphalt or portland cement concrete and surfaces abutting or projecting into asphalt concrete pavement. Distribute at rate of 0.05 to 0.15 gal. per sq. yd. of surface.
6. Allow to dry until at proper condition to receive paving.
7. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

B. PLACING MIX

1. General: Place asphalt concrete mixture on prepared surface, spread and strike-off. Spread mixture a minimum temperature of 225 deg. F (107 deg. C). Place inaccessible and small areas by hand. Place each course to required grade, cross-section, and compacted thickness.
2. Paver Placing: Place in strips not less than 10' wide, unless otherwise acceptable to Architect. After first strip has been placed and rolled, place succeeding strips and extend rolling to

overlap previous strips. Complete base course for a section before place in surface course.

3. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density and smoothness as other sections of asphalt concrete course. Clean contact surfaces and apply tack coat.

C. ROLLING

1. General: Begin rolling when mixture will bear roller weight without excessive displacement.
2. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
3. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.
4. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.
5. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.
6. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut-out such areas and fill with fresh, hot asphalt concrete. Compact by rolling to maximum surface density and smoothness.
7. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
8. Erect barricades to prevent paving from traffic until mixture has cooled enough not to become marked.

E. FIELD QUALITY CONTROL

1. General: Test in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by Architect.
2. Thickness: In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:
 - a. Base Course: 1/2", plus or minus.
 - b. Surface Course: 1/4", plus or minus.
3. Surface Smoothness: Test finished surface of each asphalt concrete course for smoothness, using 10' straightedge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness.
 - a. Base Course Surface: 1/4".
 - b. Wearing Course Surface: 3/16".
 - c. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template, 1/4".
4. Check surface areas at intervals as directed by Architect.

END OF SECTION



SECTION 02665

Water Mains and Accessories

PART 1 GENERAL

1.01 SCOPE

- A. This Section describes products to be incorporated into the water mains and requirements for the installation and use of these items. Furnish all products and perform all labor necessary to fulfill the requirements of these Specifications.
- B. General: Supply all products and perform all work in accordance with applicable American Society for Testing and Material (ASTM), American Water Works Association (AWWA), American National Standards Institute (ANSI), or other recognized standards. Latest revisions of all standards are applicable.

1.02 QUALIFICATIONS

If requested by the Engineer, submit evidence that manufacturers have consistently produced products of satisfactory quality and performance for a period of at least two years.

1.03 SUBMITTALS

Complete shop drawings and engineering data for all products shall be submitted to the Engineer in accordance with the requirements of Section 01340 of these Specifications.

1.04 TRANSPORTATION AND HANDLING

- A. Unloading: Furnish equipment and facilities for unloading, handling, distributing and storing pipe, fittings, valves and accessories. Make equipment available at all times for use in unloading. Do not drop or dump materials. Any materials dropped or dumped will be subject to rejection without additional justification. Pipe handled on skids shall not be rolled or skidded against the pipe on the ground.
- B. Handling: Handle pipe, fittings, valves and accessories carefully to prevent shock or damage. Handle pipe by rolling on skids, forklift, or front end loader. Do not use material damaged in handling. Slings, hooks or pipe tongs shall be padded and used in such a manner as to prevent damage to the exterior coatings or internal lining of the pipe.

1.05 OWNER FURNISHED MATERIALS (Not Used)**1.06 STORAGE AND PROTECTION**

- A. Store all pipe which cannot be distributed along the route. Contractor shall make arrangements for the use of suitable storage areas.
- B. Stored materials shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt or foreign matter at all times. Valves and hydrants shall be drained and stored in a manner that will protect them from damage by freezing.
- C. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom tier shall be kept off the ground on timbers, rails or concrete. Pipe in tiers shall be alternated: bell, plain end; bell, plain end. At least two rows of timbers shall be placed between tiers and chocks, affixed to each other in order to prevent movement. The timbers shall be large enough to prevent contact between the pipe in adjacent tiers.
- D. Stored mechanical and push-on joint gaskets shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.
- E. Mechanical-joint bolts shall be handled and stored in such a manner that will ensure proper use with respect to types and sizes.

1.07 QUALITY ASSURANCE

The manufacturer shall provide written certification to the Engineer that all products furnished comply with all applicable requirements of these Specifications.

PART 2 PRODUCTS**2.01 PIPING MATERIALS AND ACCESSORIES**

- A. Ductile Iron Pipe (DIP)
 - 1. Ductile iron pipe shall be manufactured in accordance with AWWA C151. All pipe, except specials, shall be furnished in nominal lengths of 18 to 20 feet. Sizes will be as shown on the Drawings. All pipe shall have a minimum pressure rating as indicated in the following table, and corresponding minimum wall thickness, unless otherwise specified or shown on the Drawings:

Pipe Sizes (inches)	Pressure Class (psi)
4 - 12	350
14 - 18	250
20	250
24	200
30 - 54	250
60 - 64	200

2. Flanged pipe minimum wall thickness shall be equal to Special Class 53. Flanges shall be furnished by the pipe manufacturer.
3. Pipe and fittings shall be cement lined in accordance with AWWA C104. Pipe and fittings shall be furnished with a bituminous outside coating.
4. Fittings shall be ductile iron and shall conform to AWWA C110 or AWWA C153 with a minimum rated working pressure of 250 psi or as indicated on plans.
5. Joints
 - a. Unless shown or specified otherwise, joints shall be push-on or restrained joint type for pipe and standard mechanical, push-on or restrained joints for fittings. Push-on and mechanical joints shall conform to AWWA C111. Restrained joints for pipe and fittings shall be American "FLEX-RING" or "LOK-RING", Clow "SUPER-LOCK", or U.S. Pipe "TR FLEX". No field welding of restrained joint pipe will be permitted. No mega lug type restraints are allowed on 24" and 30" water line.
 - b. Restrained joint pipe (RJP) on supports shall have bolted joints and shall be specifically designed for clear spans of at least 36 feet.
 - c. Flanged joints shall meet the requirements of ANSI B16.1, Class 125.
6. Provide the appropriate gaskets for mechanical and flange joints. Gaskets for flange joints shall be made of 1/8-inch thick, cloth reinforced rubber; gaskets may be ring type or full face type.
7. Provide the necessary bolts for mechanical, restrained and flange connections. Bolts for flange connections shall be steel with American

Regular unfinished square or hexagon heads. Nuts shall be steel with American Standard Regular hexagonal dimensions, all as specified in ANSI B17.2. All bolts and all nuts shall be threaded in accordance with ANSI B1.1, Coarse Thread Series, Class 2A and 2B fit. Mechanical joint glands shall be ductile iron.

8. Acceptance will be on the basis of the Engineer's inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards.

B. Polyvinyl Chloride Pipe (PVC) - (SDR-21)

1. All PVC pipe shall have belled ends for push-on type jointing and shall conform to ASTM D 2241. The pipe shall have a Standard Dimension Ratio (SDR) of 21 and shall be capable of withstanding a working pressure of 200 psi. Pipe shall be supplied in minimum lengths of 20 feet.
2. All fittings shall be of cast or ductile iron meeting the requirements of AWWA C110 or AWWA C153 with a minimum rated working pressure of 150 psi. Fittings shall be cement lined in accordance with AWWA C104. Fittings shall be furnished with a bituminous outside coating. Special adapters shall be provided as recommended by the manufacturer to adapt the PVC pipe to mechanical jointing with cast or ductile iron pipe, fittings, or valves.
3. Detection tape shall be provided over all PVC water mains.
4. Acceptance will be on the basis of the Engineer's inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards, including the National Sanitation Foundation. Additionally, each piece of pipe shall be stamped "NSF Approved".

C. Polyvinyl Chloride Pipe (PVC) - (C-900)

1. All PVC pipe shall have belled ends for push-on type jointing and shall conform to AWWA C900, ductile iron pipe equivalent outside diameters. The pipe shall have a Dimension Ratio (DR) of 14 and shall be capable of withstanding a working pressure of 200 psi. Pipe shall be supplied in minimum lengths of 20 feet.
2. All fittings shall be of cast or ductile iron meeting the requirements of AWWA C110 or AWWA C153 with a minimum rated working pressure of

250 psi. Fittings shall be cement lined in accordance with AWWA C104. Fittings shall be furnished with a bituminous outside coating. Special adapters shall be provided, as recommended by the manufacturer, to adapt the PVC pipe to mechanical jointing with cast or ductile iron pipe, fittings or valves.

3. Detection tape shall be provided over all PVC water mains.
4. Acceptance will be on the basis of the Engineer's inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards, including the National Sanitation Foundation. Additionally, each piece of pipe shall be stamped "NSF Approved".

2.02 VALVES

A. Gate Valves (GV)

1. 3-Inches in Diameter and Smaller: Gate valves shall be bronze, heavy duty, rising stem, wedge type with screwed or union bonnet. Valve ends shall be threaded or solder type as appropriate. Valves shall have a minimum 200 psi working pressure for water (125 psi working pressure for steam). Valves shall be made in the U.S.A. Gate valves shall be equal to Crane No. 428 (threaded) or Crane No. 1334 (solder end).
2. 4-Inches Through 12-Inches in Diameter: Gate valves 4-inches through 12-inches shall be resilient wedge type conforming to the requirements of AWWA C509 rated for 200 psi working pressure.
 - a. Valves shall be provided with two O-ring stem seals with one O-ring located above and one O-ring below the stem collar. The area between the O-rings shall be filled with lubricant to provide lubrication to the thrust collar bearing surfaces each time the valve is operated. At least one anti-friction washer shall be utilized to further minimize operating torque. All seals between valve parts, such as body and bonnet, bonnet and bonnet cover, shall be flat gaskets or O-rings.
 - b. The valve gate shall be made of cast iron having a vulcanized, synthetic rubber coating, or a seat ring attached to the disc with retaining screws. Sliding of the rubber on the seating surfaces to compress the rubber will not be allowed. The design shall be such that compression-set of the rubber shall not affect the ability of the

valve to seal when pressure is applied to either side of the gate. The sealing mechanism shall provide zero leakage at the water working pressure when installed with the line flow in either direction.

- c. All internal ferrous surfaces shall be coated with epoxy to a minimum thickness of 4 mils. The epoxy shall be non-toxic, impart no taste to the water and shall conform to AWWA C550, latest revision.
- d. Gate valves 4 through 12-inches shall be manufactured by American-Darling, Mueller or M & H Valve.

B. Butterfly Valves (BV)

1. Butterfly valves shall be resilient seated, short body design, and shall be designed, manufactured, and tested in accordance with all requirements of AWWA C504, and as modified below. Valves shall be designed for a rated working pressure of 250 psi. Class B, AWWA C504 Section 5.2 testing requirements are modified as follows:
 - a. the leakage test shall be performed at a pressure of 250 psi;
 - b. the hydrostatic test shall be performed at a pressure of 500 psi; and
 - c. proof of design tests shall be performed and certification of such proof of design test shall be provided to the Engineer.
2. Valve bodies shall be ductile iron conforming to ASTM A 536, Grade 65-45-12 or ASTM A 126, Grade B cast iron. Shafts and shaft hardware shall be ASTM A 564, Type 630 stainless steel, machined and polished. Valve discs shall be ductile iron, ASTM A 536, Grade 65-45-12. The resilient valve seat shall be located either on the valve disc or in the valve body and shall be fully field adjustable and field replaceable.
3. Valves shall be installed with the valve shafts horizontal. Valves and actuators shall have seals on all shafts and gaskets on valve actuator covers to prevent the entry of water. Actuator mounting brackets shall be totally enclosed and shall have gasket seals.
4. Actuators
 - a. Valves shall be equipped with traveling nut, self-locking type actuators designed, manufactured and tested in accordance with AWWA C504. Actuators shall be capable of holding the disc in any position between full open and full closed without any movement or fluttering of the disc.

- b. Actuators shall be furnished with fully adjustable mechanical stop-limiting devices. Actuators that utilize the sides of the actuator housing to limit disc travel are unacceptable.
 - c. Valve actuators shall be capable of withstanding a minimum of 450 foot pounds of input torque in either the open or closed position without damage.
5. Operators: Valves for buried service shall have a nut type operator and shall be equipped with a valve box and stem extension, as required.
 6. Valve ends shall be mechanical joint type, except where flanged or restrained joint ends are shown. Flange joints shall meet the requirements of ANSI B16.1, Class 125. MJ Joint ends shall be restrained were called for using American MJ coupled joint or approved equal.
 7. Butterfly valves shall be manufactured by Mueller, M & H Valve, DeZurik, or Pratt.

2.03 FIRE HYDRANTS (FH)

- A. All fire hydrants shall conform to the requirements of AWWA C502 for 250 psi working pressure. Hydrants shall be the compression type, closing with line pressure. The valve opening shall not be less than [5-1/4-inches].
- B. In the event of a traffic accident, the hydrant barrel shall break away from the standpipe at a point above grade and in a manner which will prevent damage to the barrel and stem, preclude opening of the valve, and permit rapid and inexpensive restoration without digging or cutting off the water.
- C. The means for attaching the barrel to the standpipe shall permit facing the hydrant a minimum of eight different directions.
- D. Hydrants shall be fully bronze mounted with all working parts of bronze. Valve seat ring shall be bronze and shall screw into a bronze retainer.
- E. All working parts, including the seat ring shall be removable through the top without disturbing the barrel of the hydrant.
- F. The operating nut shall match those on the existing hydrants. The operating threads shall be totally enclosed in an operating chamber, separated from the hydrant barrel by a rubber O-ring stem seal and lubricated by a grease or an oil reservoir.

- G. Hydrant shall be a non-freezing design and be provided with a simple, positive, and automatic drain which shall be fully closed whenever the main valve is opened.
- H. Hose and pumper connections shall be breech-locked, pinned, or threaded and pinned to seal them into the hydrant barrel. Each hydrant shall have two 2-1/2-inch hose connections and one 4-1/2-inch pumper connection, all with National Standard threads and each equipped with cap and non-kinking chain.
- I. Hydrants shall be furnished with a mechanical joint connection to the spigot of the 6-inch hydrant lead.
- J. Minimum depth of bury shall be 4.5 feet. Provide extension section where necessary for proper vertical installation and in accordance with manufacturer's recommendations.
- K. All outside surfaces of the barrel above grade shall be painted with enamel equal to Koppers Glamortex 501 in a color to be selected by the Owner.
- L. Hydrants shall be traffic model and shall be Mueller Super Centurion or approved equal.

2.04 VALVE BOXES (VB) AND EXTENSION STEMS

- A. All valves shall be equipped with valve boxes. The valve boxes shall be cast iron two-piece screw type with drop covers. Valve boxes shall have a 5.25-inch inside diameter. Valve box covers shall weigh a minimum of 13 pounds. The valve boxes shall be adjustable to 6-inches up or down from the nominal required cover over the pipe. Valve boxes shall be of sufficient length that bottom flange of the lower belled portion of the box is below the valve operating nut. Ductile or cast iron extensions shall be provided as necessary. Covers shall have "WATER VALVE" or "WATER" cast into them. Valve boxes shall be manufactured in the United States.
- B. All valves shall be furnished with extension stems, as necessary, to bring the operating nut to within 30-inches of the top of the valve box. Connection to the valve shall be with a wrench nut coupling and a set screw to secure the coupling to the valve's operating nut. The coupling and square wrench nut shall be welded to the extension stem. Extension stems shall be equal to Mueller A-26441 or M & H Valve Style 3801.

2.05 VALVE MARKERS (VM)

The Contractor shall provide a concrete valve marker as detailed on the Drawings for each valve installed. Valve markers shall be stamped "Water".

2.06 TAPPING SLEEVES AND VALVES (TS&V)

Tapping sleeves shall be cast or ductile iron of the split-sleeve, mechanical joint type. The Contractor shall be responsible for determining the outside diameter of the pipe to be connected to prior to ordering the sleeve. Valves shall be gate valves furnished in accordance with the specifications shown above, with flanged connection to the tapping sleeve and mechanical joint connection to the branch pipe. The tapping sleeve and valve shall be supplied by the valve manufacturer. Tapping sleeves shall be equal to American-Darling, Mueller or M & H Valve.

2.07 TAPPING SADDLES

Tapping saddles shall be ductile iron body type with O-ring gasket and alloy steel straps. Connection shall be flanged or mechanical joint as detailed on the Drawings. Tapping saddles shall be equal to ACIPCO A-10920.

2.08 CORPORATION COCKS AND CURB STOPS

Corporation cocks and curb stops shall be ground key type, shall be made of bronze conforming to ASTM B 61 or B 62, and shall be suitable for the working pressure of the system. Ends shall be suitable for flared tube compression type joint. Threaded ends for inlet and outlet of corporation cocks shall conform to AWWA C800; coupling nut for connection to flared copper tubing shall conform to ANSI B16.26. Corporation cocks and curb stops shall be manufactured by Mueller or Ford.

2.09 AIR VALVES

A. Air Release Valves: Air release valves shall be one of the following types:

1. The air release valve shall automatically release air accumulations from the pipeline due to the action of the float. When the air valve body fills with air, the float falls freely from the orifice to allow the air to escape to the atmosphere. When all the air has been exhausted from the valve body, the float will be buoyed up to seat against the orifice and prevent water from

being exhausted from the valve. The valve body and cover shall be constructed of cast iron (ASTM A 126-B). A synthetic orifice button shall be affixed to the valve cover to provide a non-corrosive seat for the float. The float shall be constructed of stainless steel. A resilient, Buna-N seat shall be attached to the float for drop-tight closure. The float shall be free floating within the valve body. Valve orifice size shall be as shown on the Drawings.

2. The air release valve shall automatically release air accumulations from the pipeline due to the action of the float and lever mechanism. When the air valve body fills with air, the float falls. Through the leverage mechanism, this causes the resilient seat to open the orifice and allow the air to escape to the atmosphere. When all the air has been exhausted from the valve body, the float will be buoyed up. Through the leverage mechanism, this will cause the resilient seat to close the orifice, preventing water from being exhausted from the valve. The valve body and cover shall be constructed of cast iron (ASTM A 126-B). The float shall be constructed of stainless steel and attached to a stainless steel lever mechanism. A resilient, Buna-N seat shall be attached to the lever mechanism for drop-tight closure. Valve orifice size shall be as shown on the Drawings.
- B. **Air/Vacuum Valve:** The air/vacuum valve shall discharge large amounts of air as the pipeline fills and allow air to enter the pipeline as it drains or in the event of vacuum conditions. The valve shall operate by means of a non-collapsible stainless steel float which seals an orifice. As air enters the valve the float shall drop from the orifice and allow the air to escape. As water rises in the valve, the float will again seal the orifice. The valve will be of such design that the float cannot blow shut at any air velocity. All working parts shall be of stainless steel. The inside of the valve body shall be epoxy coated. Valve inlet size shall be as shown on the Drawings.
- C. **Combination Air Valves:** Combination air valves shall combine the features of an air release valve and an air/vacuum valve and shall be of one of the following types:
1. Valve shall consist of an air/vacuum valve described in paragraph B. above, with an air release valve described in A. above tapped into its body. The valve shall be of two-piece body design with an isolation gate valve separating the two valves.
 2. Valve shall be single body, double orifice, allowing large volumes of air to escape out the larger diameter air and vacuum orifice when filling a pipeline and closes watertight when the liquid enters the valve. During large orifice

closure, the smaller diameter air release orifice will open to allow small pockets of air to escape automatically and independently of the large orifice. The large air/vacuum orifice shall also allow large volumes of air to enter through the orifice during pipeline drainage to break the vacuum. The Buna-N seats must be fastened to the valve, without distortion, for drop-tight shut-off. The float shall be stainless steel. Valve sizes shall be as shown on the Drawings.

- D. Surge Check Valve: Where shown on the Drawings or specified, provide a surge check valve on the inlet of the air/vacuum valve. The surge check valve shall be normally open, spring loaded valve consisting of a body, seat and plug bolted to the inlet of the air/vacuum valve. The surge check shall operate on the interphase between the kinetic energy and relative velocity flows of air and water, allowing air to pass through but water shall close the surge check, reducing the rate of water flow by means of throttling orifices in the plug to prevent shock closure of the air/vacuum valve. The surge check orifices must be an adjustable type to suit operating conditions in the field.
- E. All air valves and accessories shall be supplied by a single manufacturer and shall be G.A. Industries, APCO, Crispin or Val-Matic.

2.10 METER SETTERS

The meter setter shall be a tandem coppersetter as shown on the standard detail drawings with 3/4" double purpose ends and be 15" high with padlock wing. It shall be all purpose, designed for 5/8" x 3/4" meter and be of sufficient height to raise meters above the bottom of the meter box. The meter setter shall be Ford, or equal. Meter setters shall have an inverted key inlet valve.

Setters shall be installed so that the meters are centered in the meter box.

The water service line shall be extended a minimum of 18" beyond the meter box on the customer end. The end of the extension shall be capped or plugged to prevent entry of foreign material until the connection is made.

2.11 WATER METERS

Water meter shall be cold water displacement type meeting all requirement of AWWA C700-77. The meter sizes shall be 5/8-inch x 3/4-inch meters for 3/4" service rated at a flow of 20 gpm and 1" meters for 1" service rated at a flow of 50 gpm. Meters shall be of frost-proof design and be rotating disk type. The meters shall be equipped with a straight-reading register recording in U.S. Gallons hermetically sealed to prevent fogging and with a removable corrosion resistant

strainer screen between the outer case and measuring chamber. Register shall be equipped with a device to afford capability for accurately testing each meter according to AWWA Standards. The body case shall have the manufacturer's serial number imprinted thereon and have raised markings to indicate the direction of flow.

2.12 HYDRANT TEES (Not Used)

2.13 ANCHOR COUPLINGS (Not Used)

2.14 VALVE KEYS

The Contractor shall provide to the Owner one valve key for every five valves provided, but no more than three and not less than one valve key. Valve keys shall be 72-inches long with a tee handle and a 2-inch square wrench nut. Valve keys shall be furnished by the valve manufacturer. Valve keys shall be equal to Mueller A-24610 or ACIPCO No. 1303.

2.15 CONCRETE

Concrete shall have a compressive strength of not less than 3000 psi, with not less than 5.5 bags of cement per cubic yard and a slump between 3 and 5-inches. For job mixed concrete, submit the concrete mix design for approval by the Engineer. Ready-mixed concrete shall be mixed and transported in accordance with ASTM C 94. Reinforcing steel shall conform to the requirements of ASTM A 615, Grade 60.

PART 3 EXECUTION

3.01 EXISTING UTILITIES AND OBSTRUCTIONS

- A. The Drawings indicate utilities or obstructions that are known to exist according to the best information available to the Owner. The Contractor shall call the agencies or departments that own and/or operate utilities in the vicinity of the construction work site at least 72 hours (three business days) prior to construction to verify the location of the existing utilities.
- B. Existing Utility Location: The following steps shall be exercised to avoid interruption of existing utility service.
 - 1. Provide the required notice to the utility owners and allow them to locate their facilities. Field utility locations are valid for only 10 days after original notice. The Contractor shall ensure, at the time of any excavation, that a valid utility location exists at the point of excavation.

2. Expose the facility, for a distance of at least 200 feet in advance of pipeline construction, to verify its true location and grade. Repair, or have repaired, any damage to utilities resulting from locating or exposing their true location.
3. Avoid utility damage and interruption by protection with means or methods recommended by the utility owner.
4. Maintain a log identifying when phone calls were made, who was called, area for which utility relocation was requested and work order number issued, if any. The Contractor shall provide the Engineer an updated copy of the log bi-weekly, or more frequently if required.

C. Conflict with Existing Utilities

1. **Horizontal Conflict:** Horizontal conflict shall be defined as when the actual horizontal separation between a utility, main, or service and the proposed water main does not permit safe installation of the water main by the use of sheeting, shoring, tying-back, supporting, or temporarily suspending service of the parallel or crossing facility. The Contractor may change the proposed alignment of the water main to avoid horizontal conflicts if the new alignment remains within the available right-of-way or easement, complies with regulatory agency requirements and after a written request to and subsequent approval by the Engineer. Where such relocation of the water main is denied by the Engineer, the Contractor shall arrange to have the utility, main, or service relocated.
2. **Vertical Conflict:** Vertical conflict shall be defined as when the actual vertical separation between a utility, main, or service and the proposed water main does not permit the crossing without immediate or potential future damage to the utility, main, service, or the water main. The Contractor may change the proposed grade of the water main to avoid vertical conflicts if the changed grade maintains adequate cover and complies with regulatory agencies requirements after written request to and subsequent approval by the Engineer. Where such relocation of the water main is denied by the Engineer, the Contractor shall arrange to have the utility, main, or service relocated.

- D. **Electronic Locator:** Have available at all times an electronic pipe locator and a magnetic locator, in good working order, to aid in locating existing pipe lines or other obstructions.

E. Water and Sewer Separation

1. Water mains should maintain a minimum 10 foot edge-to-edge separation from sewer lines, whether gravity or pressure. If the main cannot be installed in the prescribed easement or right-of-way and provide the 10 foot separation, the separation may be reduced, provided the bottom of the water main is a minimum of 18-inches above the top of the sewer. Should neither of these two separation criteria be possible, the water main shall be installed below the sewer with a minimum vertical separation of 18-inches.
2. The water main, when installed below the sewer, shall be encased in concrete with a minimum 6-inch concrete depth to the first joint in each direction. Where water mains cross the sewer, the pipe joint adjacent to the pipe crossing the sewer shall be cut to provide maximum separation of the pipe joints from the sewer.
3. No water main shall pass through, or come in contact with, any part of a sanitary sewer manhole.

3.02 CONSTRUCTION ALONG HIGHWAYS, STREETS AND ROADWAYS

- A. Install pipe lines and appurtenances along highways, streets and roadways in accordance with the applicable regulations of, and permits issued by, the Department of Transportation, Mason and Fleming Counties and the City of Flemingsburg with reference to construction operations, safety, traffic control, road maintenance and repair.
- B. Traffic Control
 1. The Contractor shall provide, erect and maintain all necessary barricades, suitable and sufficient lights and other traffic control devices; provide qualified flagmen where necessary to direct traffic; take all necessary precautions for the protection of the work and the safety of the public.
 2. Construction traffic control devices and their installation shall be in accordance with the current Manual On Uniform Traffic Control Devices for Streets and Highways.
 3. Placement and removal of construction traffic control devices shall be coordinated with the Department of Transportation, Mason and Fleming Counties and the City of Flemingsburg a minimum of 48 hours in advance of the activity.
 4. Placement of construction traffic control devices shall be scheduled ahead of associated construction activities. Construction time in street

right-of-way shall be conducted to minimize the length of time traffic is disrupted. Construction traffic control devices shall be removed immediately following their useful purpose. Traffic control devices used intermittently, such as "Flagmen Ahead", shall be removed and replaced when needed.

5. Existing traffic control devices within the construction work zone shall be protected from damage. Traffic control devices requiring temporary relocation shall be located as near as possible to their original vertical and horizontal locations. Original locations shall be measured from reference points and recorded in a log prior to relocation. Temporary locations shall provide the same visibility to affected traffic as the original location. Relocated traffic control devices shall be reinstalled in their original locations as soon as practical following construction.
6. Construction traffic control devices shall be maintained in good repair and shall be clean and visible to affected traffic for daytime and nighttime operation. Traffic control devices affected by the construction work zone shall be inspected daily.
7. Construction warning signs shall be black legend on an orange background. Regulatory signs shall be black legend on a white background. Construction sign panels shall meet the minimum reflective requirements of the Department of Transportation, Mason and Fleming Counties and the City of Flemingsburg. Sign panels shall be of durable materials capable of maintaining their color, reflective character and legibility during the period of construction.
8. Channelization devices shall be positioned preceding an obstruction at a taper length as required by the current Manual On Uniform Traffic Control Devices for Streets and Highways, as appropriate for the speed limit at that location. Channelization devices shall be patrolled to insure that they are maintained in the proper position throughout their period of use.

C. Construction Operations

1. Perform all work along highways, streets and roadways to minimize interference with traffic.
2. Stripping: Where the pipe line is laid along road right-of-way, strip and stockpile all sod, topsoil and other material suitable for right-of-way restoration.

3. Trenching, Laying and Backfilling: Do not open the trench any further ahead of pipe laying operations than is necessary. Backfill and remove excess material immediately behind laying operations. Complete excavation and backfill for any portion of the trench in the same day.
 4. Shaping: Reshape damaged slopes, side ditches, and ditch lines immediately after completing backfilling operations. Replace topsoil, sod and any other materials removed from shoulders.
 5. Construction operations shall be limited to 400 feet along areas within KYDOT jurisdiction, including clean-up and utility exploration.
- D. Excavated Materials: Do not place excavated material along highways, streets and roadways in a manner which obstructs traffic. Sweep all scattered excavated material off of the pavement in a timely manner.
- E. Drainage Structures: Keep all side ditches, culverts, cross drains, and other drainage structures clear of excavated material. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.
- F. Landscaping Features: Landscaping features shall include, but are not necessarily limited to: fences; property corners; cultivated trees and shrubbery; manmade improvements; subdivision and other signs within the right-of-way and easement. The Contractor shall take extreme care in moving landscape features and promptly re-establishing these features.
- G. Maintaining Highways, Streets, Roadways and Driveways
1. Maintain streets, highways, roadways and driveways in suitable condition for movement of traffic until completion and final acceptance of the Work.
 2. During the time period between pavement removal and completing permanent pavement replacement, maintain highways, streets and roadways by the use of steel running plates. Running plate edges shall have asphalt placed around their periphery to minimize vehicular impact. The backfill above the pipe shall be compacted as specified elsewhere up to the existing pavement surface to provide support for the steel running plates.
 3. Furnish a road grader or front-end loader for maintaining highways, streets, and roadways. The grader or front-end loader shall be available at all times.

4. Immediately repair all driveways that are cut or damaged. Maintain them in a suitable condition for use until completion and final acceptance of the Work.

3.03 PIPE DISTRIBUTION

- A. Pipe shall be distributed and placed in such a manner that will not interfere with traffic.
- B. No pipe shall be strung further along the route than 1000 feet beyond the area in which the Contractor is actually working without written permission from the Owner.
- C. No street or roadway may be closed for unloading of pipe without first obtaining permission from the proper authorities. The Contractor shall furnish and maintain proper warning signs and obstruction lights for the protection of traffic along highways, streets and roadways upon which pipe is distributed.
- D. No distributed pipe shall be placed inside drainage ditches.
- E. Distributed pipe shall be placed as far as possible from the roadway pavement, but no closer than five feet from the roadway pavement, as measured edge-to-edge.

