



RFB2026-03
NORTHWEST ELEVATED WATER STORAGE TANK

ADVERTISEMENT FOR BIDS

Barrow County Board of Commissioners

Date of Advertisement: 08/06/2025

Date of Opening: 09/04/2025

BID DOCUMENTS

RFB2026-03

NORTHWEST ELEVATED WATER STORAGE TANK

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SECTION I

ADVERTISEMENT FOR BIDS

PROJECT: Northwest Elevated Water Storage Tank, RFB2026-03

OWNER: Barrow County Board of Commissioners

Sealed bids will be received by the Barrow County Board of Commissioners, Winder, Georgia, for the Northwest Elevated Water Storage Tank project, in accordance with the specifications and drawings.

Bids will be received in the office of the Barrow County Board of Commissioner, Clerks Office, 30 North Broad Street, Winder, Georgia 30680, **until 2:00 PM, Thursday, September 4, 2025**. Any bid received after said time and date will not be considered by OWNER. Bids are received until 2pm and will be read aloud at 2 p.m. in the Commission Meeting Room upstairs in the Historic Courthouse at 30 North Broad Street Winder, Ga. 30680 on Thursday, September 4, 2025. All bids will be evaluated and the project will be awarded, if it is awarded, within 60 days of the bid opening to the lowest responsible, qualified general contractor.

Construction Documents and Specifications can be downloaded in accordance with directions furnished at www.barrowga.org. Neither companies nor representatives or agents of companies shall contact any members or employees of the Engineering Firm, Barrow County Board of Commissioners, or any Barrow County Elected Official regarding this RFB without prior authorization of the Purchasing Analyst. All questions/inquiries are to be submitted in writing to Cindy Clack, Purchasing Analyst at cclack@barrowga.org by August 28, 2025 and will be answered and made available in accordance with instructions from Barrow County web page.

Cindy Clack, Purchasing Analyst
Barrow County Board of Commissioners
30 North Broad Street
Winder, GA 30680
cclack@barrowga.org

Questions regarding this RFB shall be received no later than 5:00 p.m. on Thursday, August 28, 2025 to Cindy Clack, Purchasing Analyst at cclack@barrowga.org.

Each bid must be in accordance with specifications and must be submitted in a sealed envelope addressed to the OWNER. License numbers must be written on the face of the envelopes. No bid will be opened unless it contains the Contractor's utility license number. Each sealed envelope containing a bid must be plainly marked on the outside as **"RFB2026-03 Northwest Elevated Water Storage Tank"**. If a bid is forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope to the attention of the OWNER at the address previously given and also plainly marked with **"RFB2026-03 Northwest Elevated Water Storage Tank"**. General contractor must fully comply with Barrow County insurance requirements. All bids must be accompanied by a Bid Bond in the amount of 5% of the Bid Amount. Both a Performance and a Payment Bond will be required in an amount equal to 100% of the Contract Price. 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 Georgia. Only Barrow County Bid, Payment and Performance Bond Forms Are Acceptable.

OWNER reserves the right to waive any informality or to reject fully or partially any or all bids, to evaluate bids, and to accept any bid which, in its opinion, may be in the best interest of the OWNER. No bid will be rejected without just cause.

BARROW COUNTY BOARD OF COMMISSIONERS
Srikanth Yamala, County Manager

SECTION II

INSTRUCTIONS TO BIDDERS

1. Defined Terms: Terms used in these Instructions to Bidders, which are defined in the General Conditions have the meanings assigned to them in the General Conditions. The term "Bidder" means one who submits a Bid directly to OWNER, as distinct from a sub-bidder, who submits a bid to a Bidder. The term "Successful Bidder" means the lowest, qualified, responsible and responsive Bidder to whom OWNER (on the basis of OWNER's evaluation as hereinafter provided) makes an award. The term "Bidding Documents" includes the Advertisement for Bids, Instructions to Bidders, the Proposal and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids.)
2. Copies of Bidding Documents:
 - 2.1 Complete sets of the Bidding Documents in the number and for the sum, if any, stated in the Advertisement for Bids may be obtained from OWNER.
 - 2.2 Complete sets of Bidding Documents must be used in preparing Bids; neither OWNER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
 - 2.3 OWNER and ENGINEER in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the WORK and do not confer a license or grant for any other use.
3. Qualifications of Bidders: To demonstrate qualifications to perform the WORK, each Bidder must be prepared to submit within five days of OWNER's request, written evidence, such as financial data, previous experience; present commitments and other such data as may be called requested. Each Bid must contain evidence of Bidder's qualification to do business in Georgia or covenant to obtain such qualification prior to award of the contract.
4. Examination of Contract Documents and Site:
 - 4.1 It is the responsibility of each Bidder before submitting a Bid to: (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local conditions that may affect cost, progress, performance or furnishing of the WORK, (c) consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the WORK, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify ENGINEER of all conflicts, errors or discrepancies in the Contract Documents.
 - 4.2 Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site is based upon information and data furnished to OWNER and ENGINEER by owners of such Underground Facilities or others, and OWNER and ENGINEER do not assume responsibility for the accuracy or completeness thereof.