3.04 LOCATION AND GRADE

- A. The Drawings show the alignment of the water main and the location of valves, hydrants and other appurtenances.
- B. Construction Staking
 1. The base lines for locating the principal components of the work and a bench mark adjacent to the work are shown on the Drawings. Base lines shall be defined as the line to which the location of the water main is referenced, i.e., edge of pavement, road centerline, property line, right-of-way or survey line. The Contractor shall be responsible for performing all survey work required for constructing the water main, including the establishment of base lines and any detail surveys needed for construction. This work shall include the staking out of permanent and temporary easements to insure that the Contractor is not deviating from the designated easements.
 2. The level of detail of survey required shall be that which the correct location of the water main can be established for construction and verified by the

Engineer. Where the location of components of the water main, e.g. tunnels and fittings, are not dimensioned, the establishment on the location of these components shall be based upon scaling these locations from the Drawings with relation to readily identifiable land marks, e.g., survey reference points, power poles, manholes, etc.

C. Reference Points

1. The Contractor shall take all precautions necessary, which includes, but is not necessarily limited to, installing reference points, in order to protect and preserve the centerline or baseline established by the Engineer.
2. Reference points shall be placed, at or no more than three feet, from the outside of the construction easement or right-of-way. The location of the reference points shall be recorded in a log with a copy provided to the Engineer for use, prior to verifying reference point locations. Distances between reference points and the manhole centerlines shall be accurately measured to 0.01 foot.
3. The Contractor shall give the Engineer reasonable notice that reference points are set. The reference point locations must be verified by the Engineer prior to commencing clearing and grubbing operations.

- D.** After the Contractor locates and marks the water main centerline or baseline, the Contractor shall perform clearing and grubbing.
- E.** Construction shall begin at a connection location and proceed without interruption. Multiple construction sites shall not be permitted without written authorization from the Engineer for each site.
- F.** The Contractor shall be responsible for any damage done to reference points, base lines, center lines and temporary bench marks, and shall be responsible for the cost of re-establishment of reference points, base lines, center lines and temporary bench marks as a result of the operations.

3.05 LAYING AND JOINTING PIPE AND ACCESSORIES

- A.** Lay all pipe and fittings to accurately conform to the lines and grades established by the Engineer.
- B.** Pipe Installation

1. Proper implements, tools and facilities shall be provided for the safe performance of the Work. All pipe, fittings, valves and hydrants shall be lowered carefully into the trench by means of slings, ropes or other suitable tools or equipment in such a manner as to prevent damage to water main materials and protective coatings and linings. Under no circumstances shall water main materials be dropped or dumped into the trench.
2. All pipe, fittings, valves, hydrants and other appurtenances shall be examined carefully for damage and other defects immediately before installation. Defective materials shall be marked and held for inspection by the Engineer, who may prescribe corrective repairs or reject the materials.
3. All lumps, blisters and excess coating shall be removed from the socket and plain ends of each pipe, and the outside of the plain end and the inside of the bell shall be wiped clean and dry and free from dirt, sand, grit or any foreign materials before the pipe is laid. No pipe containing dirt shall be laid.
4. Foreign material shall be prevented from entering the pipe while it is being placed in the trench. No debris, tools, clothing or other materials shall be placed in the pipe at any time.
5. As each length of pipe is placed in the trench, the joint shall be assembled and the pipe brought to correct line and grade. The pipe shall be secured in place with approved backfill material.
6. It is not mandatory to lay pipe with the bells facing the direction in which work is progressing.
7. Applying pressure to the top of the pipe, such as with a backhoe bucket, to lower the pipe to the proper elevation or grade, shall not be permitted.
8. Detection tape shall be buried 4 to 10-inches deep. Should detection tape need to be installed deeper, the Contractor shall provide 3-inch wide tape. In no case shall detection tape be buried greater than 20-inches from the finish grade surface.

C. Alignment and Gradient

1. Lay pipe straight in alignment and gradient or follow true curves as nearly as practicable. Do not deflect any joint more than the maximum deflection recommended by the manufacturer.

2. Maintain a transit, level and accessories on the job to lay out angles and ensure that deflection allowances are not exceeded.
- D. **Expediting of Work:** Excavate, lay the pipe, and backfill as closely together as possible. Do not leave unjointed pipe in the trench overnight. Backfill and compact the trench as soon as possible after laying and jointing is completed. Cover the exposed end of the installed pipe each day at the close of work and at all other times when work is not in progress. If necessary to backfill over the end of an uncompleted pipe or accessory, close the end with a suitable plug, either push-on, mechanical joint, restrained joint or as approved by the Engineer.
- E. **Joint Assembly**
1. Push-on, mechanical, flange and restrained type joints shall be assembled in accordance with the manufacturer's recommendations.
 2. The Contractor shall inspect each pipe joint within 200 feet on either side of main line valves to insure 100 percent seating of the pipe spigot, except as noted otherwise.
 3. Each restrained joint shall be inspected by the Contractor to ensure that it has been "homed" 100 percent.
 4. The Contractor shall internally inspect each pipe joint to insure proper assembly for pipe 24-inches in diameter and larger after the pipe has been brought to final alignment.
- F. **Cutting Pipe:** Cut ductile iron pipe using an abrasive wheel saw. Cut PVC pipe using a suitable saw; remove all burrs and smooth the end before jointing. The Contractor shall cut the pipe and bevel the end, as necessary, to provide the correct length of pipe necessary for installing the fittings, valves, accessories and closure pieces in the correct location. Only push-on or mechanical joint pipe shall be cut.
- G. **Polyethylene Encasement:** Installation shall be in accordance with AWWA C105 and the manufacturer's instructions. All ends shall be securely closed with tape and all damaged areas shall be completely repaired to the satisfaction of the Engineer.
- H. **Valve and Fitting Installation**
1. Prior to installation, valves shall be inspected for direction of opening, number of turns to open, freedom of operation, tightness of

pressure-containing bolting and test plugs, cleanliness of valve ports and especially seating surfaces, handling damage and cracks. Defective valves shall be corrected or held for inspection by the Engineer. Valves shall be closed before being installed.

2. Valves, fittings, plugs and caps shall be set and joined to the pipe in the manner specified in this Section for cleaning, laying and joining pipe, except that 12-inch and larger valves shall be provided with special support, such as treated timbers, crushed stone, concrete pads or a sufficiently tamped trench bottom so that the pipe will not be required to support the weight of the valve. Valves shall be installed in the closed position.
3. A valve box shall be provided on each underground valve. They shall be carefully set, centered exactly over the operating nut and truly plumbed. The valve box shall not transmit shock or stress to the valve. The bottom flange of the lower belled portion of the box shall be placed below the valve operating nut. This flange shall be set on brick, so arranged that the weight of the valve box and superimposed loads will bear on the base and not on the valve or pipe. Extension stems shall be installed where depth of bury places the operating nut in excess of 30-inches beneath finished grade so as to set the top of the operating nut 30-inches below finished grade. The valve box cover shall be flush with the surface of the finished area or such other level as directed by the Engineer.
4. In no case shall valves be used to bring misaligned pipe into alignment during installation. Pipe shall be supported in such a manner as to prevent stress on the valve.
5. A valve marker shall be provided for each underground valve. Unless otherwise detailed on the Drawings or directed by the Engineer, valve markers shall be installed 6-inches inside the right-of-way or easement.

I. Hydrant Installation

1. Prior to installation, inspect all hydrants for direction of opening, nozzle threading, operating nut and cap nut dimensions, tightness of pressure-containing bolting, cleanliness of inlet elbow, handling damage and cracks. Defective hydrants shall be corrected or held for inspection by the Engineer.
2. All hydrants shall stand plumb and shall have their nozzles parallel with or at right angles to the roadway, with pumper nozzle facing the roadway,

except that hydrants having two-hose nozzles 90 degrees apart shall be set with each nozzle facing the roadway at an angle of 45 degrees.

3. Hydrants shall be set to the established grade, with the centerline of the lowest nozzle at least 12-inches above the ground or as directed by the Engineer.
4. Each hydrant shall be connected to the main with a 6-inch branch controlled by an independent 6-inch valve. When a hydrant is set in soil that is pervious, drainage shall be provided at the base of the hydrant by placing coarse gravel or crushed stone mixed with coarse sand from the bottom of the trench to at least 6-inches above the drain port opening in the hydrant to a distance of 12-inches around the elbow.
5. When a hydrant is set in clay or other impervious soil, a drainage pit 2 x 2 x 2 feet shall be excavated below each hydrant and filled with coarse gravel or crushed stone mixed with coarse sand under and around the elbow of the hydrant and to a level of 6-inches above the drain port.
6. Hydrants shall be located as shown on the Drawings or as directed by the Engineer. In the case of hydrants that are intended to fail at the ground-line joint upon vehicle impact, specific care must be taken to provide adequate soil resistance to avoid transmitting shock moment to the lower barrel and inlet connection. In loose or poor load bearing soil, this may be accomplished by pouring a concrete collar approximately 6-inches thick to a diameter of 24-inches at or near the ground line around the hydrant barrel.

3.06 CONNECTIONS TO WATER MAINS

- A. Make connections to existing pipe lines with tapping sleeves and valves, unless specifically shown otherwise on the Drawings.
- B. Location: Before laying pipe, locate the points of connection to existing water mains and uncover as necessary for the Engineer to confirm the nature of the connection to be made.
- C. Interruption of Services: Make connections to existing water mains only when system operations permit. Operate existing valves only with the specific authorization and direct supervision of the Owner.
- D. Tapping Saddles and Tapping Sleeves

1. Holes in the new pipe shall be machine cut, either in the field or at the factory. No torch cutting of holes shall be permitted.
 2. Prior to attaching the saddle or sleeve, the pipe shall be thoroughly cleaned, utilizing a brush and rag, as required.
 3. Before performing field machine cut, the watertightness of the saddle or sleeve assembly shall be pressure tested. The interior of the assembly shall be filled with water. An air compressor shall be attached, which will induce a test pressure as specified in this Section. No leakage shall be permitted for a period of five minutes.
 4. After attaching the saddle or sleeve to an existing main, but prior to making the tap, the interior of the assembly shall be disinfected. All surfaces to be exposed to potable water shall be swabbed or sprayed with a one percent hypochlorite solution.
- E. Connections Using Solid Sleeves: Where connections are shown on the Drawings using solid sleeves, the Contractor shall furnish materials and labor necessary to make the connection to the existing pipe line.
- F. Connections Using Couplings: Where connections are shown on the Drawings using couplings, the Contractor shall furnish materials and labor necessary to make the connection to the existing pipe line, including all necessary cutting, plugging and backfill.

3.07 VALVE BOX ADJUSTMENT (Not Used)

3.08 THRUST RESTRAINT

- A. Provide restraint at all points where hydraulic thrust may develop.
- B. Concrete Blocking
 1. Provide concrete blocking for all bends, tees, valves, and other points where thrust may develop, except where other exclusive means of thrust restraint are specifically shown on the Drawings.
 2. Concrete shall be as specified in this Section.
 3. Form and pour concrete blocking at fittings as shown on the Drawings and as directed by the Engineer. Pour blocking against undisturbed earth. Increase dimensions when required by over excavation.

3.09 INSPECTION AND TESTING**A. Pressure and Leakage Test**

1. All sections of the water main subject to internal pressure shall be pressure tested in accordance with AWWA C600. A section of main will be considered ready for testing after completion of all thrust restraint and backfilling.
2. Each segment of water main between main valves shall be tested individually.
3. Test Preparation
 - a. For water mains less than 24-inches in diameter, flush sections thoroughly at flow velocities, greater than 2.5 feet per second, adequate to remove debris from pipe and valve seats. For water mains 24-inches in diameter and larger, the main shall be carefully swept clean, and mopped if directed by the Engineer. Partially open valves to allow the water to flush the valve seat.
 - b. Partially operate valves and hydrants to clean out seats.
 - c. Provide temporary blocking, bulkheads, flanges and plugs as necessary, to assure all new pipe, valves and appurtenances will be pressure tested.
 - d. Before applying test pressure, air shall be completely expelled from the pipeline and all appurtenances. Insert corporation cocks at highpoints to expel air as main is filled with water as necessary to supplement automatic air valves. Corporation stops shall be constructed as detailed on the Drawings with a meter box.
 - e. Fill pipeline slowly with water. Provide a suitable pump with an accurate water meter to pump the line to the specified pressure.
 - f. The differential pressure across a valve or hydrant shall equal the maximum possible, but not exceed the rated working pressure. Where necessary, provide temporary backpressure to meet the differential pressure restrictions.
 - g. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure.
4. Test Pressure: Test the pipeline at 50 psi above the rated working pressure measured at the lowest point for at least two hours. Maintain the test pressure within 5 psi of the specified test pressure for the test duration. Should the pressure drop more than 5 psi at any time during the test period,

the pressure shall be restored to the specified test pressure. Provide an accurate pressure gage with graduation not greater than 5 psi.

5. Leakage

- a. Leakage shall be defined as the sum of the quantity of water that must be pumped into the test section, to maintain pressure within 5 psi of the specified test pressure for the test duration plus water required to return line to test pressure at the end of the test. Leakage shall be the total cumulative amount measured on a water meter.
- b. The Owner assumes no responsibility for leakage occurring through existing valves.

6. Test Results: No test section shall be accepted if the leakage exceeds the limits determined by the following formula:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

Where:	L	=	allowable leakage, in gallons per hour
	S	=	length of pipe tested, in feet
	D	=	nominal diameter of the pipe, in inches
	P	=	average test pressure during the leakage test, in pounds per square inch (gauge)

As determined under Section 4 of AWWA C600.

If the water main section being tested contains lengths of various pipe diameters, the allowable leakage shall be the sum of the computed leakage for each diameter. The leakage test shall be repeated until the test section is accepted. All visible leaks shall be repaired regardless of leakage test results.

7. Completion: After a pipeline section has been accepted, relieve test pressure. Record type, size and location of all outlets on record drawings.

3.10 DISINFECTING PIPELINE

- A. After successfully pressure testing each pipeline section, disinfect in accordance with AWWA C651 for the continuous-feed method and these Specifications.
- B. Specialty Contractor: Disinfection shall be performed by an approved specialty contractor. Before disinfection is performed, the Contractor shall submit a written procedure for approval before being permitted to proceed with the disinfection. This plan shall also include the steps to be taken for the neutralization of the chlorinated water.

C. Chlorination

1. Apply chlorine solution to achieve a concentration of at least 50 milligrams per liter free chlorine in new line. Retain chlorinated water for 24 hours.
2. Chlorine concentration shall be recorded at every outlet along the line at the beginning and end of the 24 hour period.
3. After 24 hours, all samples of water shall contain at least 25 milligrams per liter free chlorine. Re-chlorinate if required results are not obtained on all samples.

D. Disposal of Chlorinated Water: Reduce chlorine residual of disinfection water to less than one milligram per liter if discharged directly to a body of water or to less than two milligrams per liter if discharged onto the ground prior to disposal. Treat water with sulfur dioxide or other reducing chemicals to neutralize chlorine residual. Flush all lines until residual is equal to existing system.

E. Bacteriological Testing: After final flushing and before the main is placed into service, the Contractor shall assist the Owner in collecting samples from the line to have tested for bacteriological quality. Testing shall be performed by the Owner at a laboratory certified by the State of Kentucky. Re-chlorinate lines until the required results are obtained.

3.11 PROTECTION AND RESTORATION OF WORK AREA

A. General: Return all items and all areas disturbed, directly or indirectly by work under these Specifications, to their original condition or better, as quickly as possible after work is started.

1. The Contractor shall plan, coordinate, and prosecute the work such that disruption to personal property and business is held to a practical minimum.
2. All construction areas abutting lawns and yards of residential or commercial property shall be restored promptly. Backfilling of underground facilities, ditches, and disturbed areas shall be accomplished on a daily basis as work is completed. Finishing, dressing, and grassing shall be accomplished immediately thereafter, as a continuous operation within each area being constructed and with emphasis placed on completing each individual yard or business frontage. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.

3. Handwork, including raking and smoothing, shall be required to ensure that the removal of roots, sticks, rocks, and other debris is removed in order to provide a neat and pleasing appearance.
 4. The Department of Transportation's engineer shall be authorized to stop all work by the Contractor when restoration and cleanup are unsatisfactory and to require appropriate remedial measures.
- B. Man-Made Improvements: Protect, or remove and replace with the Engineer's approval, all fences, walkways, mail boxes, pipe lines, drain culverts, power and telephone lines and cables, property pins and other improvements that may be encountered in the Work.
 - C. Cultivated Growth: Do not disturb cultivated trees or shrubbery unless approved by the Engineer. Any such trees or shrubbery which must be removed shall be heeled in and replanted under the direction of an experienced nurseryman.
 - D. Cutting of Trees: Do not cut trees for the performance of the work except as absolutely necessary. Protect trees that remain in the vicinity of the work from damage from equipment. Do not store spoil from excavation against the trunks. Remove excavated material stored over the root system of trees within 30 days to allow proper natural watering of the root system. Repair any damaged tree over 3-inches in diameter, not to be removed, under the direction of an experienced nurseryman. All trees and brush that require removal shall be promptly and completely removed from the work area and disposed of by the Contractor. No stumps, wood piles, or trash piles will be permitted on the work site.
 - E. Disposal of Rubbish: Dispose of all materials cleared and grubbed during the construction of the Project in accordance with the applicable codes and rules of the appropriate county, state and federal regulatory agencies.

3.12 ABANDONING EXISTING WATER MAINS (Not Used)

END OF SECTION



SECTION 02933

Seeding

PART 1 GENERAL

1.1 SCOPE

- A. The work covered by this section shall include the establishment of all ground cover including areas to be seeded and sodded. This work shall include the supply of all materials, labor, superintendence and maintenance as outlined in these specifications.
- B. The part of the site not covered by roads, walks, building, etc. shall be seeded according to these specifications. The areas to be sodded shall include a three foot strip immediately adjacent to all roads, walks, and structures, etc.

PART 2 PRODUCTS

2.1 LIME

- A. Agriculture lime shall be spread over the entire area to be planted at an average rate of one (1) ton per acre. One tillage operation shall incorporate both the lime and the fertilizer into the soil to a depth of four inches (4").

2.2 FERTILIZER

- A. Two fertilizer materials shall be applied to all areas to be seeded. The first shall be complete commercial fertilizer with 1:2:2 ratio of nitrogen, phosphorus, and potassium. Eight hundred pounds (800 lbs) per acre of a 6-12-12 fertilizer, or equivalent amount of another 1:2:2 ratio fertilizer shall be used.
- B. In addition to a complete fertilizer, a slowly available nitrogen fertilizer shall be applied. Two hundred fifty pounds (250 lbs.) per acre of urea formaldehyde (38-0-0) shall be used.
- C. Both fertilizer materials shall be free flowing and suitable for application with approved equipment. Each material shall conform to State fertilizer laws. Bagged fertilizer shall be delivered in sealed standard containers and shall bear the name, trademark, and warranty of the producer. The fertilizers shall be incorporated into the surface four inches (4") by tillage.

2.3 SEED

- A. Grass seed shall be fresh, clean and new crop seed composed of the following varieties mixed in the proportion by weight as shown and shall be certified as to varietal purity. All seed shall be mixed by a dealer furnished in sealed standard containers, and tagged with the dealer's guaranteed statement of composition of mixture and percentage of purity and germination. All areas disturbed by construction activity shall be seeded within the following blend at a rate of two hundred pounds (200 lbs.) per acre (4.6 pounds per 1000 square feet).
- B. The quality of seed shall conform to or exceed the minimum requirement for seed quality of the Kentucky Seed Improvement Association and shall meet or exceed the following standards for purity and germination:

Variety	Min% Purity/Germ	Wt.%	Seeding Rate Pounds Per Acre
Kentucky Bluegrass-Kenblue	98/80	20	40
Creeping Red Fescue-Pennlawn	98/85	70	140
Perennial Ryegrass	95/90	10	20

2.4 MULCH

- A. Mulch for hydroseeding shall be natural wood cellulose fiber or wood pulp which disperses readily in water and which has no toxic effect when combined with seed or other materials. It shall be a commercially available product made for use in spray applicators. Wood cellulose mulch shall be applied at a rate of 1000 lbs. per acre when work is done in the spring or fall season as defined below and 1500 pounds per acre when work is done during summer months.

2.5 SOD

- A. Sod shall be bluegrass sod strongly rooted and free of pernicious weeds. It shall be a uniform thickness of not more than 1 1/2" and shall have not less than 3/4" of soil. All sod shall be grown on a commercial turf farm and no pasture sod shall be acceptable. The source of the sod must be approved by the Engineer before it is cut for delivery.

PART 3 EXECUTION

3.1 PLANTING SEASON

- A. The normal seasonal dates for seeding mixtures containing Kentucky Bluegrass or tall fescue shall be August 15 to October 15 and from the time the soil is workable in the spring to May 1. Seeding of a specified grass variety at times other than the normal seasonal dates must be approved by the Engineer. Seeding shall not be done during windy weather or when the ground is excessively wet, frozen or otherwise untillable.

3.2 SOIL PREPARATION

- A. All areas shall be graded to surface drain as shown on the plans. The lime and fertilizer shall be applied at the rates specified above and tilled into the surface 4 inches with approved tillage equipment to provide a reasonably firm, but friable seedbed.
- B. All areas to be seeded or sodded shall meet the specified grades, and be free of any weed or undesirable plant growth or debris.
- C. Lime and fertilizer for all areas shall be applied at the rate specified and incorporated into the top four inches by approved tillage equipment. The seed and wood cellulose mulch shall then be mixed with adequate water to produce a slurry and then applied uniformly with a hydroseeder at the rates specified above. Any area inadequately covered shall be redone as directed by the Engineer.

3.3 MAINTENANCE OF SEEDED AREAS:

- A. The Contractor shall maintain seeded areas until they have been mowed two times and then he shall repair eroded areas one time after the second mowing. Each mowing shall be when the grass is about four inches (4") high and cut back to about 2 1/2". After the second mowing, the Contractor shall notify the Engineer that he is ready to repair erosion damage so that an inspection can be scheduled when the erosion repair work is complete. Once the erosion areas have been filled with topsoil, fertilized, seeded and mulched and the work has been inspected and approved by the Engineer, the work under this section is complete. Any further erosion repair work necessary will be treated as an extra and shall be done only when authorized by the Engineer.

3.4 CARE DURING CONSTRUCTION

- A. The Contractor shall be responsible for repair to turf areas damaged by his equipment or men until all work is accepted. Temporary haul roads and storage areas shall be tilled to depth of four inches (4") and fertilized, seeded and mulched as specified above.

END OF SECTION

SECTION 02957
Erosion Control and Stabilization

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes provisions for erosion control and stabilization.

PART 2 PRODUCTS

2.1 EROSION CONTROL

- A. All drainage paths and swales to be cut, graded, and seeded prior to any utilities trenching.
- B. All drainage paths and excavated areas to be mulched upon completion of seeding. Straw bales are to be staked perpendicular to flow in bottom of swale every 100 feet along drainage swale route. Straw bales to remain in swale route until a substantial growth of grass has been established. Straw bales are to be staked around all inlet rims where swale lines are excavated to route storm water flow into inlet.
- C. Erosion control requires immediate seeding and mulching of any stripped and unvegetated areas, including unpaved right-of-ways.

2.2 SEEDING

- A. A leguminous inoculated seed mixture shall be used for all seed areas. Class of seeding as follows:

1. Mixture A: shall be used for all drainage paths, swales, side slopes, and all other areas where existing lawn is disturbed during construction.

Seed mixture shall be as follows:

2 lbs./1000 sq. ft. - Chewings Fescue
2 lbs./1000 sq. ft. - Kentucky Bluegrass
2 lbs./1000 sq. ft. - Perennial Rye

Seed shall be sown at a rate of 6 lbs. per 1000 sq. ft. of area.

2. Mixture B: shall be for all areas disturbed by excavation and re-grading as seasonal or temporary cover in bare areas.

Seed mixture shall be as follows:

1 lb./1000 sq. ft. - Perennial Rye
1 lb./1000 sq. ft. - Annual Rye

Seed shall be sown at a rate of 4 lbs. per 1000 sq. ft. of area.

3. Mixture C: shall be used for all lake or pond banks.

Seed mixture shall be as follows:

20% Perennial Ryegrass
15% Kentucky Bluegrass
15% Creeping Red Fescue
50% Nutri-Kote plus Apron fungicide seed coating.

Seed shall be sown at a rate of 5 lbs. per 1000 sq. ft. of area.

2.3 FERTILIZER

- A. Apply a minimum of 600 lbs. of 12-12-12 fertilizer per acre.

2.4 MULCH

- A. Mulch shall consist of clean, seed-free threshed straw of wheat, rye, oats, or barley. Spread mulch uniformly to form a continuous blanket not less than 1.5 inches loose measurement over "Mixture A" and "Mixture C" seeded areas.
- B. The mulch shall be held in place by being mechanically crimped into the soil, tackified with a bio-degradable tackifier, or netted and stapled to the soil with degradable netting. The mulch should be applied at a minimum rate of 1500 lbs. per acre.

2.5 STRAW TACKIFIER - MULCH TACKIFIER

- A. The tackifier shall be a naturally derived product from all organic sources resulting in a strong resilient muciloid, non-bitumen M-Binder. The product can be used in a hydro-seeder with both 100% Virgin Wood Fiber or Paper Wood Cellulose mulch and can be sprayed on 100% Wheat Straw Mulch for stabilization from the wind. Application rates vary between 60-140 lbs. per acre depending upon the existing conditions. The product shall be packed in 40 lbs. fiber bags.

Technical Specifications:

Protein Content	1.62
Ash Content	2.7
Fiber	4.0
pH of 1% Solution	6.8
Settleable Solids	5.0

- B. Erosion control requires immediate seeding and mulching of any stripped and un-vegetated areas, including unpaved right-of-ways.

PART 3 (NOT USED)

END OF SECTION



SECTION 03300
Cast-in-place Concrete

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.
- B. Cast-in-place concrete includes the following:
 - 1. Foundations and footings.
 - 2. Slabs-on-grade.
 - 3. Fill for steel deck.
 - 4. Foundation walls.
 - 5. Shear walls.
 - 6. Load-bearing building walls.
 - 7. Building frame members.
 - 8. Equipment pads and bases.
 - 9. Fill for steel pan stairs.

1.3 SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others if requested by Engineer.
- C. Shop drawings for reinforcement detailing fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, bent bar diagrams, and arrangement of concrete reinforcement. Include special reinforcing required for openings through concrete structures.
- D. Shop drawings for formwork indicating fabrication and erection of forms for specific

Cast-in-place Concrete

finished concrete surfaces. Show form construction including jointing, special form joints or reveals, location and pattern of form tie placement, and other items that affect exposed concrete visually.

1. Engineer's review is for general applications and features only. Designing formwork for structural stability and efficiency is Contractor's responsibility.

E. Samples of materials as requested by Engineer, including names, sources, and descriptions, as follows:

1. Color finishes.
2. Normal weight aggregates.
3. Fiber reinforcement.
4. Reglets.
5. Waterstops.
6. Vapor retarder/barrier.
7. Form liners.

F. Laboratory test reports for concrete materials and mix design test.

G. Material certificates in lieu of material laboratory test reports when permitted by Engineer. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."
2. ACI 318, "Building Code Requirements for Reinforced Concrete."
3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."

B. Concrete Testing Service: Engage a testing agency acceptable to Engineer to perform material evaluation tests and to design concrete mixes.

C. Materials and installed work may require testing and retesting at any time during progress of Work. Tests, including retesting of rejected materials for installed Work, shall be done at Contractor's expense.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
- B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Textured Finish Concrete: Units of face design, size, arrangement, and configuration to match control sample. Provide solid backing and form supports to ensure stability of textured form liners.
- D. Forms for Cylindrical Columns and Supports: Metal, glass-fiber-reinforced plastic, or paper or fiber tubes that will produce smooth surfaces without joint indications. Provide units with sufficient wall thickness to resist wet concrete loads without deformation.
- E. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to support weight of placed concrete without deformation.
- F. Carton Forms: Biodegradable paper surface, treated for moisture-resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- G. Form Release Agent: Provide commercial formulation form release agent with a maximum of 350 g/L volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- H. Form Ties: Factory-fabricated, adjustable-length, stainless steel, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling of concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches (38 mm) to the plane of the exposed concrete surface.
 - 1. Provide ties that, when removed, will leave holes not larger than 1 inch (25 mm) in diameter in the concrete surface. Use only stainless material.

2.2 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615 Grade 60 (ASTM A 615M Grade 400), deformed.

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- B. Galvanized Reinforcing Bars: ASTM A 767 (ASTM A 767M), Class II [2.0 oz. zinc psf (610 g/sq. m)], hot-dip galvanized after fabrication and bending.
- C. Epoxy-Coated Reinforcing Bars: ASTM A 775 (ASTM A 775M).
- D. Steel Wire: ASTM A 82, plain, cold-drawn steel.
- E. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.
- F. Deformed-Steel Welded Wire Fabric: ASTM A 497.
- G. Epoxy-Coated Welded Wire Fabric: ASTM A 884, Class A.
- H. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar-type supports complying with CRSI specifications.
 - 1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with legs that are protected by plastic (CRSI, Class 1) or stainless steel (CRSI, Class 2).

2.3 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
 - 1. Use one brand of cement throughout Project.
- B. Fly Ash: ASTM C 618, Type F.
- C. Normal-Weight Aggregates: ASTM C 33 and as specified. Provide aggregates from a single source for exposed concrete.
 - 1. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling.
 - 2. Local aggregates not complying with ASTM C 33 that have been shown to produce concrete of adequate strength and durability by special tests or actual service may be used when acceptable to Engineer..
- D. Lightweight Aggregates: ASTM C 330.

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- E. Water: Potable.
- F. Fiber Reinforcement: Polypropylene fibers engineered and designed for secondary reinforcement of concrete slabs, complying with ASTM C 1116, Type III, not less than 3/4 inch long.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Gilco Fibers, Cormix Construction Chemicals.
 - b. Durafiber, Durafiber Corp.
 - c. Fiberstrand 100, Euclid Chemical Co.
 - d. Fibermesh, Fibermesh Co., Div. Synthetic Industries, Inc.
 - e. Forta, Forta Corp.
 - f. Grace Fibers, W.R. Grace & Co.
 - g. Polystrand, Metalcrete Industries
- G. Admixtures, General: Provide concrete admixtures that contain not more than 0.1 percent chloride ions.
- H. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Air-Tite, Cormix Construction Chemicals.
 - b. Air-Mix or Perma-Air, Euclid Chemical Co.
 - c. Darex AEA or Daravair, W.R. Grace & Co.
 - d. MB-VR or Micro-Air, Master Builders, Inc.
 - e. Sealtight AEA, W.R. Meadows, Inc.
 - f. Sika AER, Sika Corp.
- I. Water-Reducing Admixture: ASTM C 494, Type A.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Chemtard, ChemMasters Corp.
 - b. PSI N, Cormix Construction Chemicals.
 - c. Eucon WR-75, Euclid Chemical Co.
 - d. WRDA, W.R. Grace & Co.

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- e. Pozzolith Normal or Polyheed, Master Builders, Inc.
- f. Metco W.R., Metalcrete Industries.
- g. Prokrete-N, Prokrete Industries.
- h. Plastocrete 161, Sika Corp.

J. High-Range Water-Reducing Admixture: ASTM C 494, Type F or Type G.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Super P, Anti-Hydro Co., Inc.
 - b. Cormix 200, Cormix Construction Chemicals.
 - c. Eucon 37, Euclid Chemical Co.
 - d. WRDA 19 or Daracem, W.R. Grace & Co.
 - e. Rheobuild or Polyheed, Master Builders, Inc.
 - f. Superslump, Metalcrete Industries.
 - g. PSPL, Prokrete Industries.
 - h. Sikament 300, Sika Corp.

K. Water-Reducing, Accelerating Admixture: ASTM C 494, Type E.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Q-Set, Conspec Marketing & Manufacturing Co.
 - b. Lubricon NCA, Cormix Construction Chemicals.
 - c. Accelguard 80, Euclid Chemical Co.
 - d. Daraset, W.R. Grace & Co.
 - e. Pozzutec 20, Master Builders, Inc.
 - f. Accel-Set, Metalcrete Industries.

L. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. PSI-R Plus, Cormix Construction Chemicals.
 - b. Eucon Retarder 75, Euclid Chemical Co.
 - c. Daratard-17, W.R. Grace & Co.
 - d. Pozzolith R, Master Builders, Inc.
 - e. Protard, Prokrete Industries.
 - f. Plastiment, Sika Corporation.

2.4 RELATED MATERIALS

- A. Reglets: Where sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than 0.0217- inch- (0.46-mm-) thick galvanized sheet steel. Fill reglet or cover face opening to prevent intrusion of concrete or debris.
- B. Dovetail Anchor Slots: Hot-dip galvanized sheet steel, not less than 0.0336 inch thick (0.76 mm) with bent tab anchors. Fill slot with temporary filler or cover face opening to prevent intrusion of concrete or debris.
- C. Waterstops: Provide flat, dumbbell-type or centerbulb-type waterstops at construction joints and other joints as indicated. Size to suit joints.
- D. Rubber Waterstops: Corps of Engineers CRD-C 513.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. The Burke Co.
 - b. Progress Unlimited.
 - c. Williams Products, Inc.
- E. Polyvinyl Chloride Waterstops: Corps of Engineers CRD-C 572.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. The Burke Co.
 - b. Greenstreak Plastic Products Co.
 - c. W.R. Meadows, Inc.
 - d. Progress Unlimited.
 - e. Schlegel Corp.
 - f. Vinylex Corp.
- F. Sand Cushion: Clean, manufactured or natural sand.
- G. Vapor Retarder: Provide vapor retarder that is resistant to deterioration when tested according to ASTM E 154, as follows:

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1. Polyethylene sheet not less than 8 mils (0.2 mm) thick.
- H. Vapor Barrier: Premolded seven-ply membrane consisting of reinforced core and carrier sheet with fortified bitumen layers, protective weathercoating, and plastic antistick sheet. Water vapor transmission rate of 1 perm when tested according to ASTM E 96, Method B. Provide manufacturer's recommended mastics and gusset tape.
1. Product: Subject to compliance with requirements, provide Sealtight Premoulded Membrane by W.R. Meadows, Inc.
- I. Nonslip Aggregate Finish: Provide fused aluminum oxide granules or crushed emery as the abrasive aggregate for a nonslip finish, with emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide. Use material that is factory-graded, packaged, rustproof, nonglazing, and unaffected by freezing, moisture, and cleaning materials.
- J. Colored Wear-Resistant Finish: Packaged dry combination of materials consisting of portland cement, graded quartz aggregate, coloring pigments, and plasticizing admixture. Use coloring pigments that are finely ground nonfading mineral oxides interground with cement. Color as selected by Owner from manufacturers' standards, unless otherwise indicated.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Conshake 600 Colortone, Conspec Marketing & Mfg. Co.
 - b. Floorcron, Cormix Construction Chemicals.
 - c. Quartz Tuff, Dayton-Superior.
 - d. Surfex, Euclid Chemical Co.
 - e. Colorundum, A.C. Horn, Inc.
 - f. Quartz Plate, L&M Construction Chemicals, Inc.
 - g. Colorcron, Master Builders, Inc.
 - h. Floor Quartz, Metalcrete Industries
 - i. Lithochrome Color Hardener, L.M. Scofield Co.
 - j. Harcol Redi-Mix, Sonneborn-Chemrex.
 - k. Hard Top, Symons Corp.
- K. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m), complying with AASHTO M 182, Class 2.
- L. Moisture-Retaining Cover: One of the following, complying with ASTM C 171.

1. Waterproof paper.
 2. Polyethylene film.
 3. Polyethylene-coated burlap.
- M. Liquid Membrane-Forming Curing Compound: Liquid-type membrane-forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.55 kg/sq. m when applied at 200 sq. ft./gal (4.9 sq. m/L).
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. A-H 3 Way Sealer, Anti-Hydro Co., Inc.
 - b. Spartan-Cote, The Burke Co.
 - c. Conspec #1, Conspec Marketing & Mfg. Co.
 - d. Sealco 309, Cormix Construction Chemicals.
 - e. Day-Chem Cure and Seal, Dayton Superior Corp.
 - f. Eucocure, Euclid Chemical Co.
 - g. Horn Clear Seal, A.C. Horn, Inc.
 - h. L&M Cure R, L&M Construction Chemicals, Inc.
 - i. Masterkure, Master Builders, Inc.
 - j. CS-309, W.R. Meadows, Inc.
 - k. Seal N Kure, Metalcrete Industries.
 - l. Kure-N-Seal, Sonneborn-Chemrex.
 - m. Stontop CS2, Stonhard, Inc.
- N. Water-Based Acrylic Membrane Curing Compound: ASTM C 309, Type I, Class B.
1. Provide material that has a maximum volatile organic compound (VOC) rating of 350 g/L.
 2. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Highseal, Conspec Marketing and Mfg. Co.
 - b. Sealco - VOC, Cormix Construction Chemicals.
 - c. Safe Cure and Seal, Dayton Superior Corp.
 - d. Aqua-Cure, Euclid Chemical Co.
 - e. Dress & Seal WB, L&M Construction Chemicals, Inc.
 - f. Masterkure 100W, Master Builders, Inc.
 - g. Vocomp-20, W.R. Meadows, Inc.
 - h. Metcure, Metalcrete Industries.
 - i. Stontop CS1, Stonhard, Inc.

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- O. Evaporation Control: Monomolecular film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Aquafilm, Conspec Marketing and Mfg. Co.
 - b. Eucobar, Euclid Chemical Co.
 - c. E-Con, L&M Construction Chemicals, Inc.
 - d. Confilm, Master Builders, Inc.
 - e. Waterhold, Metalcrete Industries.
- P. Underlayment Compound: Free-flowing, self-leveling, pumpable, cement-based compound for applications from 1 inch (25 mm) thick to feathered edges.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. K-15, Ardex, Inc.
 - b. Self-Leveling Wear Topping, W.R. Bonsal Co.
 - c. Conflow, Conspec Marketing and Mfg. Co.
 - d. Corlevel, Cormix Construction Chemicals.
 - e. LevelLayer II, Dayton Superior Corp.
 - f. Flo-Top, Euclid Chemical Co.
 - g. Gyp-Crete, Gyp-Crete Corp.
 - h. Levelex, L&M Construction Chemicals, Inc.
 - i. Underlayment 110, Master Builders, Inc.
 - j. Stoncrete UL1, Stonhard, Inc.
 - k. Concrete Top, Symons Corp.
 - l. Thoro Underlayment Self-Leveling, Thoro System Products.
- Q. Bonding Agent: Polyvinyl acetate or acrylic base.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Polyvinyl Acetate (Interior Only):
 - 1) Superior Concrete Bonder, Dayton Superior Corp.
 - 2) Euco Weld, Euclid Chemical Co.
 - 3) Weld-Crete, Larsen Products Corp.

- 4) Everweld, L&M Construction Chemicals, Inc.
 - 5) Herculox, Metalcrete Industries.
 - 6) Ready Bond, Symons Corp.
- b. Acrylic or Styrene Butadiene:
- 1) Acrylic Bondcrete, The Burke Co.
 - 2) Strongbond, Conspec Marketing and Mfg. Co.
 - 3) Day-Chem Ad Bond, Dayton Superior Corp.
 - 4) SBR Latex, Euclid Chemical Co.
 - 5) Daraweld C, W.R. Grace & Co.
 - 6) Hornweld, A.C. Horn, Inc.
 - 7) Everbond, L&M Construction Chemicals, Inc.
 - 8) Acryl-Set, Master Builders Inc.
 - 9) Intralok, W.R. Meadows, Inc.
 - 10) Acrylpave, Metalcrete Industries.
 - 11) Sonocrete, Sonneborn-Chemrex.
 - 12) Stonlock LB2, Stonhard, Inc.
 - 13) Strong Bond, Symons Corp.
- R. Epoxy Adhesive: ASTM C 881, two-component material suitable for use on dry or damp surfaces. Provide material type, grade, and class to suit Project requirements.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Burke Epoxy M.V., The Burke Co.
 - b. Spec-Bond 100, Conspec Marketing and Mfg. Co.
 - c. Resi-Bond (J-58), Dayton Superior.
 - d. Euco Epoxy System #452 or #620, Euclid Chemical Co.
 - e. Epoxite Binder 2390, A.C. Horn, Inc.
 - f. Epabond, L&M Construction Chemicals, Inc.
 - g. Concrevice Standard Liquid, Master Builders, Inc.
 - h. Rezi-Weld 1000, W.R. Meadows, Inc.
 - i. Metco Hi-Mod Epoxy, Metalcrete Industries.
 - j. Sikadur 32 Hi-Mod, Sika Corp.
 - k. Stonset LV5, Stonhard, Inc.
 - l. R-600 Series, Symons Corp.

2.5 PROPORTIONING AND DESIGNING MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial

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batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to Engineer for preparing and reporting proposed mix designs.

1. Do not use the same testing agency for field quality control testing.
 2. Limit use of fly ash to not exceed 25 percent of cement content by weight.
- B. Submit written reports to Engineer of each proposed mix for each class of concrete prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed.
- C. Design mixes to provide normal weight concrete with the following properties as indicated on drawings and schedules:
1. 4000 psi (27.6 MPa), 28-day compressive strength; water-cement ratio, 0.44 maximum (non-air-entrained), 0.35 maximum (air-entrained).
- D. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:
1. Subjected to freezing and thawing: W/C 0.45.
 2. Subjected to deicers/watertight: W/C 0.40.
 3. Subjected to brackish water, salt spray, or deicers: W/C 0.40.
- E. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
1. Ramps, slabs, and sloping surfaces: Not more than 3 inches (75 mm).
 2. Reinforced foundation systems: Not less than 1 inch (25 mm) and not more than 3 inches (75 mm).
 3. Concrete containing high-range water-reducing admixture (superplasticizer): Not more than 8 inches (200 mm) after adding admixture to site-verified 2 - 3 inch (50 - 75 mm) slump concrete.
 4. Other concrete: Not more than 4 inches (100 mm).
- F. Lightweight Structural Concrete: Lightweight aggregate and concrete shall conform to ASTM C 330. Proportion mix to produce concrete with a minimum compressive strength of 3000 psi (20.7) at 28 days and a calculated equilibrium unit weight of 110 pcf (1762 kg/cu. m) plus or minus 3 pcf (48.1 kg/cu. m) as determined by ASTM C 567. Concrete slump at the point of placement shall be the minimum necessary for efficient mixing, placing, and finishing. Maximum slump shall be 6 inches (150 mm) for pumped

concrete and 5 inches (125 mm) elsewhere. Air entrain concrete exposed to weather according to ACI 301 requirements.

- G. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Engineer before using in Work.
- H. Fiber Reinforcement: Add at manufacturer's recommended rate but not less than 1.5 lb/cu. yd. (0.9 kg/cu. m).

2.6 ADMIXTURES

- A. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
- B. Use accelerating admixture in concrete slabs placed at ambient temperatures below 50 deg F (10 deg C).
- C. Use high-range water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs, architectural concrete, parking structure slabs, concrete required to be watertight, and concrete with water-cement ratios below 0.50.
- D. Use air-entraining admixture in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within the following limits:
 - 1. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or hydraulic pressure:
 - a. 4.5 percent (moderate exposure); 5.5 percent (severe exposure) for 1-1/2 inch (38 mm) maximum aggregate.
 - b. 4.5 percent (moderate exposure); 6.0 percent (severe exposure) for 1 inch (25 mm) maximum aggregate.
 - c. 5.0 percent (moderate exposure); 6.0 percent (severe exposure) for 3/4 inch (19 mm) maximum aggregate.
 - d. 5.5 percent (moderate exposure); 7.0 percent (severe exposure) for 1/2 inch (13 mm) maximum aggregate.
 - 2. Other concrete not exposed to freezing, thawing, or hydraulic pressure, or to

- C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal.
- D. Provide temporary openings for clean-outs and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- E. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- F. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.3 VAPOR RETARDER/BARRIER INSTALLATION

- A. General: Place vapor retarder/barrier sheeting in position with longest dimension parallel with direction of pour.
- B. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended mastic or pressure-sensitive tape.
 - 1. Cover vapor retarder/barrier with sand cushion and compact to depth indicated.

3.4 PLACING REINFORCEMENT

- A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as specified.
 - 1. Avoiding cutting or puncturing vapor retarder/barrier during reinforcement placement and concreting operations. Repair damages before placing concrete.

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receive a surface hardener: 2 to 4 percent air.

- E. Use admixtures for water reduction and set accelerating or retarding in strict compliance with manufacturer's directions.

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements of ASTM C 94, and as specified.
 - 1. When air temperature is between 85 deg F (29 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 GENERAL

- A. Coordinate the installation of joint materials, vapor retarder/barrier, and other related materials with placement of forms and reinforcing steel.

3.2 FORMS

- A. General: Design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 limits:
 - 1. Provide Class A tolerances for concrete surfaces exposed to view.
 - 2. Provide Class C tolerances for other concrete surfaces.
- B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.

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- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved.
- D. Place reinforcement to maintain minimum coverages as indicated for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

- A. Construction Joints: Locate and install construction joints so they do not impair strength or appearance of the structure.
- B. Provide keyways at least 1-1/2 inches (38 mm) deep in construction joints in walls and slabs and between walls and footings. Bulkheads designed and accepted for this purpose may be used for slabs.
- C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as indicated otherwise. Do not continue reinforcement through sides of strip placements.
- D. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.
- E. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's printed instructions.
- F. Isolation Joints in Slabs-on-Grade: Construct isolation joints in slabs-on-grade at points of contact between slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
- G. Contraction (Control) Joints in Slabs-on-Grade: Construct contraction joints in slabs-on-grade to form panels of patterns as shown. Use saw cuts 1/8 inch (3 mm) wide by one-

fourth of slab depth or inserts 1/4 inch (6 mm) wide by one-fourth of slab depth, unless otherwise indicated.

1. Form contraction joints by inserting premolded plastic, hardboard, or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.
2. Contraction joints in unexposed floor slabs may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
3. If joint pattern is not shown, provide joints not exceeding 15 ft. (4.5 m) in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays).
4. Provide joint fillers and sealants.

3.6 INSTALLING EMBEDDED ITEMS

- A. General: Set and build into formwork anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached.
- B. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles, and other conditions.
- C. Install dovetail anchor slots in concrete structures as indicated on drawings.
- D. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.7 PREPARING FORM SURFACES

- A. General: Coat contact surfaces of forms with an approved, nonresidual, low-VOC, form-coating compound before placing reinforcement.
- B. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply according to manufacturer's instructions.

1. Coat steel forms with a nonstaining, rust-preventative material. Rust-stained steel formwork is not acceptable.

3.8 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.
- D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than 24 inches (600 mm) and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
 1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.
 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.
- E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until completing placement of a panel or section.
 1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement, other embedded items and into corners.
 2. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats or darbies to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

3. Maintain reinforcing in proper position on chairs during concrete placement.
- F. Cold-Weather Placement: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
- G. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
- H. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.
1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
 3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
 4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions.

3.9 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: Provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished Work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch (6 mm) in height rubbed down or chipped off.
- B. Smooth-Formed Finish: Provide a smooth-formed finish on formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or

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a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or another similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.

- C. **Smooth-Rubbed Finish:** Unless otherwise shown or scheduled, provide smooth-rubbed finish on all exposed, vertical concrete surfaces that have received smooth-formed finish treatment not later than 1 day after form removal.
 - 1. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

- D. **Grout-Cleaned Finish:** Provide grout-cleaned finish on scheduled concrete surfaces that have received smooth-formed finish treatment.
 - 1. Combine one part portland cement to one and one-half parts fine sand by volume, and a 50:50 mixture of acrylic or styrene butadiene-based bonding admixture and water to form the consistency of thick paint. Blend standard portland cement and white portland cement in amounts determined by trial patches so that final color of dry grout will match adjacent surfaces.
 - 2. Thoroughly wet concrete surfaces, apply grout to coat surfaces, and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

- E. **Related Unformed Surfaces:** At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 MONOLITHIC SLAB FINISHES

- A. **Scratch Finish:** Apply scratch finish to monolithic slab surfaces to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and where indicated.
 - 1. After placing slabs, finish surface to tolerances of F(F) 15 (floor flatness) and F(L) 13 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set with stiff brushes, brooms, or rakes.

- B. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as specified; slab surfaces to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo; and where indicated.
1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Finish surfaces to tolerances of F(F) 18 (floor flatness) and F(L) 15 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
- C. Trowel Finish: Apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or another thin film-finish coating system.
1. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and finish surfaces to tolerances of F(F) 20 (floor flatness) and F(L) 17 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Grind smooth any surface defects that would telegraph through applied floor covering system.
- D. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply a trowel finish as specified, then immediately follow by slightly scarifying the surface with a fine broom.
- E. Nonslip Broom Finish: Apply a nonslip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with before application.
- F. Nonslip Aggregate Finish: Apply nonslip aggregate finish to concrete stair treads, platforms, ramps, sloped walks, and where indicated.
1. After completing float finishing and before starting trowel finish, uniformly spread dampened nonslip aggregate at a rate of 25 lb per 100 sq. ft. (12 kg/10 sq. m) of

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surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as specified.

2. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose nonslip aggregate.

3.11 MISCELLANEOUS CONCRETE ITEMS

- A. **Filling In:** Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.
- B. **Curbs:** Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. **Equipment Bases and Foundations:** Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.
- D. **Steel Pan Stairs:** Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.12 CONCRETE CURING AND PROTECTION

- A. **General:** Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before power floating and troweling.
- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.
- C. **Curing Methods:** Cure concrete by curing compound, by moist curing, by moisture-retaining cover curing, or by combining these methods, as specified.

- D. Provide moisture curing by the following methods:
1. Keep concrete surface continuously wet by covering with water.
 2. Use continuous water-fog spray.
 3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with a 4 inch (100 mm) lap over adjacent absorptive covers.
- E. Provide moisture-retaining cover curing as follows:
1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches (75 mm) and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
- F. Apply curing compound on exposed interior slabs and on exterior slabs, walks, and curbs as follows:
1. Apply curing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
 2. Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.
- G. Curing Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces, by moist curing with forms in place for the full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.
- H. Curing Unformed Surfaces: Cure unformed surfaces, including slabs, floor topping, and other flat surfaces, by applying the appropriate curing method.
1. Final cure concrete surfaces to receive finish flooring with a moisture-retaining cover, unless otherwise directed.

3.13 SHORES AND SUPPORTS

- A. General: Comply with ACI 347 for shoring and reshoring in multistory construction, and as specified.

- B. Extend shoring from ground to roof for structures four stories or less, unless otherwise permitted.
- C. Extend shoring at least three floors under floor or roof being placed for structures over four stories. Shore floor directly under floor or roof being placed, so that loads from construction above will transfer directly to these shores. Space shoring in stories below this level in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members where no reinforcing steel is provided. Extend shores beyond minimums to ensure proper distribution of loads throughout structure.
- D. Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to support work without excessive stress or deflection.
- E. Keep reshores in place a minimum of 15 days after placing upper tier, or longer, if required, until concrete has attained its required 28-day strength and heavy loads due to construction operations have been removed.

3.14 REMOVING FORMS

- A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.
- B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.
- C. Form-facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

3.15 REUSING FORMS

- A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.

- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use patched forms for exposed concrete surfaces except as acceptable.

3.16 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable.
- B. Mix dry-pack mortar, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh (1.2 mm) sieve, using only enough water as required for handling and placing.
 - 1. Cut out honeycombs, rock pockets, voids over 1/4 inch (6 mm) in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch (25 mm). Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.
 - 2. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- C. Repairing Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Owner. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes and fill with dry-pack mortar or precast cement cone plugs secured in place with bonding agent.
 - 1. Repair concealed formed surfaces, where possible, containing defects that affect the concrete's durability. If defects cannot be repaired, remove and replace the concrete.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.

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1. Repair finished unformed surfaces containing defects that affect the concrete's durability. Surface defects include crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to the reinforcement or completely through nonreinforced sections regardless of width, spalling, popouts, honeycombs, rock pockets, and other objectionable conditions.
 2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
 3. Correct low areas in unformed surfaces during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable.
 4. Repair defective areas, except random cracks and single holes not exceeding 1 inch (25 mm) in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose reinforcing steel with at least 3/4 inch (19 mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- E. Repair isolated random cracks and single holes 1 inch (25 mm) or less in diameter by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Place dry-pack before bonding agent has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- F. Perform structural repairs with prior approval of Engineer for method and procedure, using specified epoxy adhesive and mortar.
- G. Repair methods not specified above may be used, subject to acceptance of Engineer.

3.17 QUALITY CONTROL TESTING DURING CONSTRUCTION

- A. General: The Owner will employ a testing agency to perform tests and to submit test reports.
- B. Sampling and testing for quality control during concrete placement may include the following, as directed by Engineer.

1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
 - a. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
 - b. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
 - c. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.
 - d. Compression Test Specimen: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
 - e. Compressive-Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yd. (4 cu. m) plus additional sets for each 50 cu. yd. (38 cu. m) more than the first 25 cu. yd. (19 cu. m) of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
 2. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
 3. When total quantity of a given class of concrete is less than 50 cu. yd. (38 cu. m), Engineer may waive strength testing if adequate evidence of satisfactory strength is provided.
 4. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
 5. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi (3.4 MPa).
- C. Test results will be reported in writing to Engineer within 3 days. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-

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day tests and 28-day tests.

- D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
- E. Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

END OF SECTION

SECTION 03310
FLOWABLE FILL CONCRETE

PART 1 GENERAL

1.1 DESCRIPTION

Flowable fill is a low strength mixture of portland cement, sand, Class F fly ash, and water. It is proportioned to flow under and around the pipe requiring no compaction and little or no finishing. Flowable fill may be used by the Contractor as backfill material for pipe. When using flowable fill with aluminum pipe, an approved means of separation must be provided, such as bituminous coating.

PART 2 PRODUCT

2.2 MATERIALS

Ingredient materials shall meet the requirements specified in the following sections of the Standard Specifications:

Portland Cement, Type I	801
Sand	804
Fly Ash, Class F	844
Water	803

The flowable fill shall be initially mixed in the following proportions per cubic yard:

Cement (Minimum)	40 lbs.
Fly Ash	300 lbs.
Sand (SSD)	3000 lbs.
Water (Maximum)	550 lbs.

To expedite settlement of the flowable fill it will be necessary for bleed water to appear on the surface within 5 to 10 minutes after placement. A delay in bleeding indicates there are too many fines in the mixture or insufficient water. If the maximum water was added, the fly ash quantity shall be reduced in increments of 50 lbs. until mixture is bleeding freely. Approximately 60 lbs. of sand shall be added to replace each 50 lbs. increment of fly ash to maintain the original yield. The flowable fill is too dry when cracks develop as it flows into place.

A set of test cylinders shall be cast for each 300 cubic yards of flowable fill. Cylinders shall not be rodded, but the sides of the mold shall be tapped lightly after each layer. The test cylinders should be allowed to bleed for about 30 minutes, refilled, and then covered with a sheet of tough durable impervious plastic. Secure the plastic in place around the mold,

within one inch of the top, with a rubber band or string prior to covering with wet burlap. Remove the burlap after 24 hours and cure at 60° F to 90° F, in the shade, until 28 days old. Then remove the plastic covering and mold and perform compressive strength test. The average of the 28 days compressive strength tests is expected to be approximately 50 PSI.

PART 3 EXECUTION

3.3 CONSTRUCTION

Flowable fill shall be delivered in a revolving drum truck mixer conforming to Section 601 to insure that the mixture is in suspension when placed. Agitation is required during transportation and waiting time. Subsidence may occur if the mixture is not agitated. Normally, a trench can be backfilled directly from the truck chute or a pump may be used.

The flowable fill may extend from the top of the compacted bedding to the bottom of the pavement structure. Flowable fill shall be a minimum of 2 hours of age prior to the addition and compaction of any material above it.

When flowable fill is used, the Contractor may reduce the trench width to a minimum of 6 inches clear on each side of the pipe. Standing water in the trench does not have to be pumped out before backfilling with flowable fill.

Certain types of pipe may float, therefore backfilling may have to be done in lifts or else the pipe will need to be anchored. Backfilling in lifts is generally more applicable to long lines of pipe, allowing time for a substantial amount of the water to dissipate prior to applying the next lift. Anchors can be made of small lumber, metal straps, and must be adequately spaced. For larger diameter pipe, it may be possible to maintain a surge of flowable fill on top of the pipe to help prevent floating. Generally floating is not a problem after the level of the backfill is above the springline of the pipe. The contractor is responsible to take whatever action is necessary to insure that the pipe remains in the correct horizontal position and at the specified elevation.

END OF SECTION

SECTION 11200

Underground Packaged Booster Pump Station

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The contractor shall furnish and install one factory built underground packaged booster pumping station. The station shall be complete with all equipment factory installed in a welded steel chamber with a prefabricated roof scuttle and ladder for access.

The internal equipment shall include two pumps and motors, piping and valves, sump pump, ventilation system, dehumidifier, heater, automatic central control panel with starters and breakers, and all internal wiring.

1.02 SUBMITTALS

- A. Submit shop drawings and engineering data in accordance with the requirements of Section 01340 of these Specifications.
- B. Operation and maintenance manuals shall be furnished in accordance with the requirements of Section 01730 of these Specifications.

1.03 STORAGE AND PROTECTION

- A. Pump Station and accessories shall be stored and protected in accordance with the manufacturer's recommendations. Pump Stations shall not be stored outside or exposed to the weather.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

The underground water booster pump station shall be manufactured by DAKOTA PUMP INCORPORATED, Mitchell, South Dakota, or approved equal. The local representative for DPI is Straeffler Pump and Supply, Inc. and can be reach at (800) 837-7867.

2.02 OPERATING CONDITIONS

Each pump shall be capable of delivering 225 gallons per minute of water against a total dynamic head of 150 feet. The pumps shall have a maximum allowable speed of 3600 RPM. The minimum rated horsepower of each motor shall be 15. The minimum pump efficiency shall be 73 %.

Underground Packaged Booster Pump Station

2.03 EQUIPMENT CHAMBER

The station shall be built in two major sections, consisting of the main pump chamber and the prefabricated roof scuttle. Both sections shall be joined at the factory before shipment, to minimize field erection.

The pump chamber shall be rolled from 1/4-inch minimum thickness, ASTM A36 steel plate, to a nominal outside diameter of 10 feet. The clear inside height shall be 8 feet. This height shall be adequate to permit use of a chain or cable hoist for pump disassembly. A lifting hook shall be welded to the ceiling over each pump to facilitate service work.

The equipment chamber floor shall be 3/8-inch minimum thickness ASTM A36 steel plate. It shall be welded to the side shell on both the inside and the outside with fillet welds of adequate section to insure the structural integrity of the completed unit. The pump station manufacturer shall determine the chamber bottom reinforcement. The size and location of these structural members shall be determined to adequately resist the loads imposed by the depth of bury of the chamber.

The equipment chamber top shall be fabricated from 3/8-inch minimum thickness ASTM A36 steel plate. It shall be welded to the side shell on both the inside and the outside with fillet welds of adequate section to insure the structural integrity of the completed unit. The pump station manufacturer shall determine the chamber top reinforcement. The size and location of these structural members shall be determined to adequately resist the loads imposed by the depth of bury of the chamber. Three equally placed lifting lugs shall be welded to the chamber head to facilitate handling at the jobsite.

An 18 inch diameter sump shall be provided in the chamber floor. This sump shall be fabricated from 1/4 inch steel plate. Where steel pipes pass through the chamber walls, a continuous watertight weld shall be made on both sides of the wall. All non-weld piping required to pass through the chamber wall will be housed in a 1/4 inch steel sleeve. The space between the pipe and the sleeve shall be filled with mechanical link seals to prevent leaks. If used, mechanical joint wall sleeves shall have two compression joints with rubber gaskets.