- 4.3 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, Underground Facilities and other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in Paragraphs 4.2 and 4.3 of the General Conditions.
- 4.4 On request in advance, OWNER will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.
- 4.5 The lands upon which the WORK is to be performed, rights-of-way and easements for access thereto and other lands designated for use by CONTRACTOR in performing the WORK are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by CONTRACTOR. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by OWNER unless otherwise provided in the Contract Documents.
- 4.6 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the WORK required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the WORK.
5. Interpretations and Addenda:
- 5.1 All questions about the meaning or intent of the Contract Documents are to be directed to Cindy Clack, Barrow County Senior Buyer at cclack@barrowga.org by August 28, 2025 as indicated in the Advertisement. Interpretations or clarifications considered necessary by the OWNER in response to such questions will be provided through the Barrow County Purchasing Web Page at www.barrowga.org.
- Oral interpretations or clarifications of questions are not binding. Only written answers, in formal Addenda form, will be binding.
- 5.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable or necessary by OWNER.
6. Bid Security:
- 6.1 Each Bid must be accompanied by Bid security made payable to OWNER in an amount of five percent (5%) of the Bidder's maximum Bid price and in the form of a Bid Bond issued by a surety meeting the requirements of Paragraph 5.1 of the General Conditions. The Barrow County Bid Bond Form is the only acceptable form for this project.

- 6.2 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required contract security, whereupon the Bid security will be returned. The Bid security of other Bidders whom OWNER believes to have a reasonable chance of receiving the award may be retained by OWNER until the earlier of the seventh day after the Effective Date of the Agreement or the sixty-first day after the Bid opening, whereupon Bid security furnished by such Bidders will be returned. Bid security with Bids which are not competitive will be returned within seven days after the Bid opening.
7. Contract Time: The number of days within which, or the dates by which, the WORK is to be substantially completed and also completed and ready for final payment (the Contract Time) are set forth in the Proposal and the Agreement.
8. Liquidated Damages: Provisions for liquidated damages are set forth in the Agreement.
9. Substitute or "Or Equal" Items: The materials and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution. No substitution will be considered unless written request for approval has been submitted by the Bidder and has been received by ENGINEER at least fifteen (15) days prior to the date for receipt of Bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or WORK that incorporation of the substitute would require shall be included. The burden of proof of the merit of the proposed substitute is upon the Bidder. The ENGINEER's decision of approval or disapproval of a proposed substitution shall be final. If ENGINEER approves any proposed substitution, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner. The Bidder shall be responsible for all costs of all changes resulting from any such substitutions.
10. Subcontractors, Suppliers and Others:
- 10.1 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, and other persons and organizations (including those who are to furnish the principal items of material and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within seven days after the Bid opening submit to OWNER a list of all such Subcontractors, Suppliers and other persons and organizations proposed for those portions of the WORK for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, person or organization if requested by OWNER. If OWNER or ENGINEER after due investigation has reasonable objection to any proposed Subcontractor, Supplier, other person or organization, either may before the Notice of Award is given request the apparent Successful Bidder to submit an acceptable substitute without an increase in Bid price. If apparent Successful Bidder declines to make any such substitution, OWNER may award the contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers and other persons and organizations. The declining to make requested substitutions will not constitute grounds for sacrificing the Bid security of any Bidder. Any

Subcontractor, Supplier, other person or organization listed and to whom OWNER or ENGINEER does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to OWNER and ENGINEER subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.8.2 of the General Conditions.