Fresh air shall enter the chamber from above the ground through a 180-degree bend with a screened opening, mounted on a 4" steel vent tube. Air shall be discharged above grade with the same arrangement.

2.04 ENTRANCE

The chamber entrance man way shall be a prefabricated metal roof scuttle with a minimum clear opening of 30 inches by 36 inches. The cover shall be 11-gauge aluminum with a 3" beaded flange. Insulation shall be glass fiber 1" thick, fully covered and protected by a metal liner of 18-gauge aluminum. The scuttle shall be provided with a 3 1/2" flange with holes for bolting to the framing on the equipment chamber top. The scuttle shall be completely assembled with heavy pintle hinges, compression spring operators enclosed in telescopic tubes, positive snap latch with turn handles and padlock hasps, weatherproof padlock with two keys, and an automatic hold open arm with red vinyl grip release.

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The ladder shall be fabricated of aluminum, with side rails of 3" inch extruded I-Beams. The rungs shall be 1 1/4" diameter serrated aluminum tubing, double crimped to the side rails. The ladder shall meet the requirements of OSHA for Type I Heavy Duty service, and ANSI A14.2. The ladder shall be easily removable.

2.05 SAFETY POST

Install on the ladder below the roof scuttle a Bilco Model LU-1 Ladder-UP safety post. The Ladder-UP safety post shall be manufactured of high strength steel with telescoping tubular section that locks automatically when fully extended. Upward and downward movement shall be completely assembled with fasteners for securing to the ladder rungs in accordance with the manufacture's instructions.

2.06 WELDING

All steel members shall be joined by electric arc welding, with welds of adequate section for the joint involved. Where possible, all joints shall be welded inside and outside the chamber. All welds shall be continuous and watertight.

2.07 CORROSION PROTECTION

After all welding has been completed, all inside and outside surfaces of the structure shall be factory blasted to remove all rust, mill scale and weld slag. All weld spatter and surface roughness shall be removed by grinding. Surface preparation will comply with SSPC-SP10 specifications. Immediately after cleaning the inside surface of the structure, the unburied portions of the chamber and outside surface of the piping will receive a 2-mil minimum thickness of rust inhibitive high build catalyzed polyamide/bisphenol. An epoxy primer designed for fast dry and quick or extended recoatability and which meets Class A requirements for ASTM A490 Slip. A 4-mil thickness of high solids, high build, fast drying, polyamide epoxy will then be applied directly over the epoxy primer. Polyamide epoxy will contain 72% volume solids / 85% weight solids and be suitable for use in USDA inspected facilities.

Following blasting, the exterior portions of the chamber which are buried, shall have a 12 mil coating of a one coat, high build polyamide cured Sher-Tar epoxy enamel containing 24% pigment by weight / 76% vehicle by weight.

A touch-up kit containing epoxy coatings, as specified above, shall be provided for the coating of all field welds and for repair of any scratches or abrasions that have occurred during shipment or installation.

Four, 17# packaged magnesium anode packs with heavy copper wire shall be provided for cathodic protection. They shall be placed at the extreme limits of the excavation, prior to backfilling. The #12 wire anode leads shall be run into a 3/4" conduit, provided through the chamber wall, then down into the anode test box located in the pump chamber. The anode test

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box shall have a 0-30 milliamp gauge and a selector switch to monitor the performance of each anode. The anode test box shall be housed in a NEMA 1 enclosure.

A dielectric rubber floor mat shall be placed on the floor of the chamber, in all normal walk areas, to protect the floor from abrasions.

2.08 PUMPS

Two horizontal end-suction centrifugal water pumps shall be installed in the booster station. Each pump shall meet all the requirements set forth in this specification under OPERATING CONDITIONS, and as follows:

Each pump shall be bronze fitted, single stage with close grain cast iron construction. The pump casing shall have a bronze replaceable wear ring. The impeller shall be bronze, of the enclosed type, and statically and dynamically balanced. The one-piece pump/motor shaft shall be stainless steel or steel with a bronze sleeve. The pump shall have a single mechanical shaft seal of the Ni-Resist type, and properly vented to the suction connection. Suction and discharge connections shall be either threaded connections or 125 lb. ANSI flanges, depending upon pump size.

Each pump shall be close-coupled to a 15 HP, 3500 RPM, 1 phase, 60 hertz, 230 volt ball-bearing, open drip proof, standard horizontal electric motor, with a service factor of 1.15. Motor shall be of such size that it will operate continuously without exceeding its horsepower rating, exclusive of its service factor, at the design conditions.

2.09 CONTROL SYSTEM

The power distribution center and electrical controls shall be mounted in a common NEMA Type 1 gasketed fabricated steel enclosure. The enclosure shall have a full opening door, mounted on heavy piano hinges. Suitable type latching devices shall be provided on the door. Starters, breakers, relays, timers and wiring raceway shall be neatly arranged on a removable steel back plate. All circuit breaker operators, selector switches, indicating lights, and single phase items shall be mounted on or through die cut openings in the enclosure door. A duplex grounding type convenience outlet shall be mounted in die cut openings on the side of the enclosure, for operation of 115-volt devices. It shall not be necessary to open this enclosure, except for adjustment of controls. Additional enclosures may be used as necessary to meet power and control requirements.

The control panel shall conform to the National Electrical Code specifications and shall be UL listed and labeled in accordance with UL standards No. 508 for Industrial Control Panels. In accordance with U.L. procedures, a U.L. label shall be affixed to the control panel.

Properly sized, heavy duty, molded case thermal-magnetic air circuit breakers shall be provided for branch circuit disconnect service and for over-current protection of all control, motor and auxiliary circuits

Underground Packaged Booster Pump Station

An automatic alternator shall be provided to change the sequence of operation of the pumps upon completion of each pumping cycle to equalize running time on the motors. The alternator shall be provided with a manual On-Off selector switch.

Six digit, non-resettable elapsed time meters shall be provided to record the running time of each pump motor. These devices shall be mounted in die cut openings in the enclosure door.

Adjustable snap action diaphragm type pressure switches shall provide control of the booster pumps. Set points shall be easily adjusted after removing the weatherproof cast aluminum case cover. The repeatability shall be plus or minus .5% of range span. One switch shall be provided for the following operations:

1. Low suction pressure cut out, ___ to ___ psi.

Time delay relays shall be provided for the following functions: low suction pressure cut out timer, pump on timers, pump off timers, high discharge pressure cut out timer. The time delay relays shall be solid-state devices with pin type plug-in bases. Each time delay relay shall be provided with six time ranges, a selector dial capable of 0 to 100% of range, and an LED indicator to show that the unit is timing.

Hand-Off-Automatic switches shall be oil tight, 2 or 3 position, and grouped conveniently with oil tight, full voltage indicating lights, on the panel door. Indicating lights shall identify the following functions:

1. Red - Low suction pressure.
2. Green - Pump #1 running.
3. Green - Pump #2 running.

2.10 VARIABLE FREQUENCY DRIVES

Properly sized Safronics FP5 variable frequency drives shall be supplied for motor phase conversion and motor starts. The variable frequency drive shall be used for phase conversion only. The pumps/motor will not operate on a variable speed. The variable torque AC drive shall produce an output of adjustable voltage and frequency to control the speed of the motors. The overload rating of the drive shall be 125% for 60 seconds. Standard features shall include set point (PID) control, energy-saving mode, power consumption monitoring and methods for harmonic distortion reduction.

The variable frequency drive design shall include the following features:

Analog monitor outputs of 0 to 10 Vdc	Carrier frequency selectable to 15 kHz
Keypad operator controls	Multi-speed settings
Nema 1 enclosure or protected chassis	Multi-line LCED English keypad
PID sleep function	RS-232 communication port
Set point (PID) control with inverse input	Signal follower of bias and gain
Timer function: contact-innated	12 pulse ready
24 Vdc control logic	32 Bit microprocessor
DE bus reactor included: 30 to 125 HP at 230 Vac and 30 to 250 HP at 460 Vac	

Underground Packaged Booster Pump Station

LCD display: English alpha/numeric 2 lines x 1 character
Programmable contacts, one form C and one normally open
Remote speed reference: 0 to 10 Vdc or 4 to 20 mA

The variable frequency drives protection devices shall include the following:

Current and torque limit	Current limited stall prevention
DC bus CHARGE indicator	Electronic motor overload
Under torque protection	Over torque protection
Ground fault protection	
Phase to phase/ Phase to neutral short circuit protection	
Synchronized start into rotating motor via speed search	
Fault circuit: over current, over voltage and over temperature	

The variable frequency drives performance shall include:

Adjustable accel/decel of 0.1 to 3600 sec.
Controlled speed range of 40:1
Critical frequency rejection: 2 selectable, adjustable bands
DC injection braking: ramp or coast to stop, adjustable, current limited
Displacement power factor of 0.98
Drive efficiency of 96 to 98 percent inertia ride-thru
Energy saving control
Frequency regulation: 0:01% digital (-10 to 40C) and 0.1% analog (15 to C)
Frequency resolution: 0.01% Hz with digital reference and 0.1% HZ with reference
Output frequency of 0.1 to 400 Hz
Overload capacity of 125% for 30 sec (180% peak)
Power loss ride-thru of 2 sec
Selectable auto restart after momentary power loss
Torque boost: full range, auto
Torque limiting circuit: 30 to 180%
Programmable auto restart momentary power loss

2.11

WIRING

Power service to the water booster station shall be single phase, 60 hertz, 230 volt. Wiring of the station shall be in accordance with the National Electric Code. All internal wiring shall be installed in conduit. The station shall be completely wired at the factory, except for power feed lines

The sump pump, dehumidifier, heater, exhaust blower, and all 115-volt accessory items shall be supplied with suitable lengths of 660 volt, 14-3 rubber covered power cord. These items shall plug directly into outlets, which are identified by engraved, laminated plastic nameplates.

All wiring in the control panel shall be color-coded. All wiring from the control panel to the junction boxes adjacent to equipment served shall be in conduit. Short leads of flexible, polyvinyl covered steel conduit, with compatible grounding fittings, shall be used at the pump motors to enable the motors to be removed and laid down on the station floor. All conduit and

Underground Packaged Booster Pump Station

wires shall be adequately sized for the maximum anticipated load. All conduits shall be neatly arranged and securely clamped to slotted steel channel, welded to the structure.

2.12 VENTILATION BLOWER

As specified in the EQUIPMENT CHAMBER section above, the ventilation system shall work to exhaust air from the chamber and draw air into the chamber. The ventilator shall be direct driven by a shaded pole, 1 phase, 60-hertz, 115-volt motor. The ventilator shall be a high efficiency type blower with a capacity of 232 cubic feet per minute at 0.200 inches static pressure.

2.13 LIGHTS

Two, 40-watt fluorescent light fixtures shall be mounted on the ceiling to illuminate the station interior. Each fixture shall be enclosed with a gasketed protective wrap-around lens. A manual switch located in the entrance man way shall operate the lights.

2.14 DEHUMIDIFIER

A dehumidifier, incorporating a fan to circulate air over the evaporator coils, shall control humidity in the pump station. It shall be provided complete with a humidistat and a thermostat that will de-energize the chilling mechanism and allow the fan to operate, if the humidity and temperature conditions are such that the condenser coils freeze. The dehumidifier shall have a minimum rating of 25 pints per day at 80 degrees Fahrenheit and 60% relative humidity. Condensate shall be piped to the sump, using 1/2" polyethylene tubing.

2.15 HEATER

A 1500-watt electric space heater with a minimum capacity of 5120 BtuH and controlled by an adjustable thermostat shall be provided to regulate the temperature in the pump station. The heater shall have a fan to provide even heat distribution throughout the chamber.

2.16 SUMP PUMP

A submersible sump pump shall be installed in the chamber sump pit. It shall have a heavy duty, oil filled, close-coupled motor, in a cast iron housing and shall operate on 1 phase, 60 hertz, 115 volt power. The minimum capacity of the sump pump shall be 1200 gallons per hour at 20' total dynamic head. A mercury float switch, capable of operation in the depth of the sump pit, shall control the sump pump. The sump pump shall have a minimum 1 1/4 inch discharge.

2.17 PIPING AND VALVES

The pipe used in the booster station shall be black seamless steel pipe, Schedule 40, manufactured in accordance with the dimensional tolerances and material specifications of current AWWA standards for steel pipe and butt weld fittings.

Underground Packaged Booster Pump Station

Isolation valves used inside the station shall be wafer style butterfly valves with cast iron bodies and nickel-plated, ductile iron discs. Valve stems shall be 416 stainless steel, of one-piece design, and sealed from line flow and atmospheric corrosion. Valve seats shall be EPDM and shall be mechanically secured between the valve body and mating flange, making seat replacement simple and fast. Valves 6" and smaller shall be provided with 10 position lever lock handles with throttle plates incorporating an infinite position stop, a memory stop, and a padlocking device for either fully open or fully closed position. Valves 8" and larger shall be provided with worm gear operators, complete with crank handles and position indicators. The butterfly valves shall be rated for 200-psi working pressure.

Wafer style silent check valves shall be center guided, spring loaded, non-slam type and suitable for installation in any position. The plug, with integral shaft, shall be fully guided in bronze bearings at both ends, and shall be retained at both its fully opened and closed positions by a minimum length of one shaft diameter. Silent check valves shall be used in each pump discharge line to help suppress surges by returning the spring-assisted plug to its closed position before any reverse flow can occur.

Compression type couplings shall be used in each pump discharge pipe run, and as required, to enable easy dismantling of station pumps and piping for maintenance and service. Couplings shall consist of two steel follower rings, two resilient gaskets, one steel middle ring, and a set of steel follower trackhead bolts.

The sump pump discharge piping shall be 1 1/4" galvanized steel pipe and include one check valve, one union for disassembly, and 1/4" drain back tubing from just inside the chamber discharge coupling to the sump.

2.18 WATER METER

A 4" Neptune HP (high performance) turbo type water meter shall be provided in the inlet piping of the station. The meter shall comply with ANSI/AWWA Standard C701. The meter shall have a 125# flanged bronze body. The meter shall consist of a rugged bronze maincase, and AWWA Class II turbine measuring element, and a roll-sealed register. The Unitized Measuring Element (UME) shall allow for easy in-line interchangeability. The hydrodynamically balanced thrust compensated rotor shall relieve pressure on the thrust bearing to minimize wear and provide sustained accuracy over an extended operating life. The rotor shall be direct coupled to the gear train. A calibration vane shall allow for in-field calibration of the UME. A magnetic drive shall couple the register with the measuring element. A roll-sealed register shall eliminate leaking and fogging. On the suction side of the meter shall be a strainer. The strainer shall have a removable cover plate to permit easy access to the strainer for routine cleaning.

The meter shall be supplied with a Tricon E3 electronic digital pulse output. The electronic pulse output shall provide a 4-20 MA output that is proportional to the flow. The Tricon E3 transmitter shall mount between the meter maincase and the register. Stainless steel ball bearings shall minimize torque. A tamperproof seal pin shall prevent unauthorized access and in-line adaptability shall allow installation or service without interrupting the meter service.

2.19 PRESSURE GAUGES

Two pressure gauges, one for influent pressure and one for discharge pressure shall be mounted adjacent to the control pressure switches. These glycerin-filled gauges will be 4 ½" in diameter, graduated in psi. Rated accuracy will be $\pm 1/2\%$ of full scale. Standard features will include fiberglass reinforced polypropylene case, clear acrylic plastic window with fiberglass reinforced polypropylene threaded ring, stainless steel movement, phosphor bronze Bourbon tube, silver brazed to socket and tip. Connection will be bottom only with brass ¼" NPT.

2.20 FACTORY TEST

The water booster station shall be tested with water at the manufacturer's factory for leaks in the pumps and piping, excessive vibration, correct operation of all electrical appurtenances, and to ensure that all of the pump controls are operating properly. These tests shall, as closely as shop conditions permit, simulate field design conditions as specified under OPERATING CONDITIONS. Pump shall be tested, to insure compliance with its published head-capacity curve and insure full pumping capability. As applicable, pump tests shall include motor running amperage checks, at the design conditions, shut-off and other points along the curve, insuring non-overloading performance and pump efficiency.

2.21 INSTALLATION AND SERVICE INSTRUCTIONS

Installation of the water booster station shall be in accordance with the written instructions furnished by the manufacturer, and as recommended by the Engineer. In addition to the installation instructions, the manufacturer shall furnish six complete and detailed Operating Instructions, Service and Repair Sheets in a bound manual. This manual shall cover the initial start-up, operating procedures, maintenance and servicing procedures on the major component parts provided in the pump station. One manual shall be shipped in the station, the rest shall be sent direct to the contractor.

2.22 START-UP

The manufacturer shall provide the services of a factory-trained representative for a maximum period of one day, to assist the contractor with the initial start-up of the pump station. It shall be the responsibility of the contractor to inform all parties of this initial start-up, and to insure their attendance. The manufacturer's representative shall instruct all personnel attending the start-up in the correct and required operation, maintenance and service procedures for the water booster station. **(See Special Conditions)**

2.23 GUARANTEE

The manufacturer shall guarantee the booster station to be free from defects in materials and workmanship for a period of one year from the date of start-up. All consumable parts such as pump seals, filters, light bulbs, oil, grease, etc., shall be considered part of routine maintenance and shall not be covered under the terms of the manufacturer's warranty. **(See Special Conditions)**

2.24 GENERAL

The contractor is hereby notified that responsibility for the complete and satisfactory operation or function of all equipment and material is definitely a part of this contract, regardless of the manufacturer's guarantee on any item furnished. It is the contractor's responsibility to place all equipment in operation, furnish all lubrication, check all fittings for tightness, and see that proper operating and maintenance instructions are prepared and followed.

END OF SECTION

APPENDIX A
DOT PERMIT





TRANSPORTATION CABINET

Ernie Fletcher
Governor

Department of Highways District 7 Office
763 West New Circle Rd., Building 2
P.O. Box 11127
Lexington, KY 40512
(859) 246-2355

Bill Nighbert
Acting Secretary

Marc Williams
Commissioner of Highways

HMB Professional
Engineers, Inc.

OCT 31 2006

South Woodford Water District
Attn: George Withers
467D Wilson Ave.
Versailles, KY 40383

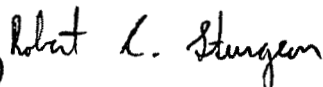

Subject: Woodford County RS 120-1967-001.300
KY 1967 (Shannon Run Road)
South Woodford Water District
Utility (APP NO 07-0178-06)

Dear Applicant:

Attached is your application for a permit that has been approved by the Department of Highways.

Please see that work is done in conformity with permit and applicable conditions. If you have any questions, please contact Kelly A. Baker, Permit Engineer, at (859) 246-2355.

Sincerely,


 Robert C. Sturgeon, P.E.
Chief District Engineer

4-17-06

Date

RCS/kab
Attachments



KENTUCKY TRANSPORTATION CABINET
 Department of Highways
 Permits Branch

TC 99-1E
 Rev. 02/01

Released Date March 21, 2006

ENCROACHMENT PERMIT

PERMIT NO. 07-0178-04

APPLICANT IDENTIFICATION: NAME: <u>South Woodford Water District</u> PERSON: <u>George Withers</u> ADDRESS: <u>467D Wilson Ave.</u> CITY: <u>Versailles</u> STATE: <u>Ky</u> ZIP CODE: <u>40383</u> PHONE: area code (<u>859</u>) <u>873-4003</u>	PROJECT IDENTIFICATION: ACCESS CONTROL: <input checked="" type="checkbox"/> By Permit <input type="checkbox"/> Partial <input type="checkbox"/> Full COUNTY: <u>Woodford</u> PRIORITY ROUTE NO: <u>Ky 1967</u> MILEPOINT: <u>1.30</u> <input type="checkbox"/> Left <input type="checkbox"/> Right <input checked="" type="checkbox"/> X-ing PROJECT STATUS: <input type="checkbox"/> Maint. <input type="checkbox"/> Const. <input checked="" type="checkbox"/> Design PROJECT # STATE: <u>RS-120-1967-001-300</u> PROJECT # FEDERAL: _____ ROAD/STREET NAME: <u>SHANNON RIVER RD</u>
--	--

TYPE OF ENCROACHMENT:

COMMERCIAL ENTRANCE - BUSINESS _____

PRIVATE ENTRANCE: Single Family Farm

UTILITY: Overhead Underground

GRADE: Fill Landscape on R/W

AIRSPACE: Agreement Lease

OTHER: (Specify) _____

ATTACHMENTS:

Standard Drawings (List on TC 99-21 under Misc.)

Applicant's Plans

Highway Plan and Profile Sheets

TC 99-3 (Ponding Encroachment Specs. and Conditions)

TC 99-4 (Rest Area Usage Specs. and Conditions)

TC 99-5 (Tree Cutting/Trimming Specs. and Conditions)

TC 99-6 (Chemical Use of Specs. and Conditions)

TC 99-10 (Typical Highway Bond Crossing Detail)

TC 99-12 (Overhead Utility Encroachment Diagram)

TC 99-13 (Surface Restoration Methods)

TC 99-21 (Encroachment Permit General Notes and Specs.)

TC 99-22 (Agreement for Services to be Performed)

TC 99-23 (Mass Transit Shelter Specs. and Conditions)

Other Attachments (Specify): _____

TYPE OF IDEMINITY: Bond Cash

SELF-INSURED AMOUNT ENCUMBERED \$ 5000

OTHER _____

NAME AND ADDRESS OF LOCAL INSURANCE AGENCY OR SELF-INSURED REPRESENTATIVE:

INDEMNITY: The applicant, in order to secure this obligation, has deposited with the Transportation Cabinet as a guarantee of conformance with the Department's Encroachment Permit requirements, an indemnity in the amount of \$ _____ as determined by the Department. It shall be the responsibility of the applicant or permittee, his heirs and assignees to keep all indemnities in full force until construction or reconstruction has been completed and duly accepted by an authorized agent of the Transportation Cabinet, Department of Highways.

BRIEF DESCRIPTION OF WORK TO BE DONE.

The South Woodford Water District is in the process of extending water service to rural areas of Woodford County. As part of this project, the water line will cross Ky 1967 near the intersection of McGee Road.

IMPORTANT (PLEASE READ): Applicant does does not intend to apply for excess RW.

When the work is completed in accordance with the terms of this encroachment permit, your idemnity will be released. However, the permit is effective until revoked by the Transportation Cabinet and the terms on the permit accompanying permit documents and drawings remain in effect as long as the encroachment exists. **FUTURE MAINTENANCE OF THE ENCROACHMENT IS THE RESPONSIBILITY OF THE PERMITEE.** It is important that you understand the requirements of this encroachment permit application and accompanying documents. If you have not done so, it is suggested that you review these documents and place the permit package in a safe place for future reference.

A copy of this permit and all documents shall be given to your contractor and shall be readily available at the work site for the encroachment permit inspector to review at all times. Failure to meet this requirement may result in cancellation of this permit.

IN THE EVENT THIS APPLICATION IS APPROVED, THIS DOCUMENT SHALL CONSTITUTE A PERMIT FOR THE APPLICANT TO USE THE RIGHT-OF-WAY, BUT ONLY IN THE MANNER AUTHORIZED BY THIS DOCUMENT AND REGULATIONS OF THE DEPARTMENT AND THE DRAWINGS, PLANS, ATTACHMENTS, AND OTHER PERTINENT DATA ATTACHED HERETO AND MADE A PART HEREOF.

The permittee agrees to the following terms and conditions:

1. The permittee shall comply with and is bound by the requirements of the Department's Permits Manual as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.
2. Permittee agrees that if the Department determines that vehicular capacity deficiencies or over capacity conditions develop as a result of the installation and use of this facility, the permittee shall adjust, relocate, or reconstruct the facilities and/or provide and bear the expenses for signs, auxiliary lanes, or other corrective measures reasonably deemed necessary by the Department and as set forth in the Department's Permit Manual within a reasonable length of time after receipt of written notice regarding such adjustments, relocation, additions, modifications, and/or corrective measures, such time to be specified in the notice. In cases where traffic signals are permitted or required, as determined by the Department, the costs for signal equipment and installation(s) shall be borne by the permittee and/or the Department in accordance with Department policy then in force as set forth in the Traffic Manual. Any modifications to the permittee's entrance necessary for access to the site shall be made by the permittee and/or the permittee's agent. (This applies only to entrance Permits.)
3. The said encroachment will infringe on the frontage rights of an abutting owner without written consent of the said owner as hereinafter provided. (This does not apply to utilities which serve the general public.)
4. Any permit granted hereunder shall be with the full understanding that it shall not interfere with any similar rights or permits heretofore granted to any other party except as otherwise provided by law.
5. A plan prepared by HMB Professional Engineers, Inc. and dated January 01, 2006 is attached hereto and made a part hereof, which describes the facilities to be constructed by the permittee for which facilities this permit is granted. The permittee agrees as a condition to the issuance of the permit to construct and maintain such facilities in accordance with said plan, and the permittee shall not use the facilities authorized herein in any manner contrary to that prescribed by this permit and plan. Normal usage and routine maintenance only are authorized under this permit.
6. Permittee shall comply with the Manual on Uniform Traffic Control Devices as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.
7. Permittee shall at all times from date when work is first commenced and until such time as all facilities are removed from the right-of-way premise, defend, protect and save harmless the Department from all liability claims, and demands arising out of work undertaken by the permittee pursuant to this permit, due to any negligent act or omission by the permittee, its servants, agents, employees, or contractors. This provision shall not inure to the benefit of any third party or operate to enlarge any liability of the Department beyond that existing at common law with this right of indemnity did not exist.
8. Upon approval of any of the provisions of this permit, the Department may revoke the permit by giving notice to the permittee in writing to remove from the right-of-way any facilities placed thereon within a reasonable time as set forth in the notice, and in the event said facilities are not so removed, and the Department may cause same to be removed, and the costs thereof shall be charged to the permittee.
9. The permittee, his successors and assigns shall use the encroachment premises in compliance with all Federal requirements imposed pursuant to the provisions of the Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000-1) and regulations of the U.S. Department of Transportation as set forth in Title 49 C.F.R., Part 21, and as said regulations may be amended.
10. Permittee agrees that in the event it should become necessary, as may be reasonably determined by the Department, for the facilities covered by this permit to be removed or relocated in connection with the reconstruction, relocation, or improvement of the abutting highway, the Department may revoke this permit and require removal or relocation by the permittee at his own expense according and pursuant to the procedures provided in Paragraph 8 above except in those cases where the Department is required by law to pay any or all the same.
11. The permittee understands and agrees that this permit is personal to the permittee and shall not inure to his successors and assigns without the written approval of the Department that he is bound by the provisions of this permit as long as the encroachment exists unless a written release has been obtained from the Department. (Does not apply to utilities serving the general public.)
12. If the work authorized by this permit is on a project in the construction phase it shall be the responsibility of the permittee to make personal contact with the Resident Engineer on the project to coordinate the permitted work with the State's prime contractor on the project.
13. This permit does not alleviate any requirements of any other Government agency.
14. Permittee agrees to keep the priority route in which this permit was issued clear of dirt, mud, and debris during construction and for the life of this permit.

THE UNDERSIGNED APPLICANT (being duly authorized representative/owner) DOES AGREE TO ALL TERMS AND CONDITIONS SET FORTH HEREIN.

January 1st July 1st, 20 07 03/23/06

Completion Date

03/23/06

Date

Signature

Signature

Signature

Signature

RECOMMENDED FOR APPROVAL

PERMIT ENCL

Will A. Bab

Robert C. Johnson

4-17-06

Signature

Date

Signature

Signature

Signature

Signature

Signature

Signature

Signature

PRIVATE ENTRANCE: TO BE COMPLETED BY PERSONNEL INSTALLING FACILITY

Will A. Bab

Robert C. Johnson

4-17-06

Signature

Signature

Signature

Installed By:

Will A. Bab

Robert C. Johnson

4-17-06

Signature

Signature

Signature

Title

Title

Title

Title

Title

Title

Title

Signature

Signature

Signature

Signature

Signature

Signature

Signature



ENCROACHMENT PERMIT GENERAL NOTES & SPECIFICATIONS

I. SAFETY

A. General Requirements

- All signs and control of traffic shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition, Part VI, and safety requirements shall comply with the Permits Manual.
- All work necessary in shoulder or ditchline areas of a state highway is to be scheduled to be promptly completed so that hazards adjacent to the traveled-way are kept to an absolute minimum.
- No more than one (1) traveled-lane is to be blocked or obstructed during normal working hours. All signs and flagmen during lane closure shall conform to the Manual on Uniform Traffic Control Devices.
- When it is necessary to block one (1) traveled-lane of a state highway, the normal working hours shall be as directed by the Department. No lanes are to be blocked or obstructed during adverse weather conditions (i.e., rain, snow, fog, etc.) with specific permission from the Department. Working hours shall be between 9:00 a.m. and 3:30 p.m.
- The traveled-way and shoulders shall be kept clear of mud and other construction debris at all times during construction of the permitted facility.
- No nonconstruction equipment or vehicles or office trailers will be allowed on the right-of-way during working hours.
- The right-of-way shall be left free and clear of equipment, material, and vehicles during non-working hours.

B. Explosives

- No explosive devices or explosive material shall be used within state right-of-way without proper license and approval of Kentucky Department of Mines and Minerals, Explosive Division.

C. Other Safety Requirements

- _____
- _____
- _____
- _____

II. UTILITIES

- *All work necessary within the right-of-way shall be behind a temporary fence erected prior to a boring operation.
- *The temporary woven wire fence shall be removed immediately upon completion of work on the right-of-way and control of access immediately restored to original condition, in accordance with applicable Kentucky Department of Highways Standard Drawings.
- *All vents, valves, manholes, etc. are to be located outside the right-of-way.
- *Encasement pipe shall extend from right-of-way line to right-of-way line and shall be one continuous run of pipe. The encasement pipe shall be welded at all joints.
- The boring pit and tail ditch shall extend past the existing toe of slope or bottom of ditch line and shall be a minimum of 30" deep.
- Encasement pipe shall conform to current standards for highway crossings in accordance with the Permits Manual.
- Parallel lines shall be constructed between back slope of ditch line and right-of-way line and shall have a minimum of 30 " cover above top of pipe or conduit. (30" preferred)
- All pavement cuts shall be restored per Kentucky Transportation Cabinet Form No. TC 99-13.
- Aerial crossing of this utility line shall have a minimum clearance of _____ feet from the high point of the roadway to the low point of the line (calculated at the coefficient for expansion of 120 degrees Fahrenheit).
- The 30' clear zone requirement will be met to the extent possible in accordance with Chapter 99-02.0313 of the Permits Manual.
- Special Requirements:

*Applies to Fully Controlled Access Highways ONLY

II. GENERAL

TC 99-21
Rev. 7/95

A. OSHA

Kentucky Occupational Safety and Health Standards for the construction industry which has the effect of law states in part: (page 5 1926.651 Specific Excavation Requirements) "Prior to opening an excavation, effort shall be made to determine whether underground installations: i.e., sewer, telephone, water, fuel, electric lines, etc., will be encountered, and if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation."