- 10.2 No CONTRACTOR shall be required to employ any Subcontractor, Supplier, other person or organization against whom CONTRACTOR has reasonable objection.

11. Proposal:

- 11.1 The Proposal is included with the Bidding Documents.
- 11.2 All blanks in the Proposal must be completed in ink or by typewriter.
- 11.3 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.
- 11.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- 11.5 All names must be typed or printed below the signature.
- 11.6 The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which must be filled in on the Proposal).
- 11.7 The address and telephone number for communications regarding the Bid must be shown.

12. Submission of Bids:

- 12.1 Bids shall be submitted at the time, place, and as specified indicated in the Advertisement for Bids and shall be enclosed in a sealed envelope, marked with the project title, "Northwest Elevated Water Storage Tank, 2025-xx". FAILURE TO COMPLY WITH THIS PARAGRAPH WILL RESULT IN DISQUALIFICATION.

- 12.2 All costs associated with preparation of Bids in response to this RFB will be the responsibility of the bidder and will not be reimbursed by the OWNER.

The OWNER will not be responsible for late mail delivery of bids and no bid may be withdrawn or modified in any way after the deadline for bid opening. No bid amounts shall be shown on the outside of the bid envelope.

- 12.3 Barrow County requires the original unbound copy and four (4) bound copies of the bid.

13. Modification and Withdrawal of Bids:

13.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

14. Opening of Bids: Bids will be opened, and read aloud. See Section I Advertisement for Bids for time and place.

15. Bids to Remain Subject to Acceptance: All bids will remain subject to acceptance for sixty (60) days after the day of the Bid opening, but OWNER may, in its sole discretion, release any Bid and return the Bid security prior to that date.

16. Award of Contract:

16.1 OWNER reserves the right to reject any and all Bids, to waive any and all formalities not involving price, time or changes in the WORK and to negotiate contract terms with the Successful Bidder, and the right to disregard all nonconforming, non-responsive, unbalanced or conditional Bids. OWNER reserves the right to reject the Bid of any Bidder at the OWNER's sole discretion. OWNER also reserves the right to resolve any discrepancies in the multiplication of units of WORK and unit prices or between the indicated sum of any column of figures and the correct sum at the OWNER's sole discretion.

16.2 In evaluating Bids, OWNER will consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Proposal or prior to the Notice of Award.

16.3 OWNER may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the WORK as to which the identity of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. OWNER also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the WORK when such data is required to be submitted prior to the Notice of Award.

16.4 OWNER may conduct such investigations as OWNER deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the WORK in accordance with the Contract Documents to OWNER's satisfaction within the prescribed time.

16.5 If the contract is to be awarded, OWNER will give the Successful Bidder a Notice of Award within sixty days after the day of the Bid opening.

17. Contract Security: Performance and Payment Bonds shall be submitted as specified in the Advertisement for Bids. Only Barrow County Performance and Payment Bond Forms will be accepted.

18. Signing of Agreement: All bidders are required to execute the Construction Agreement included in this bid package to indicate the bidder's willingness to comply with all terms of the Agreement and to submit the executed Agreement with the bid. Upon award of the Project to the winning bidder, the County will execute the Agreement. There will be no re-negotiation of terms of the Agreement. Please be advised that the bidder's execution of the Agreement prior to the award of the Project does not constitute the acceptance of an offer by the County or otherwise bind the County in any way until such time as the County executes the Agreement.
19. Laws and Regulations: The CONTRACTOR shall keep itself fully informed of all laws, ordinances and regulations of State, City and County in any manner affecting those engaged or employed in the WORK, or the materials used in the WORK, or in any way affecting the conduct of the WORK, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over same. If any discrepancy or inconsistency should be discovered in this contract, or in the drawings or specifications herein referred to, in relation to any such law, ordinance, regulation, order or decree, CONTRACTOR shall forthwith report the same in writing to the OWNER. CONTRACTOR shall at all times observe and comply with all such existing and future laws, ordinances and regulations and shall protect and indemnify the OWNER and its agents against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree whether by CONTRACTOR or by its employees.
20. Non-Segregated Facilities: Bidders must certify that they do not and will not, maintain or provide for their employees any facilities that are segregated on a basis of race, color, creed or national origin.
21. OWNER's Options To Purchase Materials:
- 21.1 By submitting a Bid, a Bidder agrees to allow the OWNER to purchase certain materials for this Project at the price quoted to Bidder by its supplier. The Bidder further agrees to execute a change order at the time of execution of the Contract Agreement to adjust the appropriate unit prices or extended totals and total contract amount. The amount of the change order will be based on deducting from the prices bid the sum of:
- 21.1.1 The cost of the materials;
- 21.1.2 Shipping costs, based on freight-on board (FOB) job site; and
- 21.1.3 Sales tax in the amount of seven percent of the sum of the two preceding items.
- 21.2 By virtue of a Bidder utilizing quotes from suppliers in the preparation of its bid for this Project, the Bidder declares that it has reached an agreement with its potential suppliers to allow the OWNER to purchase the materials for this Project from the suppliers in accordance with the terms and conditions included herein.
- 21.3 The apparent Low Bidder supplier of the designated material shall each submit a sworn affidavit stating the cost of the material and the cost of shipping the material which was utilized in the Bidder's preparation of its bid.
- 21.4 In the event the OWNER furnishes materials for this Project:
- 21.4.1 The CONTRACTOR shall be responsible for scheduling shop drawings, the delivery