B. Archaeological

Whenever materials of an archaeological nature are discovered during the course of construction work or maintenance operations, contact shall be made immediately with the Division of Environmental Analysis which maintains an archaeologist on its staff, or with the Office of the State Archaeologist located at the University of Kentucky. Following this consultation, further action shall be decided on a case-by-case basis by the State Highway Engineer or the Transportation Planning Engineer or their designated representative.

C. Utilities in the Work Areas

The permittee is to be responsible for any damage to existing utilities and any utility modifications or relocations within State right-of-way necessary, as determined by the Department or by the owner of the utility, are to be at the expense of the permittee and subject to the approval of the Department.

All existing manholes and valve boxes are to be adjusted to be flush with finished grade.

IV. RIGHT-OF-WAY RESTORATION

All disturbed portions of the right-of-way are to be restored to grass as per Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition). A satisfactory turf, as determined by the Department, is to be established by the permittee prior to release of indemnity. Sodding or seeding as follows:

Lawn or High Maintenance Situation	-70% Lawn Fescue (e.g., variety - Falcon)
	-30% Bluegrass or
	70% Lawn Rye (e.g., variety - Derby)
	30% Bluegrass
Right-off-Way Lawn Maintenance Situation	-70% KY 31 Fescue
	-30% Perennial Rye Grass or
	100% KY Fescue

Two tons clean straw mulch per acre of seeding.

Prior to seeding, the ground must be prepared in accordance with Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).

Substitutes for sod such as artificial turf or rocked mulch or paved areas may be acceptable if they are aesthetically pleasing.

All ditch flow lines and all ditch side slopes are to be sodded.

Existing concrete right-of-way markers are not to be disturbed, but if damaged in any way, they are to be entirely replaced by the permittee with new concrete markers to match the original markers, in accordance with Kentucky Department of Highways Standard Drawings. Markers which are entirely removed are to be re-established in the proper locations by the permittee and to the satisfaction of the Department.

Other right-of-way restoration requirements are as follows:

V. DRAINAGE

All pipe is to be laid in a straight alignment, to proper grades, and with all materials and methods of installation including bedding and joint seating in accordance with Department Standard Specifications for Road and Bridge Construction, latest edition. Pipe is not to be covered until inspected by the Department and express permission obtained to make backfill.

All gutter lines at the base of new curbs are to be on continuous grades, and pockets of water along curbs, or in entrance areas or other paved areas within the right-of-way, are not acceptable.

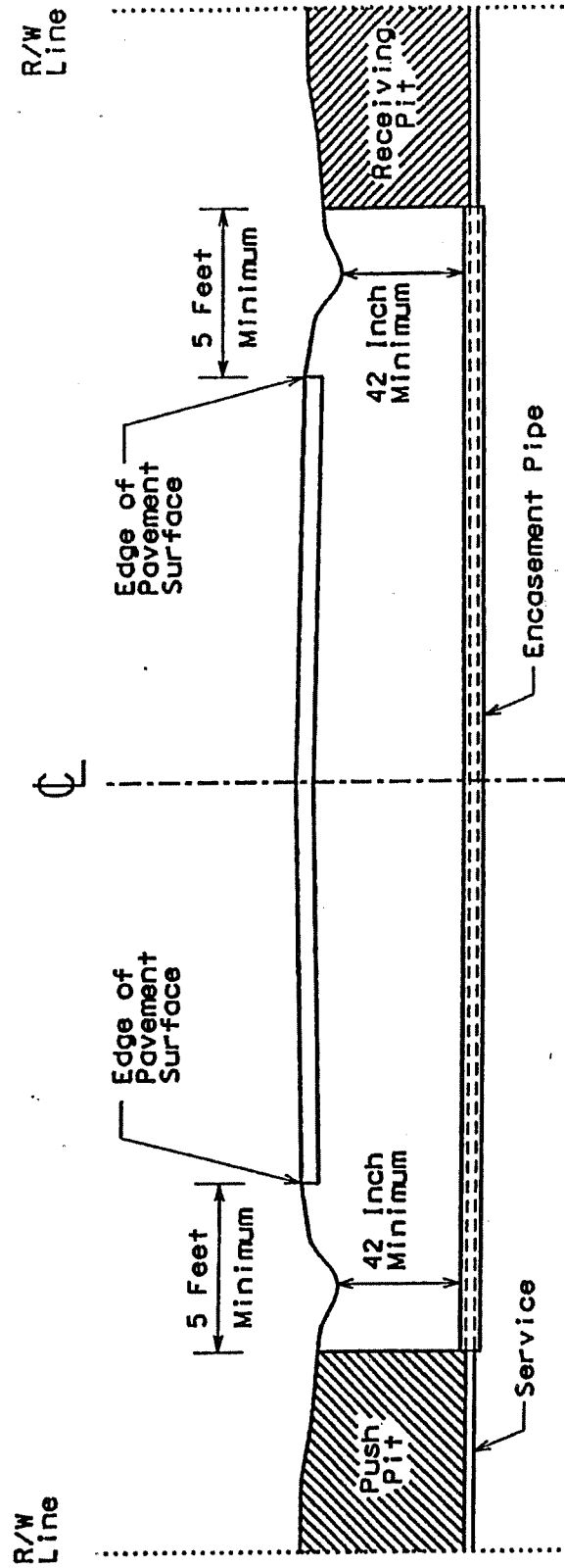
All drainage structures and appurtenances (manholes, catch basins, curbing, inlet basins, etc.) shall conform to Department specifications and shall be constructed in accordance with the Department Standard Drawings. Type required:

Kentucky Transportation Cabinet
 Department of Highways
 Permits Branch

EXHIBIT 8
 TC 99-10
 Rev. 9/2004

TYPICAL HIGHWAY BORING CROSSING DETAIL

Permit No. _____
 Route No. _____
 Pavement Width _____



1. Push Pit and Receiving Pit shall be backfilled and thoroughly compacted.
2. All ditch lines are to remain open at all times.
3. Seed and straw all disturbed areas immediately after completing the work.
4. Provide traffic control as required to insure the safety of the traveling public in accordance with the current edition of the "Manual on Uniform Traffic Control Devices".

ALL SERVICES OVER 2" IN DIAMETER SHALL REQUIRE ENCASEMENT.



NOTICE OF COMPLETION OF ENCROACHMENT PERMIT WORK

Please return this form to the District Office when work is completed and ready for final inspection.

Applicant Identification

Name: SOUTH WOODFORD WATER DISTRICT
Contact Person: GEORGE WITHERS
Address: 460 WILSON AVENUE
City: VERSAILLES
State: KY Zip: 40383
Telephone: 606-873-1308

Project Identification

Permit Number: 07-0179-06
County: Woodford
Route Number: 33
Road Name: TROY PIKE
Milepoint: 2.125

I wish to notify the Department of Highways that the above mentioned permit work and any necessary right of way restoration have been completed and are ready for final inspection.

Applicant

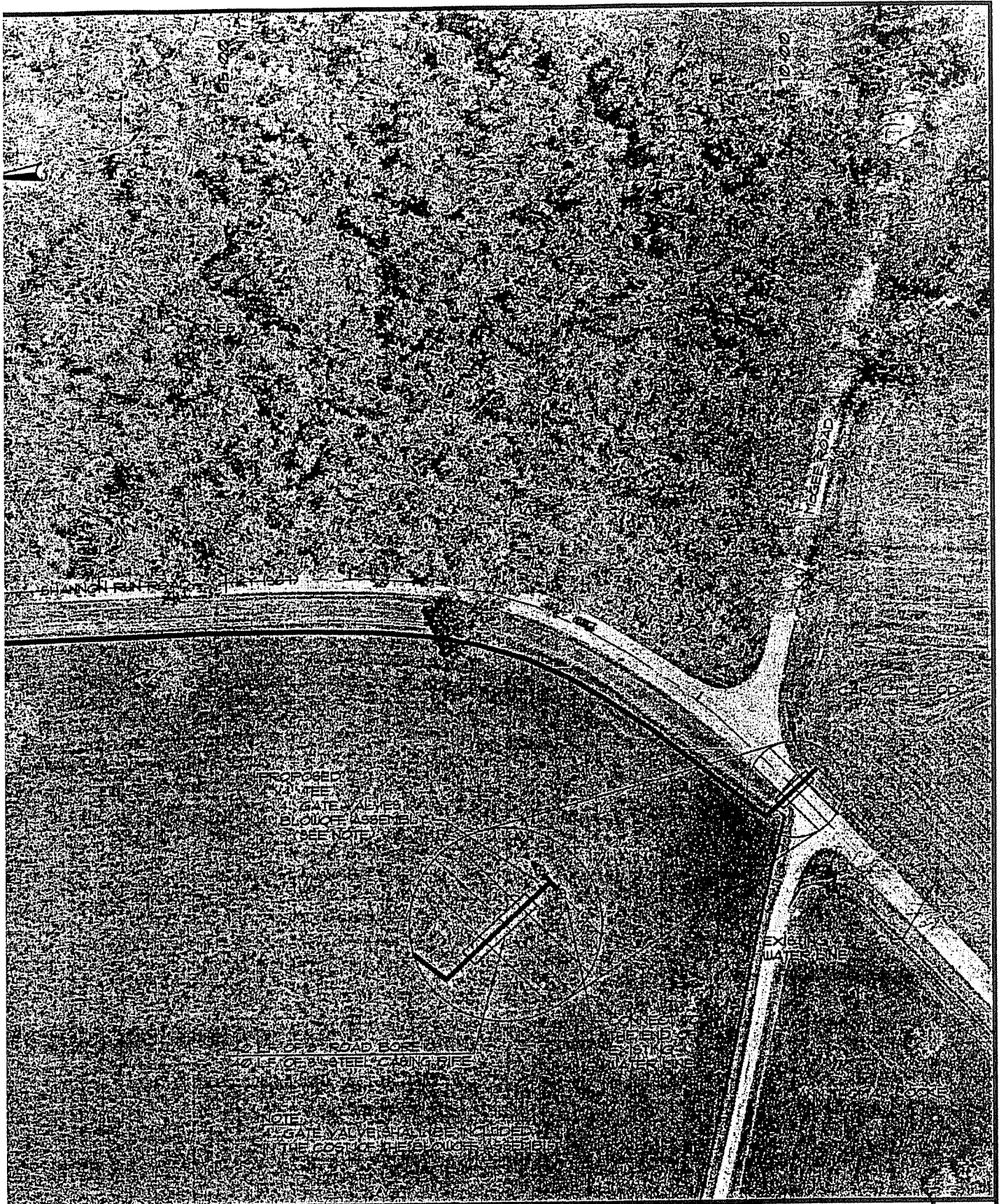
Please Return To:

Department of Highways
District 7 Lexington
P.O. Box 11127
Lexington, Ky. 40512-1127

Attention:

Kelly A. Baker, P.E.





PROPOSED
 GATE ALLEY
 PIPING
 SEE NOTE

EXISTING
 WATER LINE

1/2" OF ROAD BORE
 1/2" OF GATE LEADING FIRE

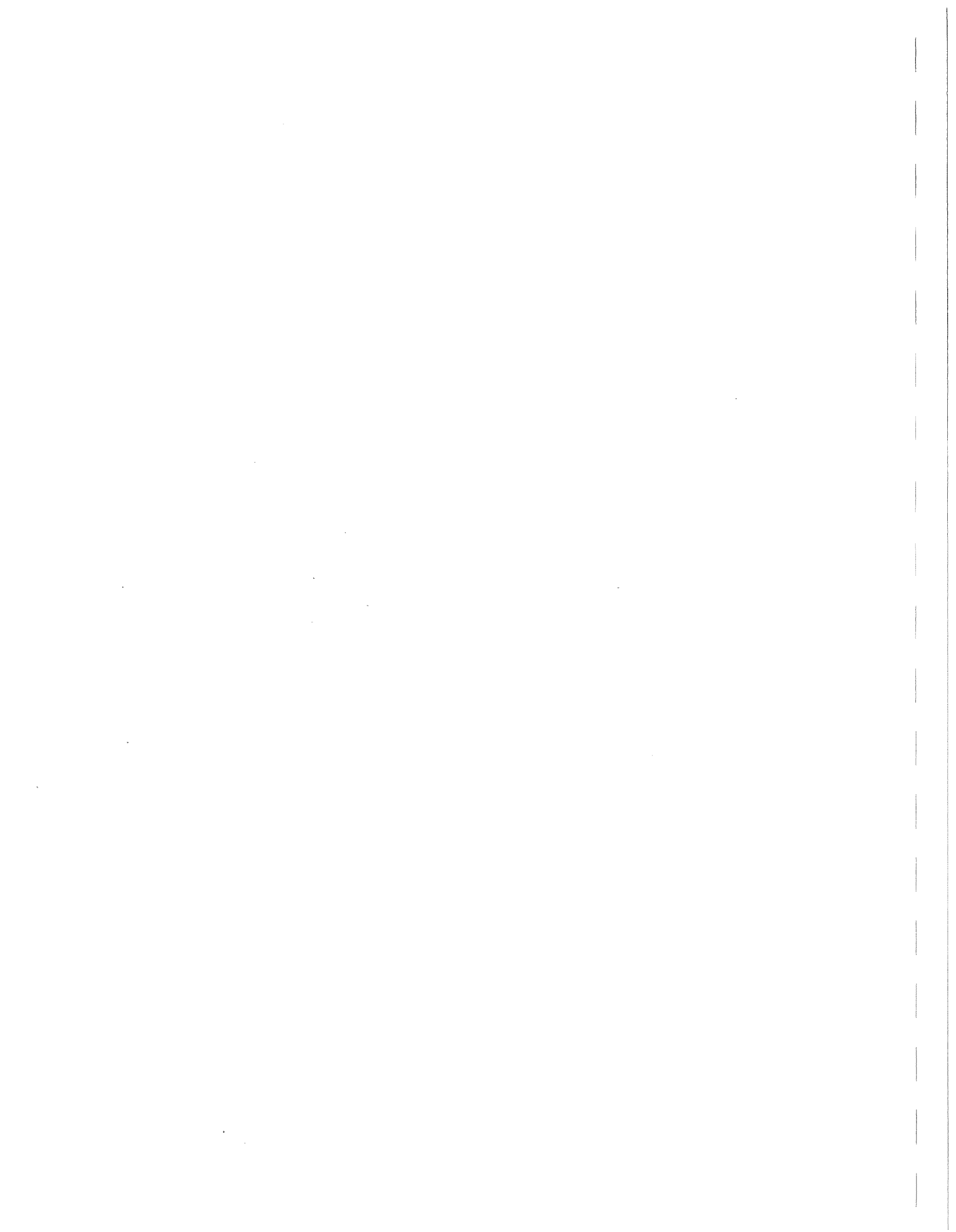
NOTE:
 GATE VALVE SHALL BE INCLUDED
 AT THE COST OF THE BIDDING CONTRACTOR

11MB CIRCLE
 ANKFORT, KENTUCKY
 (22) 695-9800
 (22) 695-9810 FAX

**PHASE IV WATER PROJECT
 SOUTH WOODFORD WATER DISTRICT
 WOODFORD COUNTY, KENTUCKY**

SHANNON RUN ROAD (KY 1967)

SHEET	6
OF	??





JK
CCS
R3
File

TRANSPORTATION CABINET

Ernie Fletcher
Governor

Department of Highways District 7 Office
763 West New Circle Rd., Building 2
P.O. Box 11127
Lexington, KY 40512
(859) 246-2355

Bill Nighbert
Acting Secretary

Marc Williams
Commissioner of Highways

HMB Professional
Engineers, Inc.

OCT 31 2006

South Woodford Water District
Attn: George Withers
467D Wilson Ave.
Versailles, KY 40383

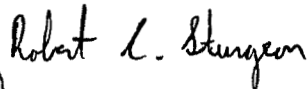

Subject: Woodford County MP 120-0033-002.125
KY 0033 (Troy Pike)
South Woodford Water District
Utility (APP NO 07-0179-06)

Dear Applicant:

Attached is your application for a permit that has been approved by the Department of Highways.

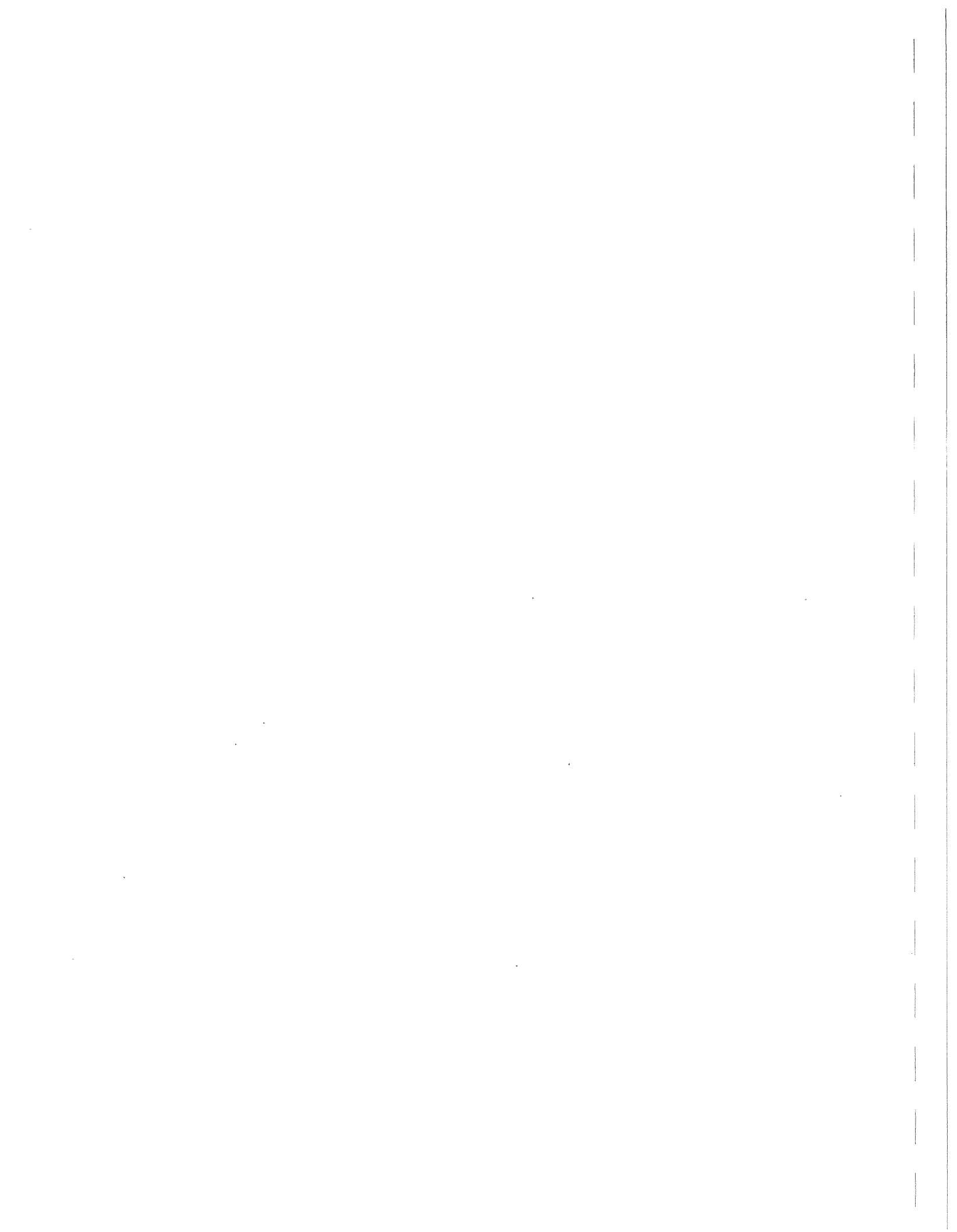
Please see that work is done in conformity with permit and applicable conditions. If you have any questions, please contact Kelly A. Baker, Permit Engineer, at (859) 246-2355.

Sincerely,


 Robert C. Sturgeon, P.E.
Chief District Engineer

4-17-06
Date

RCS/kab
Attachments



KENTUCKY TRANSPORTATION CABINET
 Department of Highways
 Permits Branch

TC 99-1E
 Rev. 02/01

Released Date March 21, 2006

ENCROACHMENT PERMIT

PERMIT NO. 07-0179-06

<p>APPLICANT IDENTIFICATION: NAME: <u>South Woodford Water District</u> PERSON: <u>George Withers</u> ADDRESS: <u>467D Wilson Ave.</u> CITY: <u>Versailles</u> STATE: <u>Ky</u> ZIP CODE: <u>40383</u> PHONE: area code (<u>859</u>) <u>873-4003</u></p>	<p>PROJECT IDENTIFICATION: ACCESS CONTROL: <input checked="" type="checkbox"/> By Permit <input type="checkbox"/> Partial <input type="checkbox"/> Full COUNTY: <u>Woodford</u> PRIORITY ROUTE NO: <u>Ky 33</u> MILEPOINT: <u>2.125</u> <input type="checkbox"/> Left <input type="checkbox"/> Right <input checked="" type="checkbox"/> X-ing PROJECT STATUS: <input type="checkbox"/> Maint. <input type="checkbox"/> Const. <input checked="" type="checkbox"/> Design PROJECT # STATE: <u>MP120-0033-002-125</u> PROJECT # FEDERAL: _____ ROAD/STREET NAME: <u>TROY PK</u></p>
<p>TYPE OF ENCROACHMENT: <input type="checkbox"/> COMMERCIAL ENTRANCE - BUSINESS _____ <input type="checkbox"/> PRIVATE ENTRANCE: <input type="checkbox"/> Single Family <input type="checkbox"/> Farm <input checked="" type="checkbox"/> UTILITY: <input type="checkbox"/> Overhead <input checked="" type="checkbox"/> Underground <input type="checkbox"/> GRADE: <input type="checkbox"/> Fill <input type="checkbox"/> Landscape on R/W <input type="checkbox"/> AIRSPACE: <input type="checkbox"/> Agreement <input type="checkbox"/> Lease <input type="checkbox"/> OTHER: (Specify) _____</p>	<p>ATTACHMENTS: <input type="checkbox"/> Standard Drawings (List on TC 99-21 under Misc.) <input checked="" type="checkbox"/> Applicant's Plans <input type="checkbox"/> Highway Plan and Profile Sheets <input type="checkbox"/> TC 99-3 (Ponding Encroachment Specs. and Conditions) <input type="checkbox"/> TC 99-4 (Rest Area Usage Specs. and Conditions) <input type="checkbox"/> TC 99-5 (Tree Cutting/Trimming Specs. and Conditions) <input type="checkbox"/> TC 99-6 (Chemical Use of Specs. and Conditions) <input checked="" type="checkbox"/> TC 99-10 (Typical Highway Bond Crossing Detail) <input type="checkbox"/> TC 99-12 (Overhead Utility Encroachment Diagram) <input type="checkbox"/> TC 99-13 (Surface Restoration Methods) <input type="checkbox"/> TC 99-21 (Encroachment Permit General Notes and Specs.) <input type="checkbox"/> TC 99-22 (Agreement for Services to be Performed) <input type="checkbox"/> TC 99-23 (Mass Transit Shelter Specs. and Conditions) <input type="checkbox"/> Other Attachments (Specify): _____</p>
<p>TYPE OF IDEMINITY: <input checked="" type="checkbox"/> Bond <input type="checkbox"/> Cash <input type="checkbox"/> SELF-INSURED AMOUNT ENCUMBERED \$ <u>5000</u> <input type="checkbox"/> OTHER _____</p>	
<p>NAME AND ADDRESS OF LOCAL INSURANCE AGENCY OR SELF-INSURED REPRESENTATIVE: _____</p>	
<p>INDEMNITY: The applicant, in order to secure this obligation, has deposited with the Transportation Cabinet as a guarantee of conformance with the Department's Encroachment Permit requirements, an indemnity in the amount of \$ _____ as determined by the Department. It shall be the responsibility of the applicant or permittee, his heirs and assignees to keep all indemnities in full force until construction or reconstruction has been completed and duly accepted by an authorized agent of the Transportation Cabinet, Department of Highways.</p>	
<p>BRIEF DESCRIPTION OF WORK TO BE DONE. The South Woodford Water District is in the process of extending water service to rural areas of Woodford County. As part of this project, the water line will cross Ky 33 near the intersection of Pauls Mill Road.</p>	
<p>IMPORTANT (PLEASE READ): Applicant <input type="checkbox"/> does <input checked="" type="checkbox"/> does not intend to apply for excess R/W.</p>	

When the work is completed in accordance with the terms of this encroachment permit, your idemnity will be released. However, the permit is effective until revoked by the Transportation Cabinet and the terms on the permit accompanying permit documents and drawings remain in effect as long as the encroachment exists. **FUTURE MAINTENANCE OF THE ENCROACHMENT IS THE RESPONSIBILITY OF THE PERMITEE.** It is important that you understand the requirements of this encroachment permit application and accompanying documents. If you have not done so, it is suggested that you review these documents and place the permit package in a safe place for future reference.

A copy of this permit and all documents shall be given to your contractor and shall be readily available at the work site for the encroachment permit inspector to review at all times. Failure to meet this requirement may result in cancellation of this permit.

IN THE EVENT THIS APPLICATION IS APPROVED, THIS DOCUMENT SHALL CONSTITUTE A PERMIT FOR THE APPLICANT TO USE THE RIGHT-OF-WAY, BUT ONLY IN THE MANNER AUTHORIZED BY THIS DOCUMENT AND REGULATIONS OF THE DEPARTMENT AND THE DRAWINGS, PLANS, ATTACHMENTS, AND OTHER PERTINENT DATA ATTACHED HERETO AND MADE A PART HEREOF.



Permit No. _____

The permittee agrees to the following terms and conditions:

1. The permittee shall comply with and is bound by the requirements of the Department's Permits Manual as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.
2. Permittee agrees that if the Department determines that vehicular capacity deficiencies or over capacity conditions develop as a result of the installation and use of this facility, the permittee shall adjust, relocate, or reconstruct the facilities and/or provide and bear the expenses for signs, auxiliary lanes, or other corrective measures reasonably deemed necessary by the Department and as set forth in the Department's Permit Manual within a reasonable length of time after receipt of written notice regarding such adjustments, relocation, additions, modifications, and/or corrective measures, such time to be specified in the notice in cases where traffic signals are permitted or required, as determined by the Department, the costs for signal equipment and installation(s) shall be borne by the permittee and/or the Department in accordance with Department policy then in force as set forth in the Traffic Manual. Any modifications to the permittee's entrance necessary to accommodate signalization (including necessary easement(s) on private property) shall be the responsibility of the permittee at no expense to the Department. (This applies only to Entrance Permits.)
3. The said encroachment will in no way interfere with the abutting owner's without written consent of the said owner as hereto. "I (we) consent to the granting of attached permit." _____ Date _____ (This does not apply to utilities which serve the general public.)
4. Any permit granted hereunder shall be with the full understanding that it shall not interfere with any similar rights or permits heretofore granted to any other party except as otherwise provided by law.
5. A plan prepared by HMB Professional Engineers, Inc. and dated January 01, 2006 is attached hereto and made a part hereof, which describes the facilities to be constructed by the permittee for which facilities this permit is granted. The permittee agrees as a condition to the issuance of the permit to construct and maintain such facilities in accordance with said plan, and the permittee shall not use the facilities authorized herein in any manner contrary to that prescribed by this permit and plan. Normal usage and routine maintenance only are authorized under this permit.
6. Permittee shall comply with the Manual on Uniform Traffic Control Devices as revised to and in effect on the date of the issuance of this permit which is made a part hereof by reference.
7. Permittee shall at all times from date when work is first commenced and until such time as all facilities are removed from the right-of-way premises, defend, protect, and save harmless the Department from all liability claims, and demands arising out of work undertaken by the permittee pursuant to this permit, due to any negligent act or omission by the permittee, its servants, agents, employees, or contractors. This provision shall not inure to the benefit of any third party or operate to enlarge any liability of the Department beyond that existing at common law if the right to indemnify did not exist.
8. Upon violation of any of the provisions of this permit, the Department may revoke the permit by giving notice to the permittee in writing to remove from the right-of-way any facilities placed thereon within a reasonable time as set forth in the notice, and in the event said facilities are not so removed, and the right-of-way required by the Department may cause same to be removed, and the costs thereof shall be charged to the permittee.
9. The permittee, his successors and assigns shall use the encroachment premises in compliance with all Federal requirements imposed pursuant to the provisions of the Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000-1) and regulations of the U.S. Department of Transportation as set forth in Title 49 C.F.R., Part 21, and as said regulations may be amended.
10. Permittee agrees that in the event it should become necessary, as may be reasonably determined by the Department, for the facilities covered by this permit to be removed or relocated in connection with the reconstruction, relocation, or improvement of the abutting highway, the Department may revoke this permit and require removal or relocation by the permittee at his own expense according and pursuant to the procedures provided in Paragraph 8 above except in those cases where the Department is required by law to pay any or all the same.
11. The permittee understands and agrees that this permit is personal to the permittee and shall not inure to his successors and assigns without the written approval of the Department that he is bound by the provisions of this permit as long as the encroachment exists unless a written release has been obtained from the Department. (Does not apply to utilities serving the general public.)
12. If the work authorized by this permit is on a project in the construction phase, it shall be the responsibility of the permittee to make personal contact with the Resident Engineer on the project to coordinate the permitted work with the State's prime contractor on the project.
13. This permit does not alleviate any requirements of any other government agency.
14. Permittee agrees to keep the priority route in which this permit was issued clear of dirt, mud, and debris during construction and for the life of this permit.

VOID PERMIT

THE UNDERSIGNED APPLICANT (being duly authorized representative/owner) DOES AGREE TO ALL TERMS AND CONDITIONS SET FORTH HEREIN.