of the materials to the Project site, as well as establishing the hours of delivery and method of delivery to the Project site. The CONTRACTOR shall maintain communication with the material schedules. The CONTRACTOR shall submit, with construction progress schedule, a schedule for required deliveries of OWNER furnished material.

- 21.4.2 No additional payment shall be made to CONTRACTOR on account of delays in delivery of materials furnished by the OWNER.
- 21.4.3 The CONTRACTOR shall pay all delivery waiting charges.
- 21.4.4 The CONTRACTOR shall review and handle all shop drawings prepared by the supplier in accordance with Section IX of these Specifications.
- 21.4.5 Upon delivery of materials, the CONTRACTOR shall proceed without delay to unload such materials.
- 21.4.6 Should any material be damaged, lost, or fail under test, and in the opinion of the ENGINEER, such failure or damage is the result of improper handling, it shall be replaced in kind by the CONTRACTOR at no cost to the OWNER.
- 21.4.7 No additional payment will be made for receiving, handling and distributing materials furnished by the OWNER.
- 21.4.8 Fittings, solid sleeves and special pipe, which are not shown on the Drawings and which are installed for the convenience of the CONTRACTOR, shall not be paid for the OWNER.
- 21.4.9 Upon receipt of materials from the manufacturer, the CONTRACTOR shall make an inspection of such materials, checking and certifying the bill of lading, noting any discrepancies and obtaining a proper memorandum signed by the agent of the carrier for any shortage in the shipment, or for any damaged materials received. All bills of lading and any memorandum for shortage of damage of material in the shipment shall be promptly submitted to the ENGINEER. The CONTRACTOR shall be responsible for distribution of all materials as required to complete the WORK. Materials furnished to the CONTRACTOR shall be in the custody of the CONTRACTOR from the time of receipt by the CONTRACTOR of such materials from the carrier until final acceptance of the completed WORK. The CONTRACTOR shall be responsible for any loss or damage to materials furnished by the OWNER.

- 22. Payments from County: Payments will be made to the CONTRACTOR based from actual quantities installed.
- 23. Construction Staking: Construction staking services shall be provided by the CONTRACTOR.

END OF SECTION

SECTION III PROPOSAL

To: Barrow County Board of Commissioners
30 North Broad Street
Winder, Georgia, 30680

PROJECT TITLE: Northwest Elevated Water Storage Tank, RFB2026-03

Bidder's person to contact for additional information on this Bid Form:

Name:

Address:

Telephone:

Licensed, Class:

Contractor No.

1. **BIDDER'S DECLARATION AND UNDERSTANDING**

- 1.1 The undersigned, hereinafter called the Bidder, declares that the only persons or parties interested in this Bid are those named herein, that this Bid is, in all respects, fair and without fraud, that it is made without collusion with any official of the OWNER, and that the Bid is made without any connection or collusion with any person submitting another Bid on this Project.
- 1.2 The Bidder further declares that he has carefully examined the Bidding and Contract Documents for the construction of the project, that he has personally inspected the site, that he has satisfied himself as to the quantities involved, including materials and equipment, and conditions of work involved, including the fact that the description of the quantities of work and materials, as included herein, is brief and is intended only to indicate the general nature of the work and to identify the said quantities with the detailed requirements of the Bidding and Bidding and Contract Documents, and that this Bid Form is made according to the provisions and under the terms of the Bidding Documents, which Documents are hereby made a part of this Bid Form.
- 1.3 The Bidder further acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions, particularly those bearing access to the site; rights-of-way and temporary construction limits; disposal, handling and storage of materials; availability of labor, water, electric power, and roads; and uncertainties of weather, creek stages, or similar physical conditions at the site; the conformation and conditions of the ground; the character of equipment and facilities needed preliminary to and during the prosecution of the work and all other matters which can in any way affect the work or the cost thereof covered by the Bidding and Contract Documents.
- 1.4 The Bidder further acknowledges that he has satisfied himself/herself as to the character, quality, and quantity of surface and subsurface materials to be encountered from his inspection of the site and from reviewing any available records or exploratory work

furnished by the OWNER or included in these Documents. Failure by the CONTRACTOR to acquaint himself with the physical conditions of the site and all available information will not relieve him from responsibility for properly estimating the difficulty or cost of successfully performing the work.

- 1.5 The Bidder warrants that as a result of his examination and investigation of all the aforesaid data that he can perform the work in a good and workmanlike manner and to the satisfaction of the OWNER. The OWNER assumes no responsibility for any representations made by any of its officers or agents during or prior to the execution of the Agreement, unless (1) such representations are expressly stated in the Agreement Form, and (2) the Agreement Form expressly provides that the responsibility therefore is assumed by the OWNER.
- 1.6 Bidder shall include the following additional documents and information with this Bid Form:
 - 1.6.1 Bid Security
 - 1.6.2 Bidder's Certification of License Number on the outside of envelope containing this Bid Form.

2. CONTRACT EXECUTION AND BONDS

- 2.1 The Contractor grants to the OWNER the exclusive right and option to accept its bid, upon the terms and conditions provided for in the Bidding Documents. The Contractor shall be obligated to hold its bid open for sixty (60) days from the date of the submittal of its bid. The OWNER may exercise its right to accept the bid at any time during this sixty (60) day period.
- 2.2 All bidders are required to execute the Construction Agreement included in this bid package to indicate the bidder's willingness to comply with all terms of the Agreement and to submit the executed Agreement with the bid. Upon award of the Project to the winning bidder, the County will execute the Agreement. There will be no re-negotiation of terms of the Agreement. Please be advised that the bidder's execution of the Agreement prior to the award of the Project does not constitute the acceptance of an offer by the County or otherwise bind the County in any way until such time as the County executes the Agreement.

The Bidder will, within 5 days from receiving Notice of Award, deliver to the OWNER the Performance Bond, Payment Bond, and Certificate(s) of Insurance, required herein, and will, to the extent of his bid, furnish all machinery, tools, apparatus, and other means of construction and do the work and furnish all the materials necessary to complete all work as specified or indicated in the Bidding and Contract Documents.

3. CERTIFICATES OF INSURANCE

- 3.1 The Successful Bidder agrees to furnish the OWNER, within 5 days from receiving Notice of Award, both the Certificate of Insurance required herein and the insurance company's own Certificate of Insurance.
- 3.2 The Successful Bidder further agrees that the total bid amount stated herein includes specific consideration for the insurance coverages, including contractual liability, specified in the Bidding and Contract Documents.

4. START OF CONSTRUCTION AND CONTRACT COMPLETION TIME

- 4.1 The Successful Bidder further agrees to promptly mobilize and begin work within 15 days from the Contract start date specified in the OWNER'S Notice to Proceed, and to be substantially complete, as defined in the General Conditions, within **360** days from the Contract start date specified in the OWNER'S Notice to Proceed. All work tasks of the total project shall be complete in all respects within **390** days from the date specified in the OWNER'S Notice to Proceed.

5. ADDENDA

- 5.1 The Bidder hereby acknowledges that he has received Addenda No's __, __, __, __, __, __ (Bidder shall insert No. of each Addendum received) and agrees that all addenda issued are hereby made part of the Bidding and Contract Documents, and the Bidder further agrees that his Bid Form includes all impacts resulting from said addenda.

6. SALES AND USE TAXES

- 6.1 The Bidder agrees that all sales and use taxes, if applicable, are included in the stated bid prices for the work.