January 1st July 1st, 20 07 03/23/06 _____ Date

Attempt to alter this form constitutes a _____ Date

Signature _____

PERMIT ENCL _____ Title _____ Signature _____ Date

Will A. Baker _____ Title _____ Signature _____ Date

Robert C. Bengten _____ Title _____ Signature _____ Date

PRIVATE ENTRANCE: TO BE COMPLETED BY PERSONNEL INSTALLING FACILITY _____ Title _____ Signature _____ Date

Installed By: _____ Title _____ Signature _____ Date



ENCROACHMENT PERMIT GENERAL NOTES & SPECIFICATIONS

I. SAFETY

A. General Requirements

- All signs and control of traffic shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition, Part VI, and safety requirements shall comply with the Permits Manual.
- All work necessary in shoulder or ditchline areas of a state highway is to be scheduled to be promptly completed so that hazards adjacent to the traveled-way are kept to an absolute minimum.
- No more than one (1) traveled-lane is to be blocked or obstructed during normal working hours. All signs and flagmen during lane closure shall conform to the Manual on Uniform Traffic Control Devices.
- When it is necessary to block one (1) traveled-lane of a state highway, the normal working hours shall be as directed by the Department. No lanes are to be blocked or obstructed during adverse weather conditions (i.e., rain, snow, fog, etc.) with specific permission from the Department. Working hours shall be between 9:00 a.m. and 3:30 p.m.
- The traveled-way and shoulders shall be kept clear of mud and other construction debris at all times during construction of the permitted facility.
- No nonconstruction equipment or vehicles or office trailers will be allowed on the right-of-way during working hours.
- The right-of-way shall be left free and clear of equipment, material, and vehicles during non-working hours.

B. Explosives

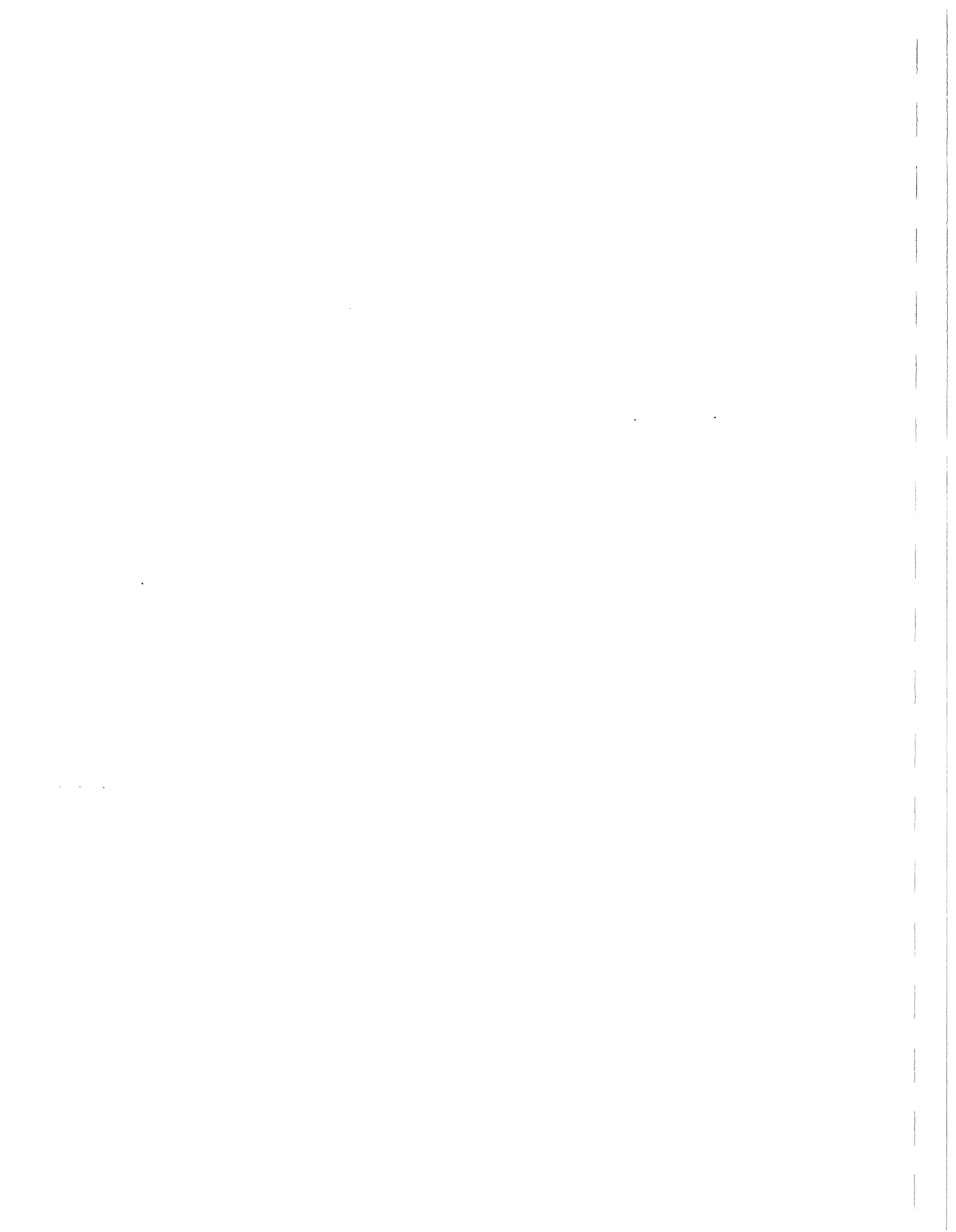
- No explosive devices or explosive material shall be used within state right-of-way without proper license and approval of Kentucky Department of Mines and Minerals, Explosive Division.

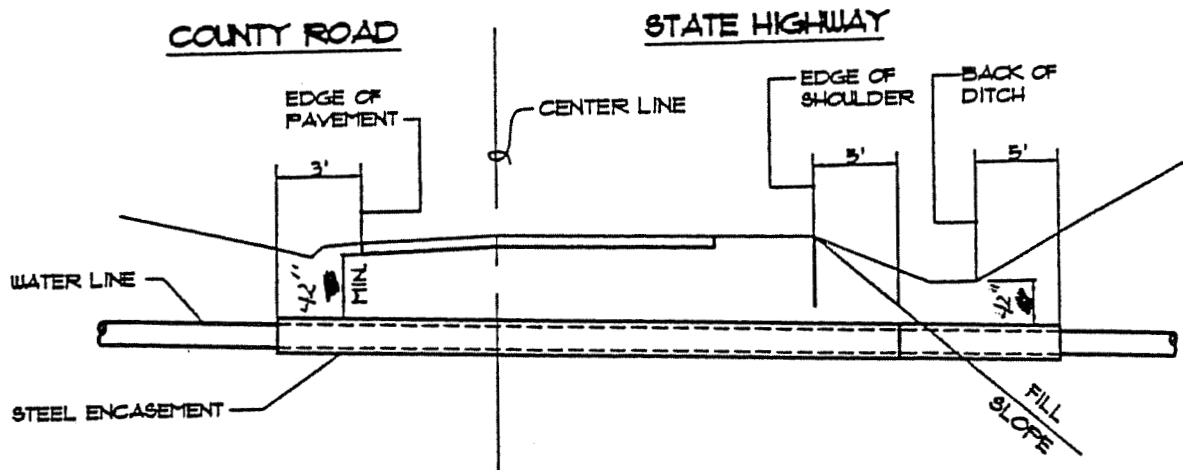
C. Other Safety Requirements

II. UTILITIES

- *All work necessary within the right-of-way shall be behind a temporary fence erected prior to a boring operation.
- *The temporary woven wire fence shall be removed immediately upon completion of work on the right-of-way and control of access immediately restored to original condition, in accordance with applicable Kentucky Department of Highways Standard Drawings.
- *All vents, valves, manholes, etc. are to be located outside the right-of-way.
- *Encasement pipe shall extend from right-of-way line to right-of-way line and shall be one continuous run of pipe. The encasement pipe shall be welded at all joints.
- The boring pit and tail ditch shall extend past the existing toe of slope or bottom of ditch line and shall be a minimum of 30" deep.
- Encasement pipe shall conform to current standards for highway crossings in accordance with the Permits Manual.
- Parallel lines shall be constructed between back slope of ditch line and right-of-way line and shall have a minimum of 30 " cover above top of pipe or conduit. (30" preferred)
- All pavement cuts shall be restored per Kentucky Transportation Cabinet Form No. TC 99-13.
- Aerial crossing of this utility line shall have a minimum clearance of _____ feet from the high point of the roadway to the low point of the line (calculated at the coefficient for expansion of 120 degrees Fahrenheit).
- The 30' clear zone requirement will be met to the extent possible in accordance with Chapter 99-02.0313 of the Permits Manual.
- Special Requirements:

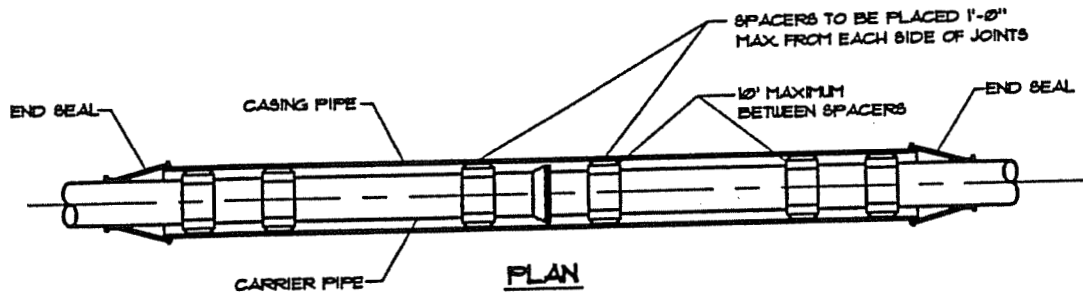
*Applies to Fully Controlled Access Highways **ONLY**





TYPICAL ROAD CROSSING

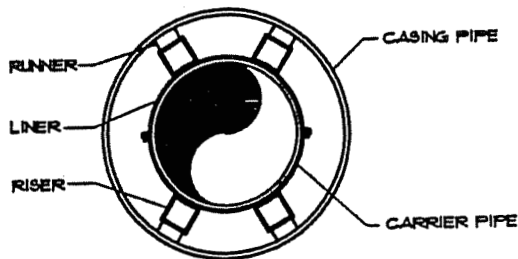
NOT TO SCALE



PLAN

TYPICAL ROAD CROSSING NOTES:

1. ALL JOINTS SHALL BE SOLIDLY WELDED. END OF CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. MINIMUM DEPTHS MAY INCREASE IN AREAS WHICH REQUIRE MINIMUM SEPARATION WITH OTHER FACILITIES.
3. OPEN TRENCH NO CLOSER THAN THE DITCH LINE OR TOE OF FILL FROM THE EDGE OF THE PAVEMENT OR AS DIRECTED BY STATE, COUNTY OR MUNICIPAL SPECIFICATIONS.
4. HIGHWAY CROSSINGS SHALL UTILIZE STEEL CASING PIPE. STEEL CASING PIPES 4" AND LESS SHALL BE NEW SCHEDULE 40. STEEL CASING PIPES LARGER THAN 4" SHALL HAVE MINIMUM WALL THICKNESS OF 0.25". ALL BORED AND JACKED ENCASEMENT PIPE SHALL BE INSTALLED IN BORE HOLES NO LARGER THAN THE OUTSIDE DIAMETER OF THE ENCASEMENT PIPE.



ELEVATION

TYPICAL STREAM CROSSING NOTES:

1. END CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. CONCRETE CAP SHALL END A MINIMUM OF ONE FOOT FROM EDGE OF CASING PIPE.
3. STREAM CROSSINGS SHALL UTILIZE PVC SDR 35 CASING PIPE.

ENCASEMENT PIPE SPACER



GENERAL

TC 99-21
Rev. 7/95

OSHA

Kentucky Occupational Safety and Health Standards for the construction industry which has the effect of law states in part: (page 5 1926.651 Specific Excavation Requirements) "Prior to opening an excavation, effort shall be made to determine whether underground installations: i.e., sewer, telephone, water, fuel, electric lines, etc., will be encountered, and if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation."

Archaeological

Whenever materials of an archaeological nature are discovered during the course of construction work or maintenance operations, contact shall be made immediately with the Division of Environmental Analysis which maintains an archaeologist on its staff, or with the Office of the State Archaeologist located at the University of Kentucky. Following this consultation, further action shall be decided on a case-by-case basis by the State Highway Engineer or the Transportation Planning Engineer or their designated representative.

Utilities in the Work Areas

The permittee is to be responsible for any damage to existing utilities and any utility modifications or relocations within State right-of-way necessary, as determined by the Department or by the owner of the utility, are to be at the expense of the permittee and subject to the approval of the Department.

All existing manholes and valve boxes are to be adjusted to be flush with finished grade.

RIGHT-OF-WAY RESTORATION

All disturbed portions of the right-of-way are to be restored to grass as per Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition). A satisfactory turf, as determined by the Department, is to be established by the permittee prior to release of indemnity. Sodding or seeding as follows:

Lawn or High Maintenance Situation	-70% Lawn Fescue (e.g., variety - Falcon)
	-30% Bluegrass or
	70% Lawn Rye (e.g., variety - Derby)
	30% Bluegrass
Right-off-Way Lawn Maintenance Situation	-70% KY 31 Fescue
	-30% Perennial Rye Grass or
	100% KY Fescue

Two tons clean straw mulch per acre of seeding.

Prior to seeding, the ground must be prepared in accordance with Kentucky Department of Highways Standard Specifications for Road and Bridge Construction (latest edition).

Substitutes for sod such as artificial turf or rocked mulch or paved areas may be acceptable if they are aesthetically pleasing.

All ditch flow lines and all ditch side slopes are to be sodded.

Existing concrete right-of-way markers are not to be disturbed, but if damaged in any way, they are to be entirely replaced by the permittee with new concrete markers to match the original markers, in accordance with Kentucky Department of Highways Standard Drawings. Markers which are entirely removed are to be re-established in the proper locations by the permittee and to the satisfaction of the Department.

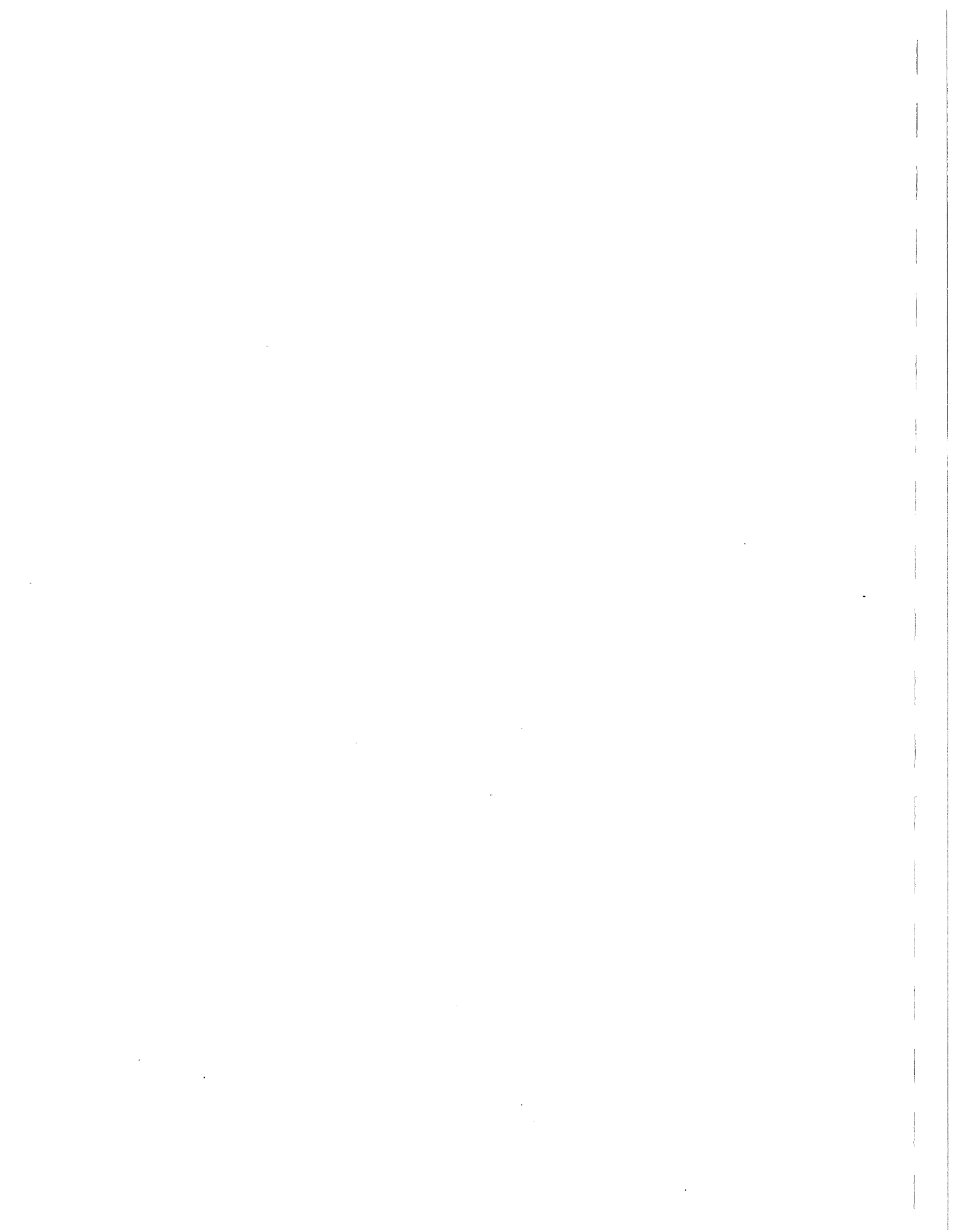
Other right-of-way restoration requirements are as follows:

DRAINAGE

All pipe is to be laid in a straight alignment, to proper grades, and with all materials and methods of installation including bedding and joint seating in accordance with Department Standard Specifications for Road and Bridge Construction, latest edition. Pipe is not to be covered until inspected by the Department and express permission obtained to make backfill.

All gutter lines at the base of new curbs are to be on continuous grades, and pockets of water along curbs, or in entrance areas or other paved areas within the right-of-way, are not acceptable.

All drainage structures and appurtenances (manholes, catch basins, curbing, inlet basins, etc.) shall conform to Department specifications and shall be constructed in accordance with the Department Standard Drawings. Type required:

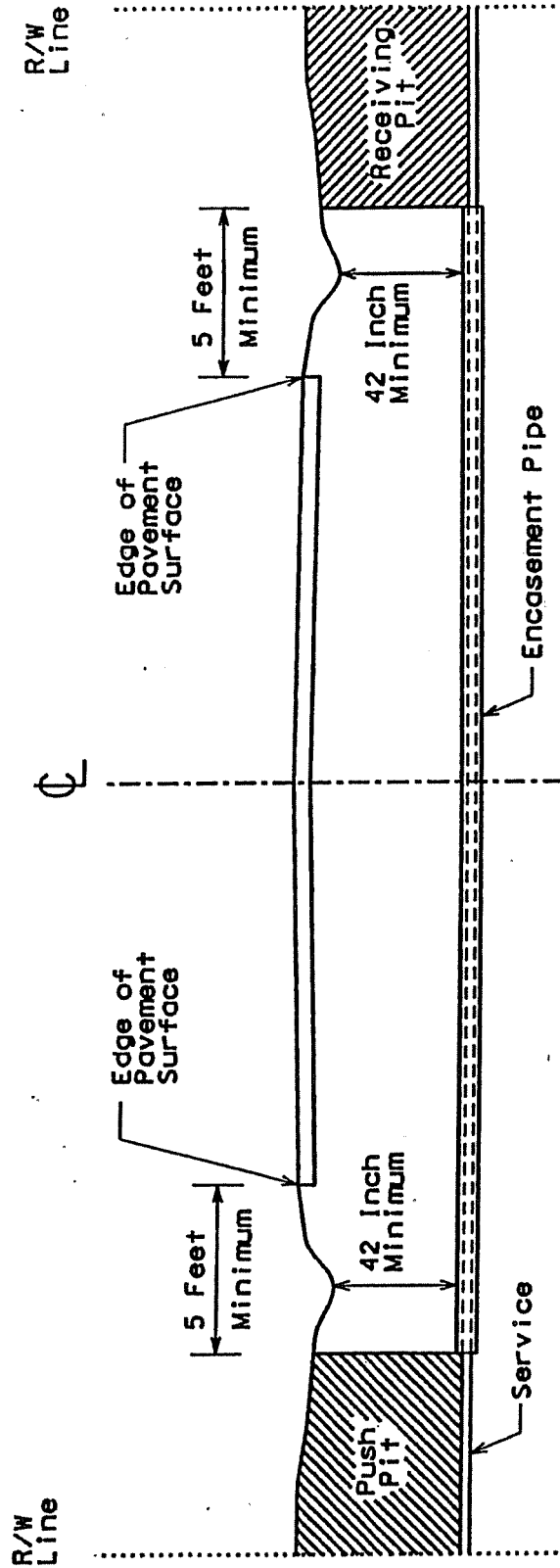


Kentucky Transportation Cabinet
 Department of Highways
 Permits Branch

EXHIBIT 8
 TC 99-10
 Rev. 9/2004

TYPICAL HIGHWAY BORING CROSSING DETAIL

Permit No. _____
 Route No. _____
 Pavement Width _____

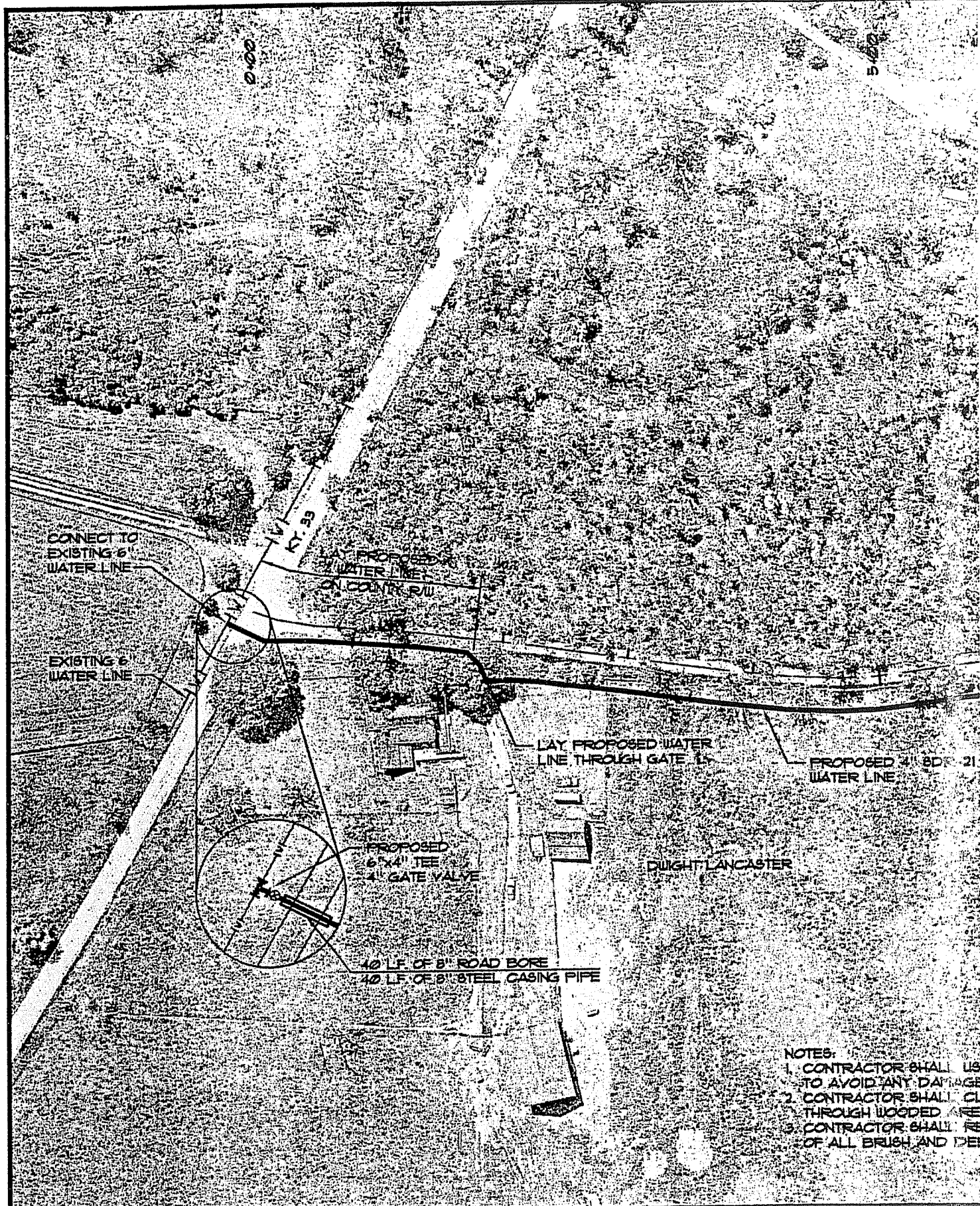


1. Push Pit and Receiving Pit shall be backfilled and thoroughly compacted.
2. All ditch lines are to remain open at all times.
3. Seed and straw all disturbed areas immediately after completing the work.
4. Provide traffic control as required to insure the safety of the traveling public in accordance with the current edition of the "Manual on Uniform Traffic Control Devices".

ALL SERVICES OVER 2" IN DIAMETER SHALL REQUIRE ENCASEMENT.



141Cz .erilint .dwg, 2005 09 AM .prt



- NOTES:
1. CONTRACTOR SHALL USE TO AVOID ANY DAMAGE
 2. CONTRACTOR SHALL CL THROUGH WOODED ARE
 3. CONTRACTOR SHALL BE OF ALL BRUSH AND DEE

NO.	DATE	REVISIONS	CHK'D	APPR'D	DATE

PROJECT: 404400		
SCALE: 1" = 100'		DATE: JULY 2005
DESIGNED BY:	JDR	NAME
DRAWN BY:	GAR	DATE
CHECKED BY:	JDR	
RECORD DUGS:		



NOTICE OF COMPLETION OF ENCROACHMENT PERMIT WORK

Please return this form to the District Office when work is completed and ready for final inspection.

Applicant Identification

Name: SOUTH WOODFORD WATER DISTRICT

Contact Person: GEORGE WITHERS

Address: 460 WILSON AVENUE

City: VERSAILLES

State: KY Zip: 40383

Telephone: 606-873-1308

Project Identification

Permit Number: 07-0178-06

County: Woodford

Route Number: 1967

Road Name: SHANNON RUN ROAD

Milepoint: 1.3

I wish to notify the Department of Highways that the above mentioned permit work and any necessary right of way restoration have been completed and are ready for final inspection.

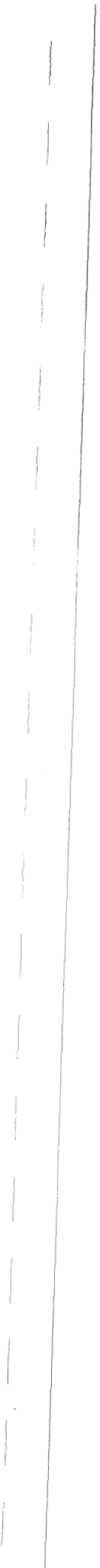
Applicant

Please Return To:

Department of Highways
District 7 Lexington
P.O. Box 11127
Lexington, Ky. 40512-1127

Attention:

Kelly A. Baker, P.E.



APPENDIX B
COUNTY ROAD PERMIT

WOODFORD COUNTY ENGINEER

BUAN SMITH III, P.E.
160 Beasley Road
Versailles, Kentucky 40383
859-873-4231

HMB Professional
Engineers, Inc.

MAR 21 2006

March 16, 2006

HMB Professional Engineers, Inc.
3 HMB Circle
U.S. 460
Frankfort, Kentucky 40601

Attn: Jeff Reynolds, P.E.

Re: Phase 4 Water Project
South Woodford Water District
HMB # 4044

Dear Mr. Reynolds,

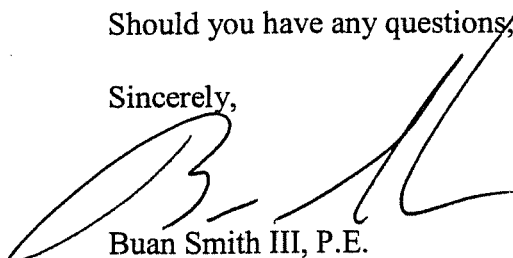
I have enclosed signed copies of the Encroachment Permits requested. The Woodford County Fiscal Court approved issuing these permits contingent on the requirements either listed on, or attached to the individual permit.

As for the 15 service line bores the following conditions can apply:

- All locations shall be reported to this office.
- For crossing that will be bored, the line shall be encased as shown in your Typical Road Crossing schematic and any damage to the roadway shall be repaired by the Applicant.
- For those crossing in which a road cut is deemed necessary this office shall be notified, the line shall be encased and the trenching shall be accomplish as shown in your Typical Road Crossing and Flowable Fill schematics. The elevation of the black top surface over the trench shall be smooth with the existing roadway elevation from one side of the trench to the other.