7. BASIS OF AWARD

- 7.1 Award of Contract will be made in accordance with Paragraph 16 (Award of Contract) of the INSTRUCTIONS TO BIDDERS.

8. TOTAL BID AMOUNT

- 8.1 The Bidder further proposes to accept as full payment for the work proposed herein the amounts computed under the provisions of the Bidding and Contract Documents and based on the following unit price amounts, it being expressly understood that the unit prices are independent of the exact quantities involved for each. The Bidder agrees that the unit prices represent a true measure of all labor and materials required to perform the work, including all allowances for overhead, profit, bond cost and any and all other costs associated with the work for each type and unit of work called for in these Bidding and Contract Documents. The unit price amounts shall be shown in both words and figures. In case of a discrepancy, the amounts shown in words shall govern.

8.2 UNIT PRICE

Bid Item

<u>No.</u>	<u>Bid Item</u>	<u>Qty</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Extended Total Amount</u>
1	750,000 Gallon Elevated Water Storage Tank	1	LS	\$_____	_____ Dollars
2	Reservoir Hydrodynamic Mixing System	1	LS	\$_____	_____ Dollars
3	Stormwater/Erosion Control Monitoring Program	1	LS	\$_____	_____ Dollars
4	Rock Outlet Temp. Sediment Trap (Sd4-C)	1	EA	\$_____	_____ Dollars
5	Rip Rap Spreader Berms	2	EA	\$_____	_____ Dollars
6	Silt Fence Type 'S' (Sd1)	500	LF	\$_____	_____ Dollars
7	Orange Barrier Fence	220	LF	\$_____	_____ Dollars
8	Erosion Control Matting	100	SY	\$_____	_____ Dollars
9	Rip Rap, Type 3	15	SY	\$_____	_____ Dollars

Bid Item

<u>No.</u>	<u>Bid Item</u>	<u>Qty</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Extended Total Amount</u>
10	Fire Hydrant Assembly - Complete	1	EA	\$ _____	_____ Dollars
11	10" Diameter DIP, Class 350 Water Main	100	LF	\$ _____	_____ Dollars
12	12" Diameter DIP, Class 350 Water Main	175	LF	\$ _____	_____ Dollars
13	Gate Valves, 10" Diameter	1	EA	\$ _____	_____ Dollars
14	Tapping Sleeve & Valve, 12"x12"	1	EA	\$ _____	_____ Dollars
15	Altitude Valve Assembly Vault	1	EA	\$ _____	_____ Dollars
16	Check Valve Assembly Vault	1	EA	\$ _____	_____ Dollars
17	Asphalt Pavement Resurfacing	1,040	SY	\$ _____	_____ Dollars
18	Geotechnical Allowance	1	LS	\$ _____	_____ Dollars

NOTE: All labor, material and equipment required to complete the work as shown on the plans but not specifically itemized in the above bid items but shown or called out on the plans shall be included in the price.

BASE BID: TOTAL OF EXTENDED AMOUNT FOR UNIT PRICES FOR BID ITEMS 1-18:

_____ Dollars
and _____ Cents \$ _____

(Amount written in words has precedence)

8.3 Bidder acknowledges that the unit prices have been computed in accordance with the General Conditions. Bidder further acknowledges that quantities are not guaranteed and final payment will be based on actual quantities determined as provided in Bidding and Contract Documents.

8.4 Total Bid Summary:

8.4.1 TOTAL BASE BID AMOUNT: \$ _____
(including bond premium)

9. EXPERIENCE OF BIDDER

9.1 The Bidder submits the following list of at least five clients for whom projects involving similar construction have been performed within the past 5 years. Verify Client Contact is a current and Contact Email is valid. References will be contacted two (2) times and will be deemed non-responsive if no answer.

1) Name of Client (Owner and Contact)_____

Email Address _____ Telephone Number _____

Street _____

City _____ State _____ Zip _____

Project Name _____

Date Completed _____ Total Contract Amount _____

2) Name of Client (Owner and Contact)_____

Email Address _____ Telephone Number _____

Street _____

City _____ State _____ Zip _____

Project Name _____

Date Completed _____ Total Contract Amount _____

3) Name of Client (Owner and Contact)_____

Email Address _____ Telephone Number _____

Street _____

City _____ State _____ Zip _____

Project Name _____

Date Completed _____ Total Contract Amount _____

4) Name of Client (Owner and Contact)_____

Email Address _____ Telephone Number _____

Street _____

City _____ State _____ Zip _____

Project Name _____

Date Completed _____ Total Contract Amount _____

5) Name of Client (Owner and Contact)_____

Email Address _____ Telephone Number _____

Street _____

City _____ State _____ Zip _____

Project Name _____

Date Completed _____ Total Contract Amount _____

10. PERFORMANCE OF WORK BY CONTRACTOR

10.1 The Bidder shall perform at least 50 percent of the work with his own forces.

11. SUBCONTRACTORS

11.1 The Bidder further proposes that the following subcontracting firms or businesses will be awarded subcontracts for the following portions of the work in the event that the Bidder is awarded the Contract:

Name _____

Type of Work _____

Street _____

City _____ State _____ Zip _____

Name _____

Type of Work _____

Street _____

City _____ State _____ Zip _____

Name _____

Type of Work _____

Street _____

City _____ State _____ Zip _____

12. SURETY

- 12.1 If the Bidder is awarded a construction Contract, the Surety who provides the Performance Bond and Payment Bond will be:

_____ whose address is

Street_____

City_____ State_____ Zip_____

13. BIDDER

- 13.1 The name of the Bidder submitting this Bid Form is

_____ doing business at

Street_____

City_____ State_____ Zip_____

which is the address to which all communications concerned with this Bid Form and with the Agreement Form shall be sent.

- 13.2 The names of the principal officers of the corporation submitting this Bid Form, or of the partnership, or of all persons interested in this Bid Form as principals are as follows:

If Sole Proprietor or Partnership

IN WITNESS hereto the undersigned has set his (its) hand this ____ day of _____ 2025.

Signature of Bidder

Title

If Corporation

IN WITNESS WHEREOF the undersigned corporation has caused this instrument to be executed and its seal affixed by its duly authorized officers this _____ day of _____ 2025.

(SEAL)

Name of Corporation

By

Title

Attest

Secretary

End of Section

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SECTION IV

BID BOND

BARROW COUNTY BOARD OF COMMISSIONERS

WINDER, GEORGIA

Barrow County Board of Commissioners

Winder, Georgia 30680

PROJECT (Brief Description Including Location): Project consists of a 750,000 gallon, multi-column, elevated steel water tank and approximately 275 linear feet of 10" through 12" diameter water main, altitude and check valve assemblies, and appurtenances, and all labor, equipment, and materials to complete the work as specified in the Contract Documents. Project location is Barrow County.

PENAL SUM: _____
(Words) (Figures)

SURETY

(Seal)

Surety's Name and Corporate Seal

By: _____

Signature and Title:

Attest:

Signature and Title:

Page 1 of 2

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to the County upon Default of Bidder the penal sum set forth on the face of this Bond.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension of that time agreed to in writing by the County) the executed Agreement required by the Bidding Documents and any performance and payment Bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 The County accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension of that time agreed to in writing by the County) the executed Agreement required by the Bidding Documents and any performance and payment Bonds required by the Bidding Documents; or

3.2 All Bids are rejected by the County; or

3.3 The County fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension of that time agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon Default by Bidder within 30 calendar days after receipt by Bidder and Surety of a written Notice of Default from the County, which Notice will be given with reasonable promptness and will identify this Bond and the Project and include a statement of the amount due.

5. Surety waives notice of, as well as any and all defenses based on or arising out of, any time extension to issue a Notice of Award agreed to in writing by the County and Bidder, provided that the total time, including extensions, for issuing a

Notice of Award shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond either prior to 30 calendar days after the Notice of Default required in paragraph 4 above is received by Bidder and Surety or later than one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the State of Georgia.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer or proposal, as applicable under the particular circumstances.

12. The terms of this Bid Bond shall be governed by the laws of the State of Georgia.

CONSTRUCTION SERVICES AGREEMENT
RFB2026-03 NORTHWEST ELEVATED WATER STORAGE TANK

This Construction Services Agreement (the "Agreement") is made and entered into this _____ day of _____, **2025** (the "Effective Date"), by and between **BARROW COUNTY, GEORGIA**, a political subdivision of the State of Georgia, acting by and through its governing authority, the Barrow County Board of Commissioners ("County") and _____, a _____ (hereinafter referred to as the "Contractor"), collectively referred to herein as the "Parties".