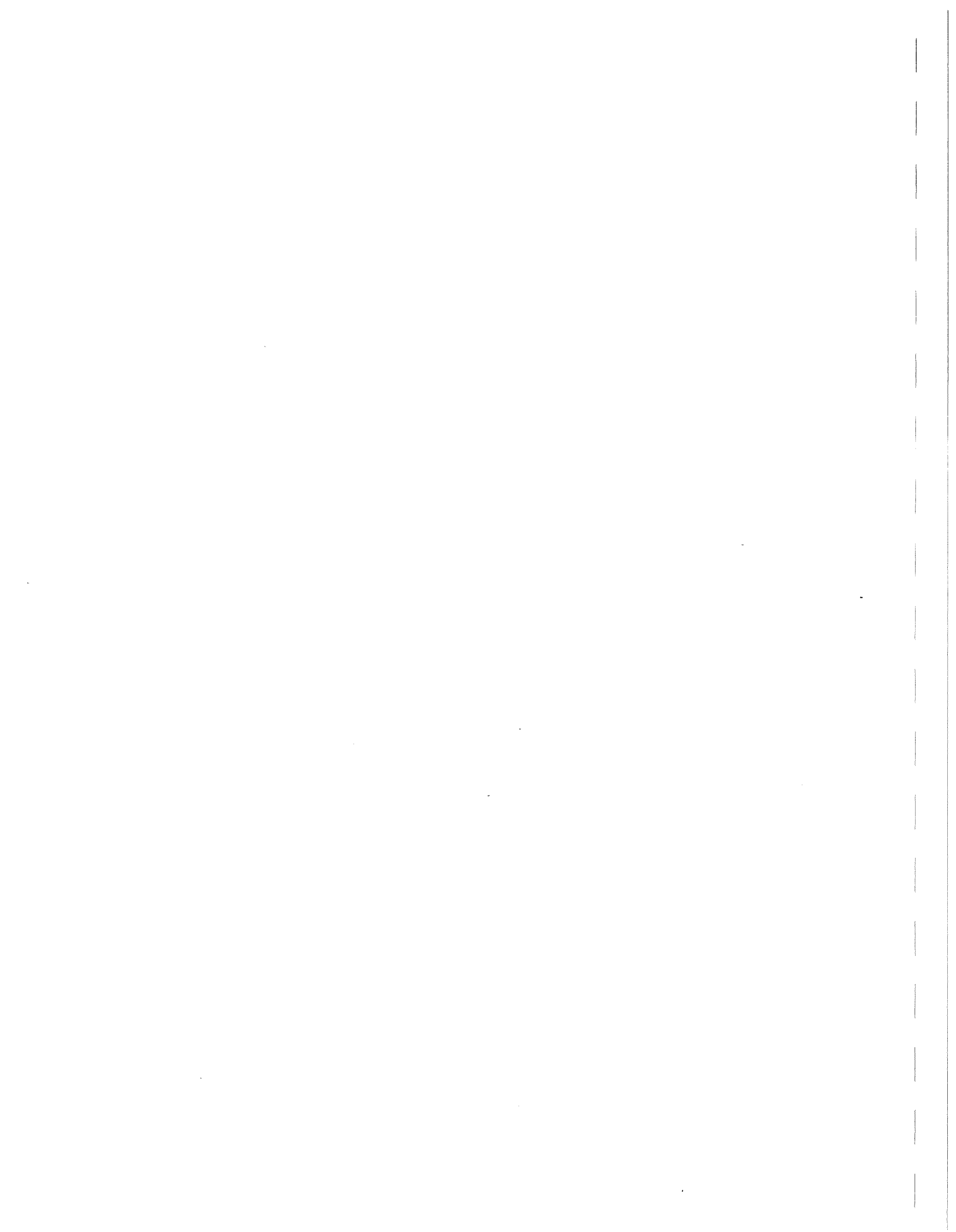
Should you have any questions, feel free to contact me.

Sincerely,



Buan Smith III, P.E.
County Engineer

Enclosures



WOODFORD COUNTY ROAD DEPARTMENT

ENCROACHMENT PERMIT

NAME & ADDRESS OF APPLICANT

DATE _____

South Woodford Water District
467 D Wilson Ave.
Versailles, Ky. 40383

PHONE NUMBER 859-873-4003

TYPE OF PERMIT:

PRIVATE ACCESS
 UTILITY
 OTHER (SPECIFY)

COMMERCIAL
 AIR SPACE

LOCATION: ROAD NAME

Pauls Mill Road (Near Ky 33)

_____ MILES

LEFT OR

RIGHT FROM _____

See attached plan sheet

DESCRIPTION OF WORK TO BE DONE:

Lay approx. 150' of water line on county R/W parallel to Pauls Mill Rd.

THIS PERMIT IS GRANTED SUBJECT TO THE FOLLOWING CONDITIONS:

THE APPLICANT UNDERSTANDS THAT IF THIS PERMIT IS GRANTED, HE WILL FULFILL ALL REQUIREMENTS AND FURNISH ANY AND ALL MATERIALS NEEDED AND REQUESTED BY THE COUNTY ENGINEER.

MAINTAIN EXISTING GROUNDLINE ALONG R/W.

APPROX. COMPLETION DATE

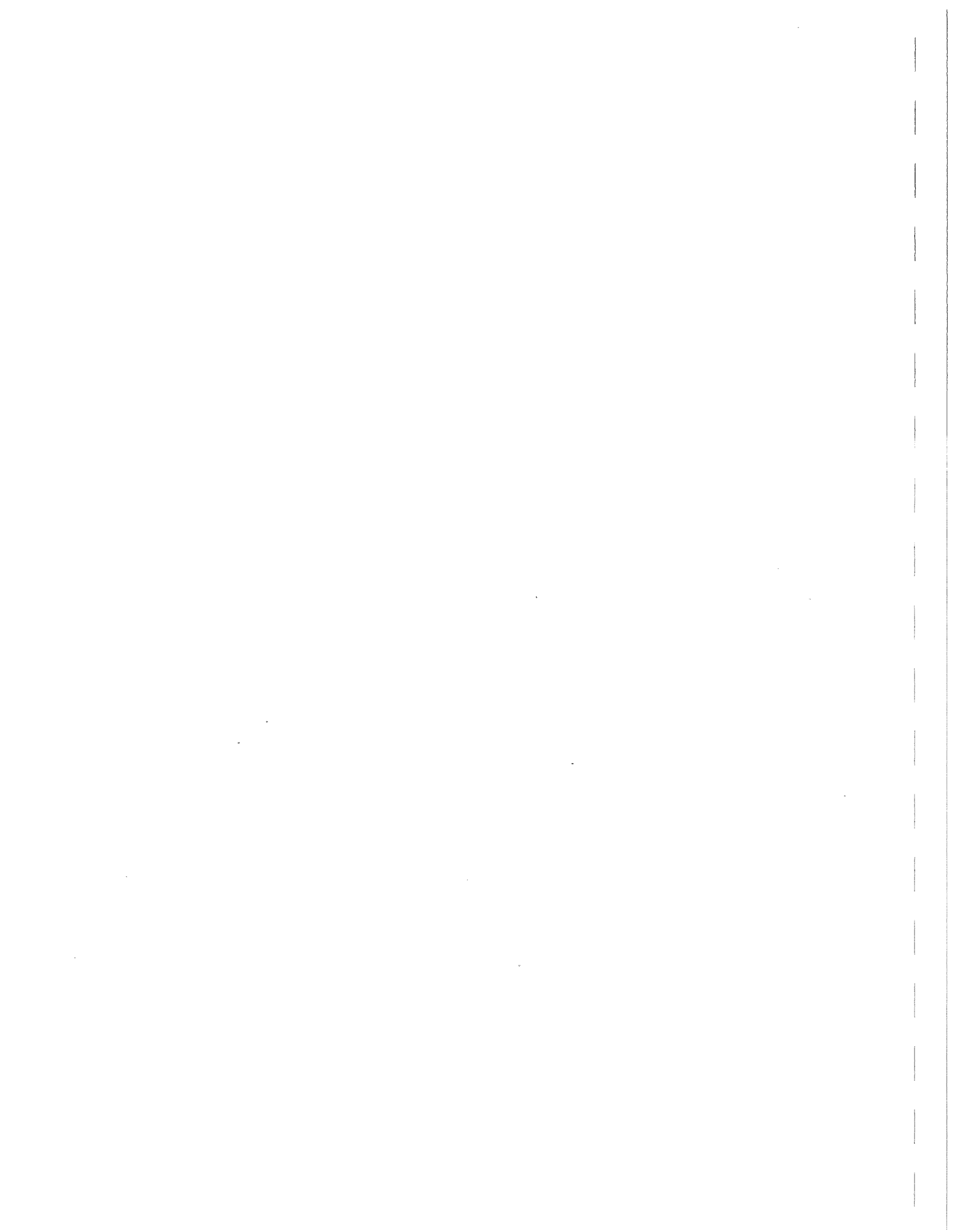
X [Signature]

SIGNATURE OF APPLICANT

[Signature]
COUNTY ENGINEER

MARCH 16, 2006

DATE



Bowman Road

Description

Install approximately 800 feet of 4" water line on county right-of-way parallel to Bowman Road. Flowable fill concrete as shown on the attached detail will be used where the water line is laid within 3 feet of the pavement.

Bowman Road

The existing ditch line shall be maintained with a one foot vertical depth from the elevation of the pavement edge (minimum).

The ditchline above the waterline trench shall be stabilized by use of flowable fill to prevent "wash-out" of the trench/ditchline during heavy rain events.

Pavement damaged during construction shall be repaired by the Applicant.

WOODFORD COUNTY ROAD DEPARTMENT

ENCROACHMENT PERMIT

NAME & ADDRESS OF APPLICANT

DATE _____

South Woodford Water District
467 D Wilson Ave.
Versailles, Ky. 40383

PHONE NUMBER 859-873-4003

TYPE OF PERMIT:

PRIVATE ACCESS
 UTILITY
 OTHER (SPECIFY)

COMMERCIAL
 AIR SPACE

LOCATION: ROAD NAME Bowman Road

 MILES LEFT OR RIGHT FROM

See attached plan sheet

DESCRIPTION OF WORK TO BE DONE:

See attached description

THIS PERMIT IS GRANTED SUBJECT TO THE FOLLOWING CONDITIONS:

THE APPLICANT UNDERSTANDS THAT IF THIS PERMIT IS GRANTED, HE WILL FULFILL ALL REQUIREMENTS AND FURNISH ANY AND ALL MATERIALS NEEDED AND REQUESTED BY THE COUNTY ENGINEER.

APPROX. COMPLETION DATE

X [Signature]
SIGNATURE OF APPLICANT

[Signature]
COUNTY ENGINEER

March 16, 2006
DATE

WOODFORD COUNTY ROAD DEPARTMENT

ENCROACHMENT PERMIT

NAME & ADDRESS OF APPLICANT

DATE _____

South Woodford Water District
467 D Wilson Ave.
Versailles, Ky. 40383

PHONE NUMBER 859-873-4003

TYPE OF PERMIT:

PRIVATE ACCESS
 UTILITY
 OTHER (SPECIFY)

COMMERCIAL
 AIR SPACE

LOCATION: ROAD NAME Hifner Road

 MILES LEFT OR RIGHT FROM

See attached pln sheets

DESCRIPTION OF WORK TO BE DONE:

35' of 8" roadbed w/steel casing and approx. 150' of water line on County R/W

THIS PERMIT IS GRANTED SUBJECT TO THE FOLLOWING CONDITIONS:
THE APPLICANT UNDERSTANDS THAT IF THIS PERMIT IS GRANTED, HE WILL FULFILL ALL REQUIREMENTS AND FURNISH ANY AND ALL MATERIALS NEEDED AND REQUESTED BY THE COUNTY ENGINEER.

PAVEMENT DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE APPLICANT.

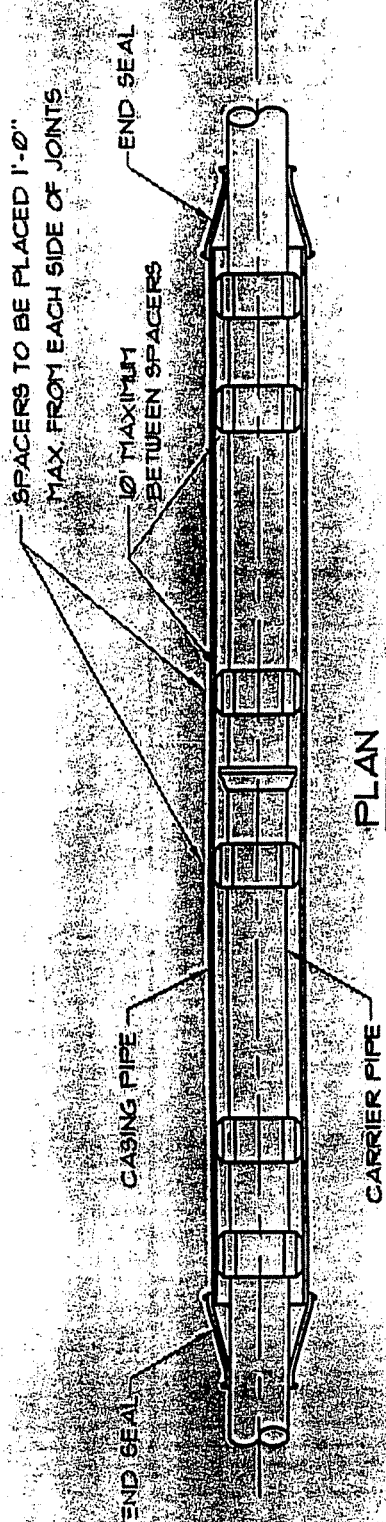
APPROX. COMPLETION DATE

[Signature]

SIGNATURE OF APPLICANT

[Signature]
COUNTY ENGINEER

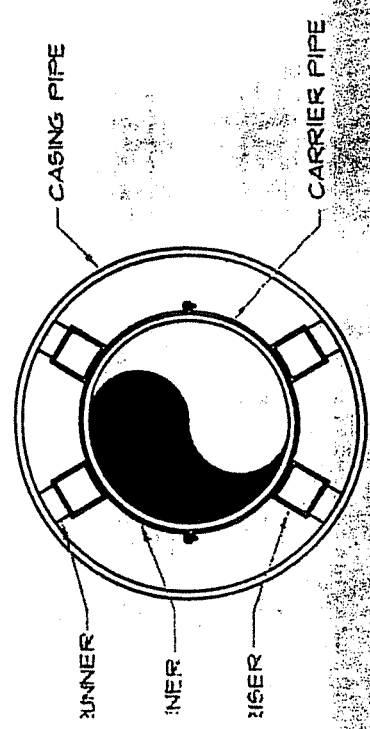
March 16, 2006
DATE



PLAN

TYPICAL ROAD CROSSING NOTES:

1. ALL JOINTS SHALL BE SOLIDLY WELDED. END OF CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. MINIMUM DEPTHS MAY INCREASE IN AREAS WHICH REQUIRE MINIMUM SEPARATION WITH OTHER FACILITIES.
3. OPEN TRENCH NO CLOSER THAN THE DITCH LINE OR TOE OF FILL FROM THE EDGE OF THE PAVEMENT OR AS DIRECTED BY STATE, COUNTY OR MUNICIPAL SPECIFICATIONS.
4. HIGHWAY CROSSINGS SHALL UTILIZE STEEL CASING PIPE. STEEL CASING PIPES 4" AND LESS SHALL BE NEW SCHEDULE 40. STEEL CASING PIPES LARGER THAN 4" SHALL HAVE MINIMUM WALL THICKNESS OF 0.25". ALL BORED AND JACKED ENCASEMENT PIPE SHALL BE INSTALLED IN BORE HOLES NO LARGER THAN THE OUTSIDE DIAMETER OF THE ENCASEMENT PIPE.
5. SDR-21 SHALL BE USED FOR PVC CASING FOR COUNTY ROADS, WHERE PVC CASING PIPE IS REQUIRED.



ELEVATION

TYPICAL STREAM CROSSING NOTES:

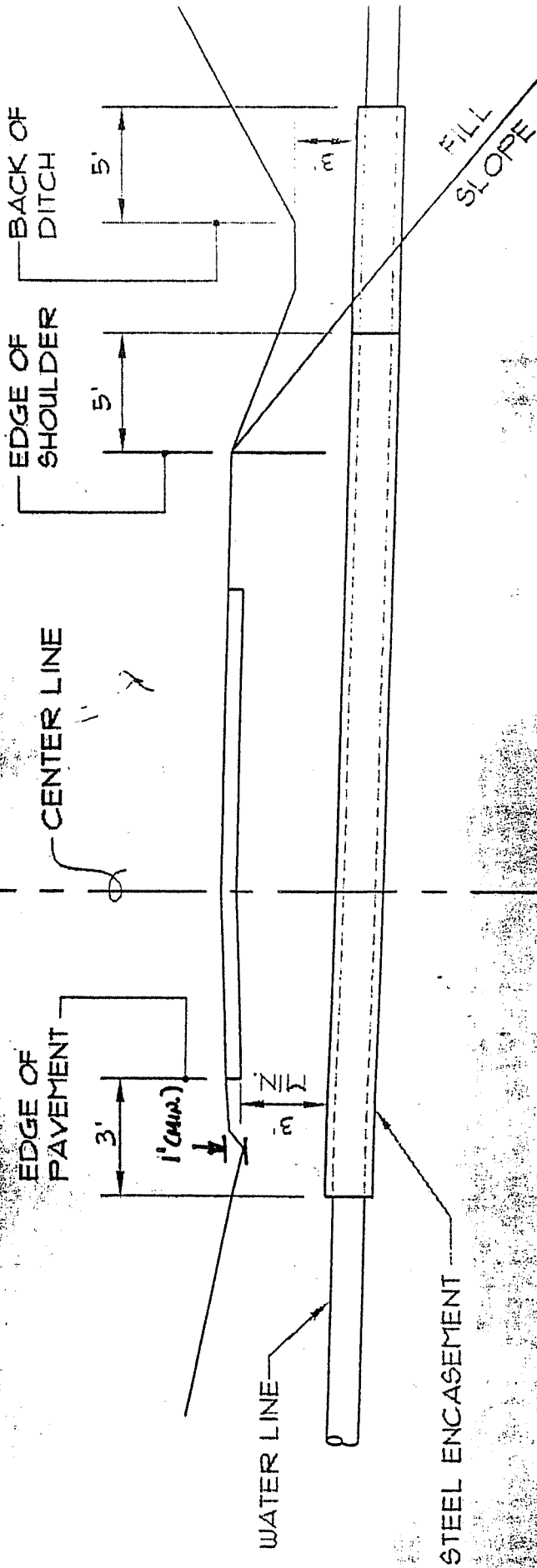
1. END CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. CONCRETE GAP SHALL END A MINIMUM OF ONE FOOT FROM EDGE OF CASING PIPE.
3. STREAM CROSSINGS SHALL UTILIZE PVC SDR 35 CASING PIPE.

ENGAGEMENT PIPE SPACER

NOT TO SCALE

COUNTY ROAD

STATE HIGHWAY



TYPICAL ROAD CROSSING

NOT TO SCALE

WOODFORD COUNTY ROAD DEPARTMENT

ENCROACHMENT PERMIT

NAME & ADDRESS OF APPLICANT

DATE _____

South Woodford Water District
467 D Wilson Ave.
Versailles, Ky. 40383

PHONE NUMBER 859-873-4003

TYPE OF PERMIT:

PRIVATE ACCESS
 UTILITY
 OTHER (SPECIFY)

COMMERCIAL
 AIR SPACE

LOCATION: ROAD NAME Craigs Creek Rd

 MILES LEFT OR RIGHT FROM

See attached plan sheets

DESCRIPTION OF WORK TO BE DONE:

See attached description

THIS PERMIT IS GRANTED SUBJECT TO THE FOLLOWING CONDITIONS:


THE APPLICANT UNDERSTANDS THAT IF THIS PERMIT IS GRANTED, HE WILL FULFILL ALL REQUIREMENTS AND FURNISH ANY AND ALL MATERIALS NEEDED AND REQUESTED BY THE COUNTY ENGINEER.

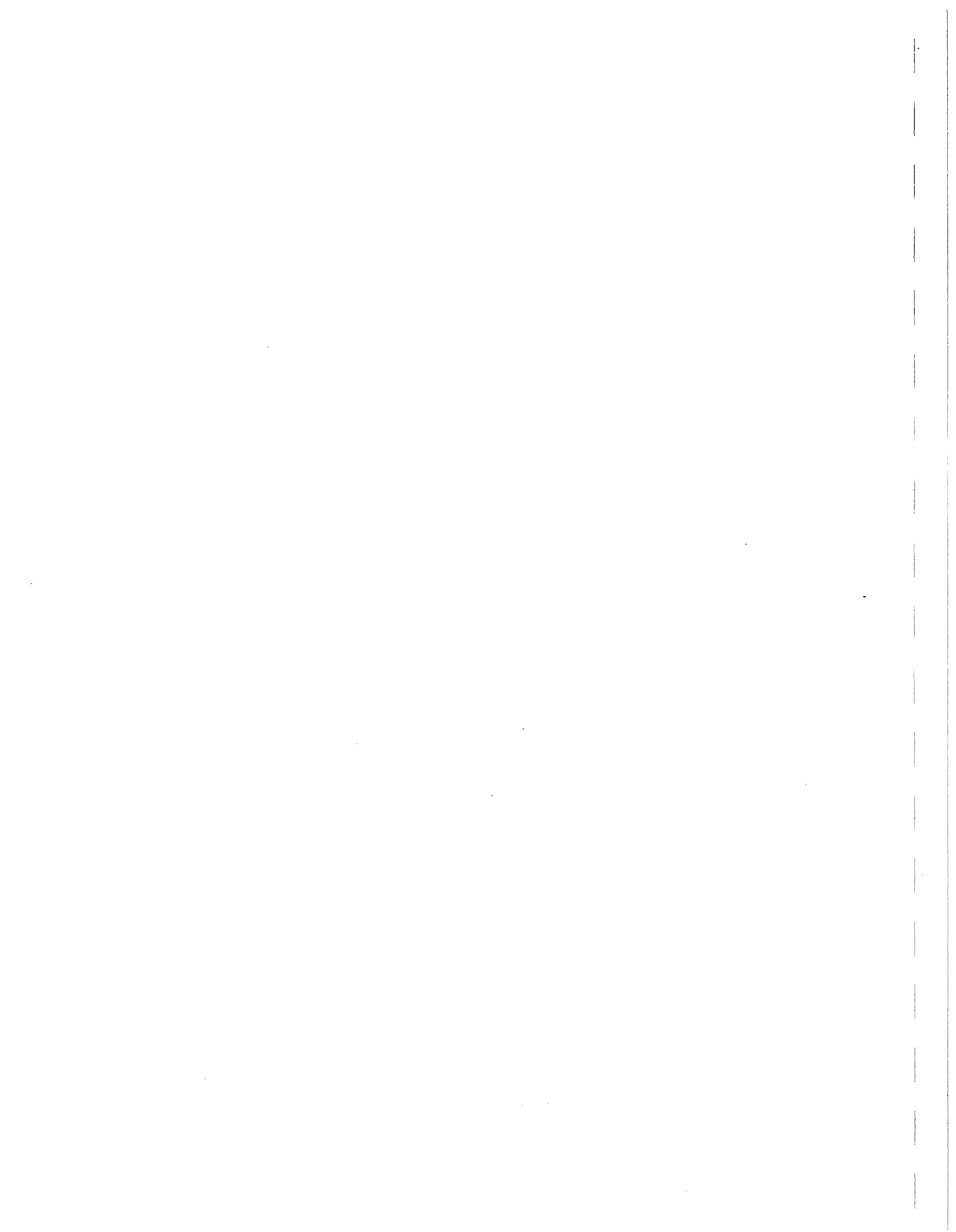
*SEE ATTACHED NOTE 5
AND SCHEMATICS*

APPROX. COMPLETION DATE

X 
SIGNATURE OF APPLICANT

COUNTY ENGINEER


March 16, 2006
DATE



Craigs Creek Road

Description

Install approximately 4,300 feet of 4" water line on county right-of-way parallel to Craigs Creek Road. Flowable fill concrete as shown on the attached detail will be used where the water line is laid within 3 feet of the pavement.

Install approximately 60 feet of 8" steel casing by open cut to cross Craigs Creek Road. Open cut is necessary due to a creek on one side of the road and a cliff on the other side of the road. Flowable fill concrete will be used for the full depth of the trench with a black top cap.

Install approximately 100 feet of water line in the road. This is necessary due to a creek on one side of the road and house on the other side of the road. Flowable fill concrete as shown on the attached detail with a black top cap will be used for the entire length.

Craigs Creek Road

The existing ditch line shall be maintained with a one foot vertical depth from the elevation of the pavement edge (minimum).

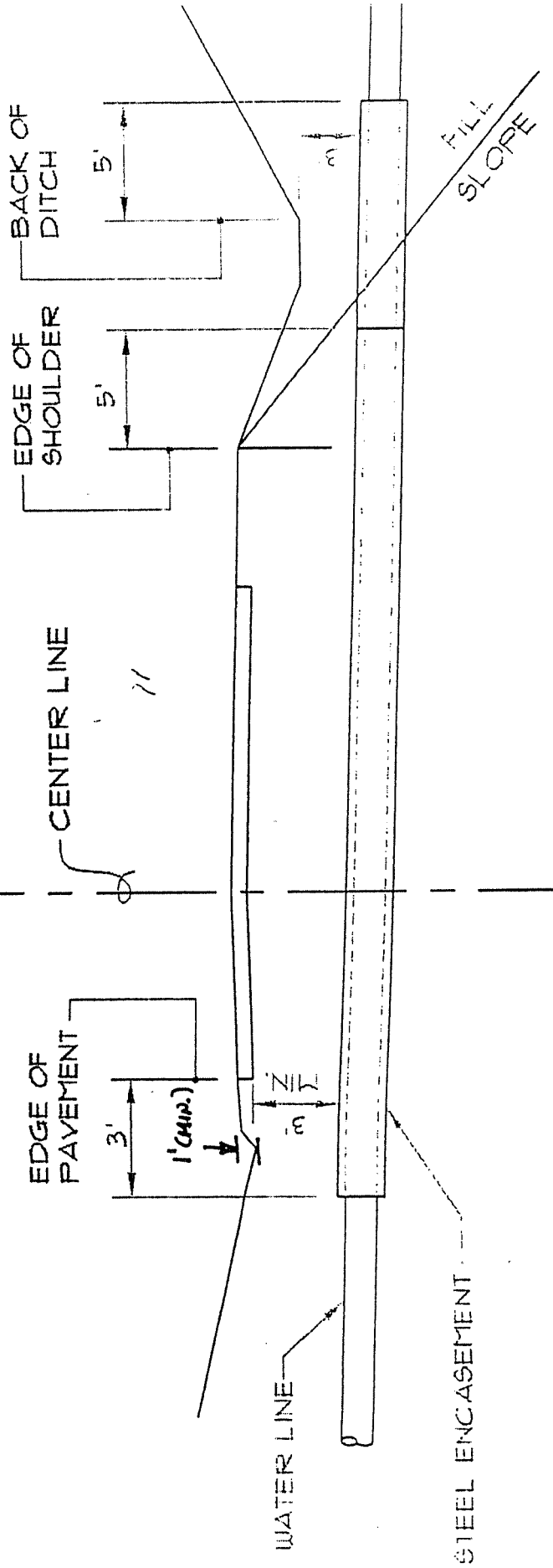
Pavement damaged during construction shall be repaired by the Applicant.

The existing bridges over Craigs Creek shall not be impacted or altered for placement of the proposed waterline.

Every effort should be made to bore road crossing under the pavement. Should it be necessary to open cut the roadway the Woodford County Engineer shall be notified. The road shall also remain passable either by use of roadway metal plates or part-width construction. Backfill of the road cut trench shall be as detailed in the in the Flowable Fill schematic with the final surface course elevation to traverse smoothly from one side of the roadway cut to the other.

STATE HIGHWAY

COUNTY ROAD



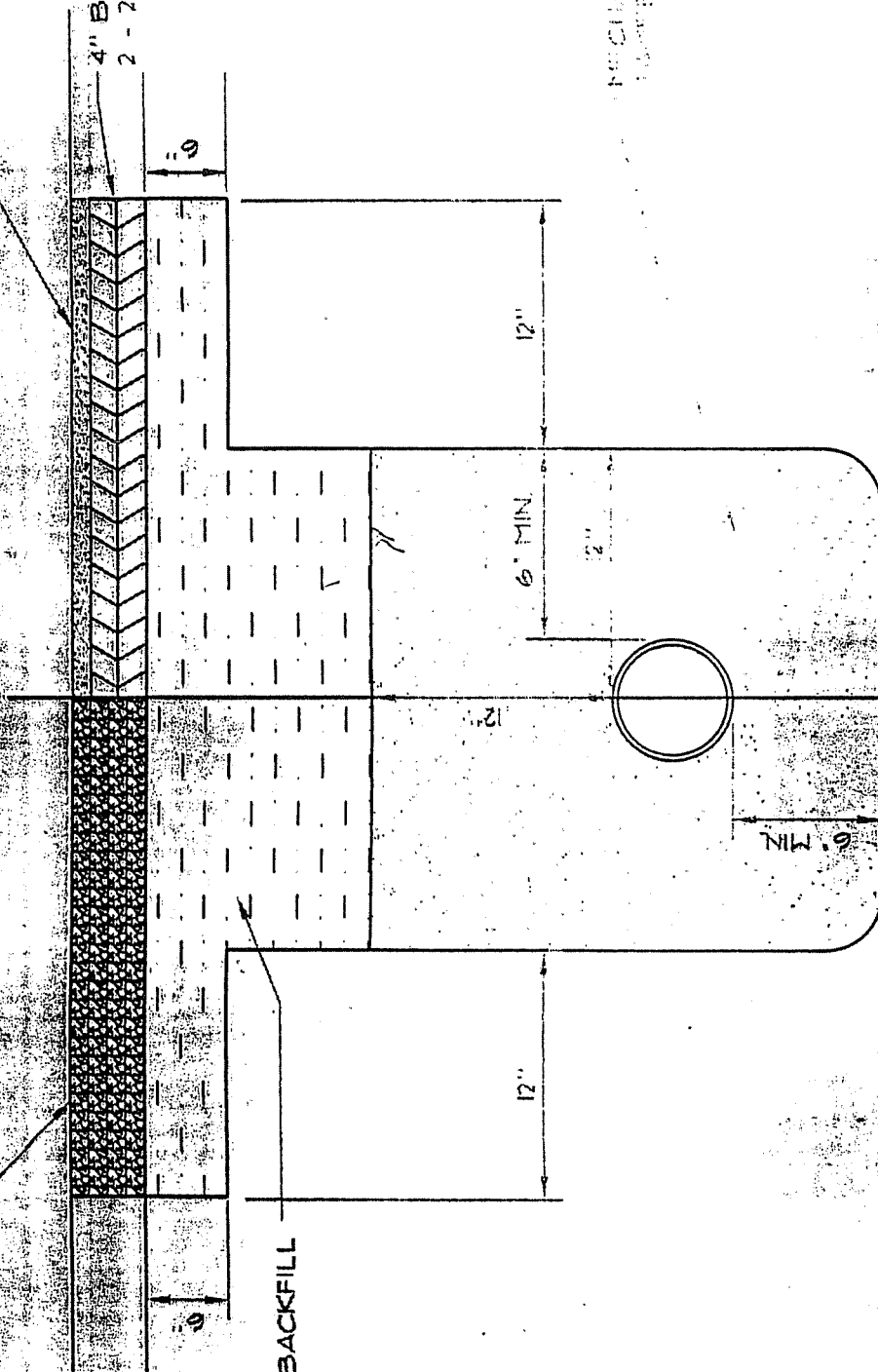
TYPICAL ROAD CROSSING

NOT TO SCALE

8" COMPACTED CRUSHED STONE
OR EARTH BACKFILL

1" COMPACTED BIT. CC
SURFACE TYPE "A"

4" BIT. CONC. BASE
2 - 2" COURSES



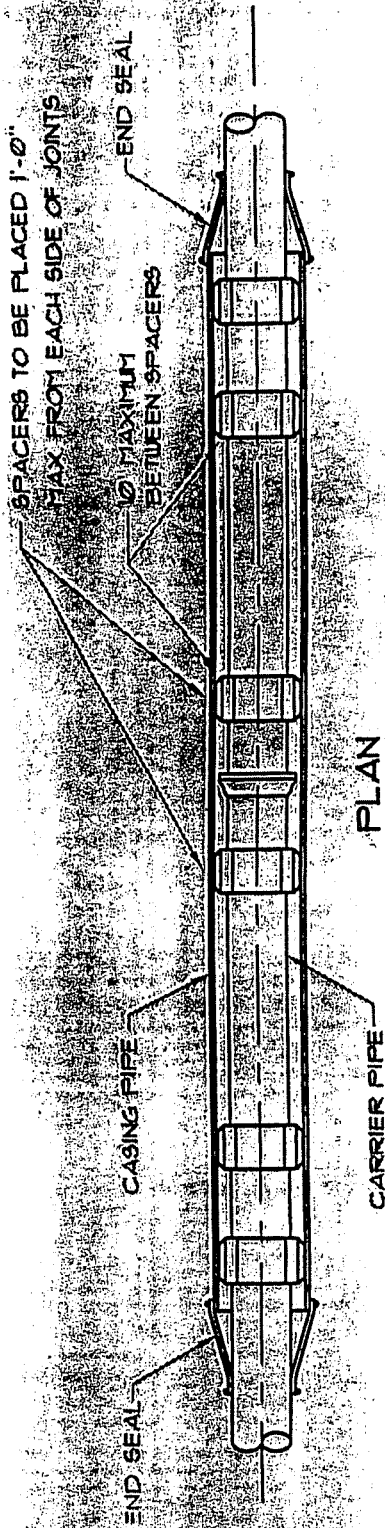
FLOWABLE BACKFILL

GRAVEL OR EARTH SURFACE

BITUMINOUS SURFACE

NOT TO SCALE





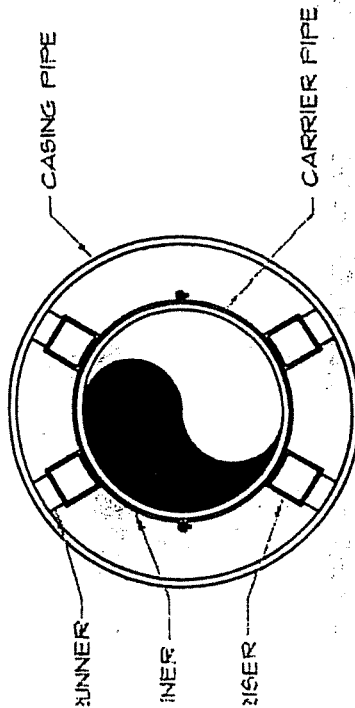
PLAN

TYPICAL ROAD CROSSING NOTES:

1. ALL JOINTS SHALL BE SOLIDLY WELDED. END OF CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. MINIMUM DEPTHS MAY INCREASE IN AREAS WHICH REQUIRE MINIMUM SEPARATION WITH OTHER FACILITIES.
3. OPEN TRENCH NO CLOSER THAN THE DITCH LINE OR TOE OF FILL FROM THE EDGE OF THE PAVEMENT OR AS DIRECTED BY STATE, COUNTY OR MUNICIPAL SPECIFICATIONS.
4. HIGHWAY CROSSINGS SHALL UTILIZE STEEL CASING PIPE. STEEL CASING PIPES 4" AND LESS SHALL BE NEW SCHEDULE 40 STEEL CASING PIPES LARGER THAN 4" SHALL HAVE MINIMUM WALL THICKNESS OF 0.25". ALL BORED AND JACKED ENCASMENT PIPE SHALL BE INSTALLED IN BORE HOLES NO LARGER THAN THE OUTSIDE DIAMETER OF THE ENCASMENT PIPE.
5. SDR-21 SHALL BE USED FOR PVC CASING FOR COUNTY ROADS, WHERE PVC CASING PIPE IS REQUIRED.

TYPICAL STREET CROSSING NOTES:

1. END CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. CONCRETE GAP SHALL END A MINIMUM OF ONE FOOT FROM EDGE OF CASING PIPE.
3. STREET CROSSINGS SHALL UTILIZE PVC SDR 95 CASING PIPE.



ELEVATION

ENCASMENT PIPE SPACER

NOT TO SCALE



WOODFORD COUNTY ROAD DEPARTMENT

ENCROACHMENT PERMIT

NAME & ADDRESS OF APPLICANT

DATE _____

South Woodford Water District
467 D Wilson Ave.
Versailles, Ky. 40383

PHONE NUMBER 859-873-4003

TYPE OF PERMIT:

PRIVATE ACCESS
 UTILITY
 OTHER (SPECIFY)

COMMERCIAL
 AIR SPACE

LOCATION: ROAD NAME Griers Creek Road

 MILES LEFT OR RIGHT FROM

See attached plan sheet

DESCRIPTION OF WORK TO BE DONE:

See attached description

THIS PERMIT IS GRANTED SUBJECT TO THE FOLLOWING CONDITIONS:

THE APPLICANT UNDERSTANDS THAT IF THIS PERMIT IS GRANTED, HE WILL FULFILL ALL REQUIREMENTS AND FURNISH ANY AND ALL MATERIALS NEEDED AND REQUESTED BY THE COUNTY ENGINEER.

THE EXISTING DITCH LINE SHALL BE MAINTAINED WITH A ONE FOOT VERTICAL DEPTH FROM THE EDGE OF PAVEMENT (MINIMUM).

PAVEMENT DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE APPLICANT

APPROX. COMPLETION DATE

X [Signature]
SIGNATURE OF APPLICANT

[Signature]
COUNTY ENGINEER

MARCH 16, 2006
DATE



Griers Creek Road

Description

Install approximately 1,050 feet of 6" water line on county right-of-way parallel to Griers Creek Road. Flowable fill concrete as shown on the attached detail will be used where the water line is laid within 3 feet of the pavement.



CONTRACT I
PHASE IV WATER PROJECT
SOUTH WOODFORD WATER DISTRICT
WOODFORD COUNTY, KENTUCKY
OCTOBER 2006

Proposal of _____ (hereinafter called "BIDDER"), organized and existing under the laws of the State of _____ doing business as _____.* To the _____ (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all work for the construction of Contract I – Phase IV Water Project – South Woodford Water District in strict accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

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

BIDDER hereby agrees to commence work under this contract on or before a date to be specified in the Notice to Proceed and to fully complete the project within 120 consecutive calendar days thereafter. BIDDER further agrees to pay as liquidated damages, the sum of \$500.00 for each consecutive calendar day that the work remains incomplete after the expiration date of the contract.

BIDDER acknowledges receipt of the following Addenda:

Addendum No. _____ Addendum No. _____ Addendum No. _____

The BIDDER hereby proposes to furnish and do all that is required by the contract to which this refers for the construction of all structures listed at the prices shown for each bid item on the following Bid Schedule. (The Bid Schedule attached lists the various divisions of construction contemplated in the Plans and Specifications, together with an estimate of the units of each. With these units as the basis, the BIDDER will extend each item, using the cost he inserts in the unit column. Any total cost found inconsistent with the unit cost when the bids are examined will be deemed in error and corrected to agree with the unit cost which shall be considered correct).

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



The undersigned BIDDER does hereby declare and stipulate that this proposal is made in pursuance of and subject to all terms and conditions of the Instructions to Bidders, the Construction Contract, the Technical Specifications, and the Plans pertaining to the work to be done, all of which have been examined by the undersigned.

Accompanying this proposal is a certified check or standard bid bond (5% of the Total Bid) in the sum of _____ dollars and cents (\$ _____) in accordance with the Instructions to Bidders.

The undersigned BIDDER agrees to execute the contract and Performance and Payment Bond for the amount of the total of this bid within 10 calendar days from the date when the written Notice of Award of the contract is delivered to him at the address given in this proposal. The name and address of the corporate surety with which the BIDDER proposes to furnish the specified Performance and Payment Bond is as follows:

All the various phases of work enumerated in the Technical Specifications with their individual jobs and overhead, whether specifically mentioned, included by implication or appurtenant thereto, are to be performed by the Contractor under one of the items listed in the Bid Schedule, irrespective of whether it is named in said list.

Payment for work performed will be in accordance with the Bid Schedule, subject to changes as provided for the Construction Contract.

The BIDDER understands that the OWNER reserves the right to reject any or all bids and to waive any informalities in the bidding.

The BIDDER agrees that this bid shall be good and may not be withdrawn for a period of 90 calendar days after the scheduled closing time for receiving bids.

Bids shall include sales tax and all other applicable taxes and fees.



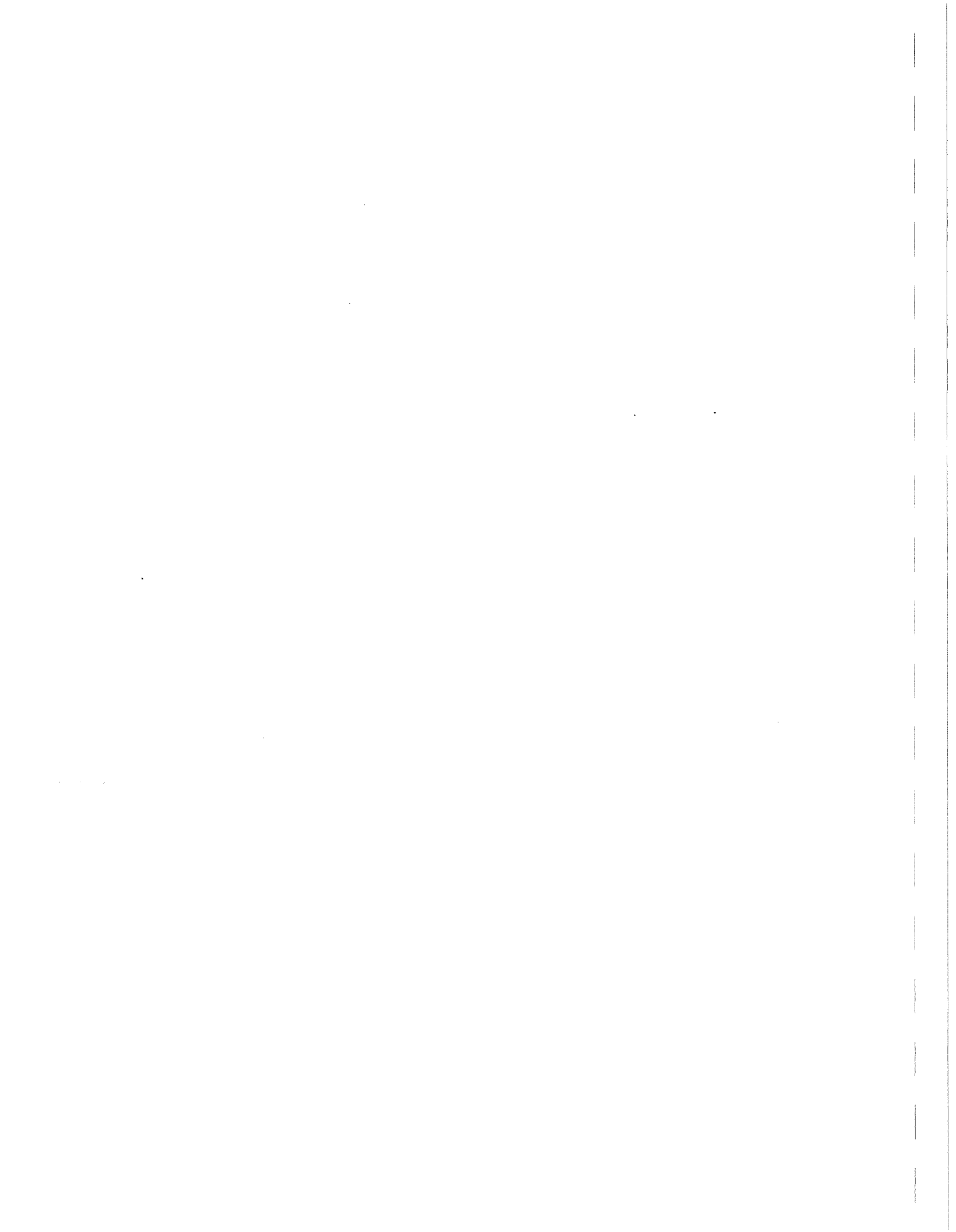
BID SCHEDULE

<u>Item No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Total</u>
1.	6" D.I. Class 350 Pipe, Furnishing, Trenching, Laying and Backfilling. (Unclassified Excavation)	1,200	L.F.	_____	_____
2.	4" PVC, Class 200 Pipe, DR-14, AWWA C-900 Furnishing, Trenching, Laying and Backfilling. (Unclassified Excavation)	9,200	L.F.	_____	_____
3.	4" PVC, Class 200 Pipe, SDR-21 Furnishing, Trenching, Laying and Backfilling. (Unclassified Excavation)	17,800	L.F.	_____	_____
4.	8" Steel Cover Pipe, Furnishing and Installing Under State and County Maintained Roads, Including Unclassified Boring and/or Jacking (Water Pipe Not Included)	100	L.F.	_____	_____
5.	Open Cut Furnishing and Installing 8" Steel Casing Pipe (Water Pipe Not Included)	60	L.F.	_____	_____
6.	Open Cut Furnishing and Installing 8" PVC Casing Pipe (Water Pipe Not Included)	20	L.F.	_____	_____



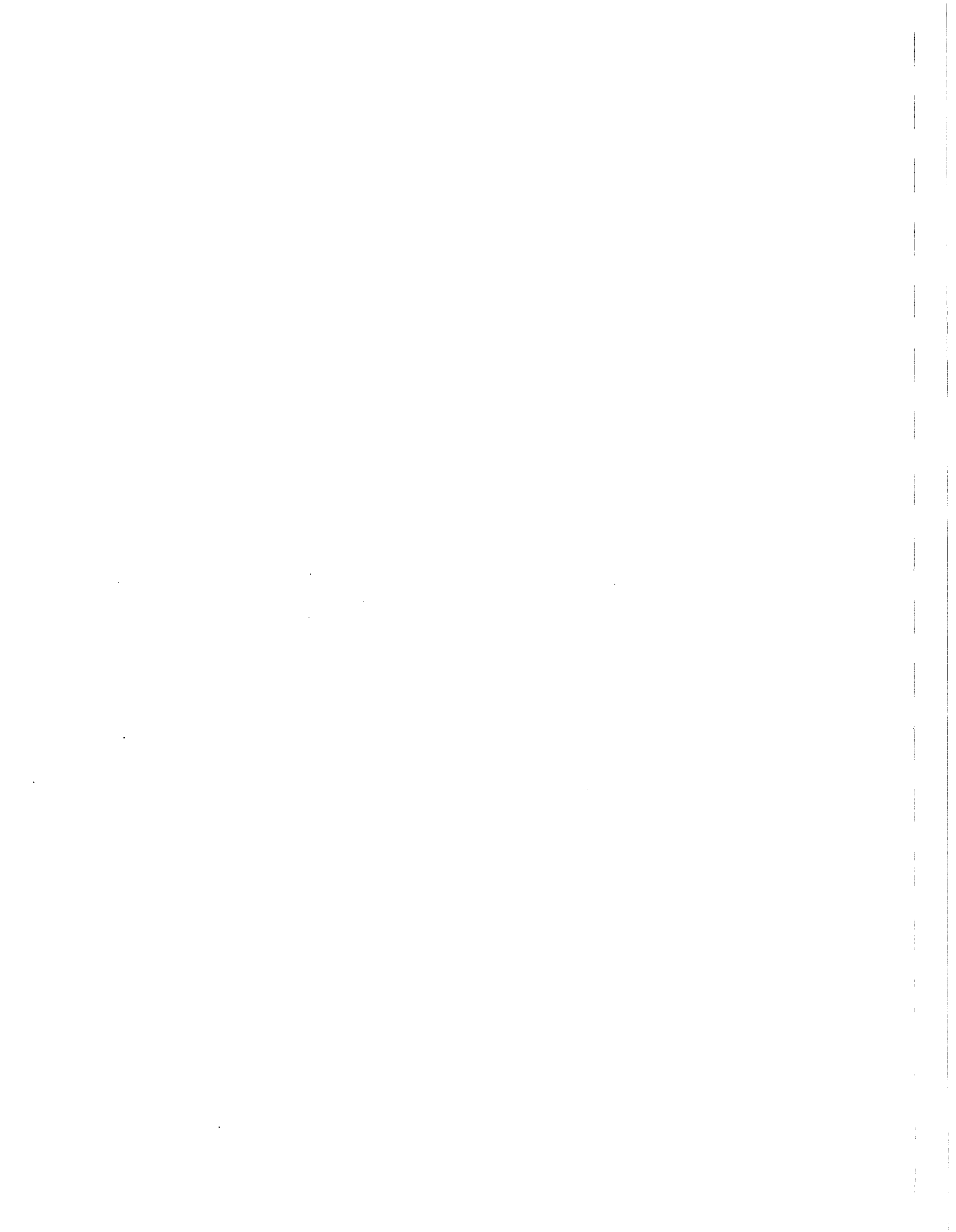
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<u>Item</u> <u>No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit</u> <u>Price</u>	<u>Total</u>
7.	4" Unclassified Bore and/or Jack under improved surfaces, including drive-ways, no casing required (Water Pipe not Included)	100	L.F.	_____	_____
8.	6" C.I. AWWA N.R.S. Gate Valve and Box, Conc. Pad, Complete in Place	1	Ea.	_____	_____
9.	4" C.I. AWWA NRS Gate Valve and Box, Conc. Pad, Complete in Place	12	Ea.	_____	_____
10.	Customer Services with 5/8" Meter, Pressure Regulator, Tandem Copper Setter, Meter Box, Lid, PVC Casing, Opposite Side of Road as Main, 70 feet service tubing (maximum)	10	Ea.	_____	_____
11.	Customer services with 5/8" Meter, Pressure Regulator, Tandem Copper Setter, Meter Box, Lid Same Side of Road as Main, 10 feet service tubing (maximum)	10	Ea.	_____	_____



Continued

<u>Item</u>				<u>Unit</u>	<u>Price</u>	<u>Total</u>
<u>No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Unit</u>			
12.	Customer Services with 5/8" Meter, Copper Setter, Meter Box, Lid, PVC Casing Opposite Side of Road, 70 feet Service tubing. (maximum)	5	Ea.	_____	_____	
13.	Customer Services with 5/8" Meter, Copper Setter, Meter Box, Lid, Same Side of Road, 10 feet Service tubing (maximum)	5	Ea.	_____	_____	
14.	Additional 3/4" PE Service Tubing, Furnishing, Laying, Trenching and Backfilling Where required in Addition to Maximum lengths Included 10 through 13	250	L.F.	_____	_____	
15.	4" Type "B" Creek Crossing Including Fittings, Concrete Casing, Casing Pipe, Complete in Place as shown on the detail sheet	250	L.F.	_____	_____	
16.	Single Nozzle Blowoff Hydrant Assembly, Including Tee, Valve, Valve Box, Mechanical Joint Anchoring, Pipe and Fittings, Complete in place	3	Ea.	_____	_____	
17.	4" Blowoff Assembly Including valve, pipe and Fittings, complete in place	2	Ea.	_____	_____	



Continued

<u>Item</u> <u>No.</u>	<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit</u> <u>Price</u>	<u>Total</u>
18.	Automatic Air Release Valve Assembly and Box, Complete in Place	5	Ea.	_____	_____
19.	Crushed Stone on trench, full depth On driveways, roadway crossings and streets	1,000	L.F.	_____	_____
20.	Bituminous Paving Replacement on State and County Maintained roads and Driveways. Including gravel backfill	300	L.F.	_____	_____
21.	Concrete Paving Replacement, 6" Thick, including gravel backfill	300	L.F.	_____	_____
22.	Flowable Fill Concrete, including sand and flowable backfill as shown on detail sheet and described in specs. (Bit. replacement not included)	3,500	L.F.	_____	_____
23.	Booster Pump Station Including but not limited to furnishing and installing 2-225 gpm pumps, all piping, valves, controls, concrete, site work, fence, access road, power pole, electric to site, etc. (Complete in Place)		L.S.		_____



TOTAL BID PRICE (Items 1 through 23) _____

*Contractor shall note that apparent low bidder shall be determined by the Total Bid Price of Items 1 through 23.

Method of Payment shall be by bid unit. Contractor should review the Standard Details and the Specifications, especially the Special Conditions, when bidding this project.

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

(Contractor)

(Date)

By _____

(Title)

(Business Address)

(Phone Number)



BID BOND

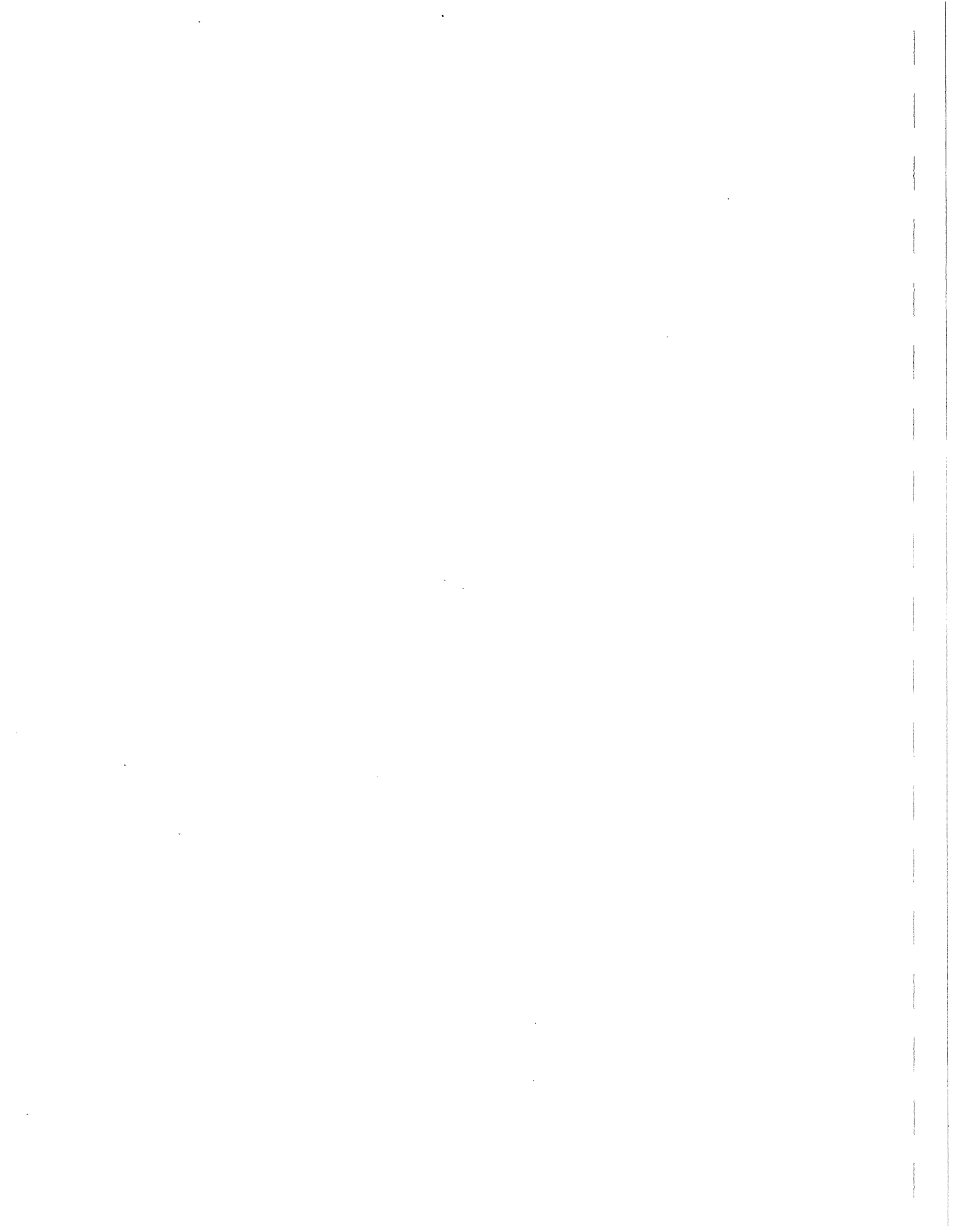
KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____
_____ as Principal, and _____
as Surety, are hereby held and firmly bound unto _____
_____ as OWNER in the penal sum of ____
_____ for the payment of which, well
and truly to be made, we hereby jointly and severally bind ourselves, successors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

Signed, this ____ day of _____, 20 ____.

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

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attachment hereto (properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said contract, and for the payment of all persons performing labor, furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect;



it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

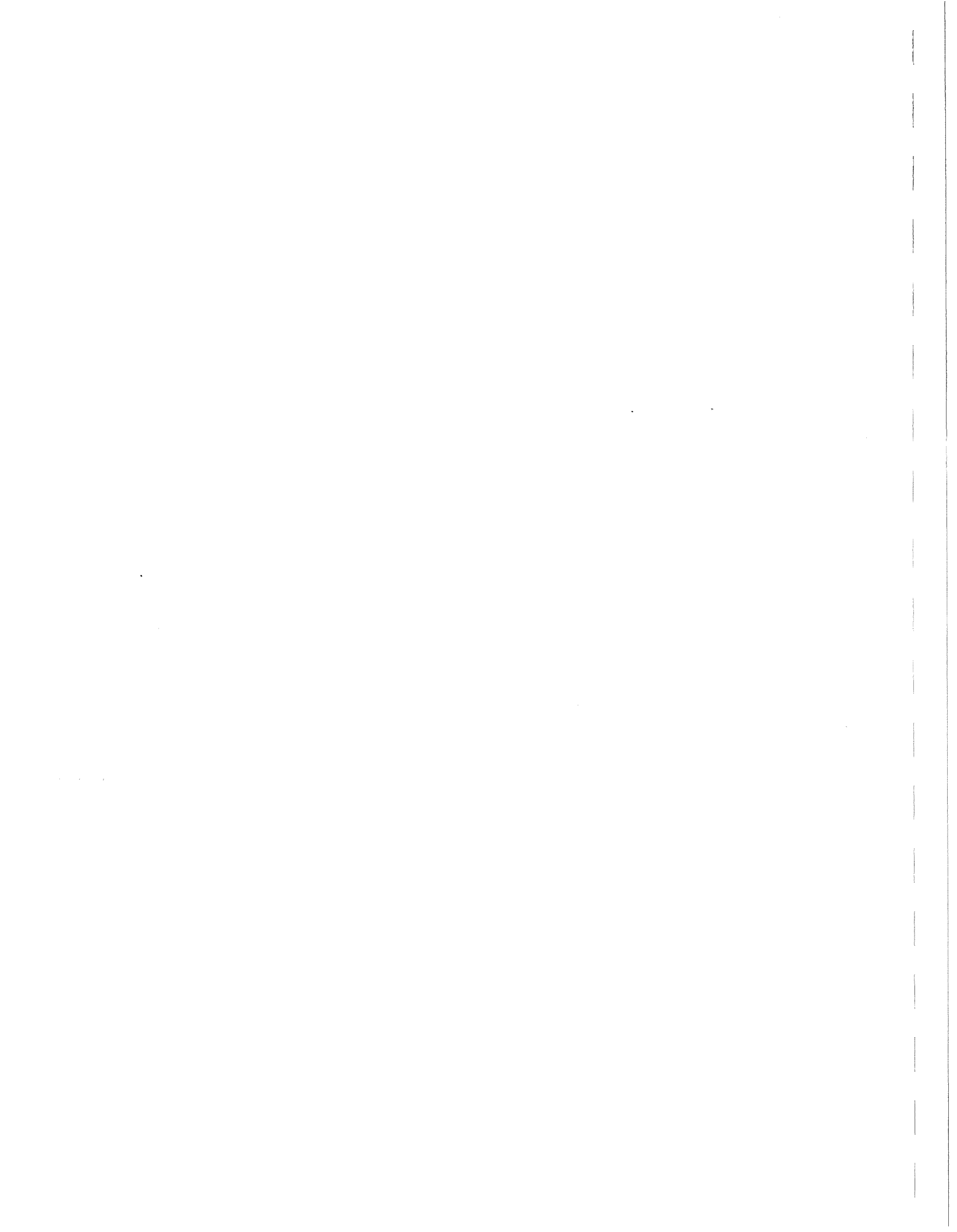
IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal (L.S.)

Surety

By: _____

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



Case No. 2007-00033

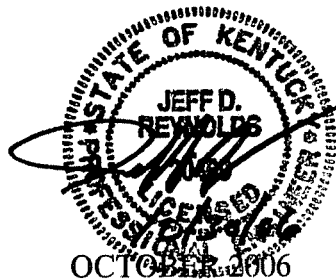
RECEIVED

JAN 23 2007

PUBLIC SERVICE
COMMISSION

CONTRACT II

250,000 GALLON ELEVATED TANK
PHASE IV WATER PROJECT
SOUTH WOODFORD WATER DISTRICT
WOODFORD COUNTY, KENTUCKY



Prepared By:

HMB Professional Engineers, Inc.
3 HMB Circle, US 460
Frankfort, Kentucky 40601