WITNESSETH:

WHEREAS, the County desires to retain a contractor to perform services for construction as defined below; and

WHEREAS, the County solicited bids for the Project pursuant to the Request for Bids RFB2026-03 dated _____, maintained on file with the Purchasing Division of the Finance Department.

WHEREAS, the Contractor submitted a complete and timely bid, attached hereto as "**Exhibit A**" and incorporated herein by reference, and met all bid requirements such that the County awarded **RFB2026-03 NORTHWEST ELEVATED WATER STORAGE TANK** to the Contractor; and

WHEREAS, the County finds that specialized knowledge, skills, and training are necessary to perform the Work (defined below) contemplated under this Agreement; and

WHEREAS, the Contractor has represented that it is qualified by training and experience to perform the Work; and

WHEREAS, based upon Contractor's bid, the County has selected Contractor as the successful bidder, and

WHEREAS, Contractor desires to perform the Work as set forth in this Agreement under the terms and conditions provided in this Agreement; and

WHEREAS, the public interest will be served by this Agreement; and

WHEREAS, Contractor has familiarized itself with the nature and extent of the Contract Documents, the Project, and the Work, and with all local conditions and federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of Work, and Contractor is aware that it must be licensed to do business in the State of Georgia.

NOW THEREFORE, for and in consideration of the mutual promises, the public purposes, and the acknowledgements and agreements contained herein and other good and adequate

consideration, the sufficiency of which is hereby acknowledged, the Parties hereto do mutually agree as follows:

Section 1. Contract Documents

This Agreement along with the following documents, attached hereto (except as expressly noted otherwise below) and incorporated herein by reference, constitute the "Contract Documents":

- A. Request for Bids, (a true and correct copy of which has been provided to Contractor with original maintained on file with the Purchasing Division of the Finance Department);
- B. Bid Documents from Contractor, dated _____, _____, attached hereto as **"Exhibit A"**;
- C. Scope of Work, (a true and correct copy of which has been provided to Contractor with original maintained on file with the Purchasing Division of the Finance Department);
- D. Any required Performance Bond and/or Payment Bond, attached hereto collectively as **"Exhibits B.1 and B.2"**;
- E. Noncollusion Affidavit of Prime Bidder, attached hereto as **"Exhibit C"**;
- F. Final Affidavit, attached hereto as **"Exhibit D"**;
- G. Alien Employment affidavits, attached hereto as **"Exhibits E.1 and E.2"**;
- H. Plans, drawings and specifications (included in the RFP referenced in 1.A. above), with any modifications (if issued), attached hereto as **"Exhibit F"**;
- I. Additional Payment/Retainage Requirements, attached hereto as **"Exhibit G"**;
- J. Key Personnel, attached hereto as **"Exhibit H"**;
- K. Contract Administration provisions (if issued), attached hereto as **"Exhibit I"**;
- L. General Conditions (if issued), attached hereto as **"Exhibit J"**;
- M. Supplementary Conditions (if issued), attached hereto as **"Exhibit K"**;
- N. Notice of Award, attached hereto as **"Exhibit L"**;
- O. Barrow County Code of Ethics (codified in the official Code of Barrow County);

- P. The following, which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Change Orders (defined in Section 6 below), other written amendments, and other documents amending, modifying, or supplementing the Contract Documents if properly adopted in writing and executed by the Parties.

Section 2. Project Description

Project. A general description of the Project is as follows: **RFB2026-03 NORTHWEST ELEVATED WATER STORAGE TANK**, which is described as consisting of a 750,000 gallon, multi-column, elevated steel water tank and approximately 1,100 linear feet of 10" through 16" diameter water main, altitude and check valve assemblies, and appurtenances, and all labor, equipment, and materials to complete the work as specified in the Contract Documents (the "Project"). See the Plans, Drawings and/or Specifications attached at **Exhibit F** for additional information.

Section 3. The Work

- A. The Work. The Work to be completed under this Agreement (the "Work") includes, but shall not be limited to, the work described in the Specifications and Instructions, Bid Form, and Plans, included in the RFB2026-03 and elsewhere in the Contract Documents for the Project, a true and correct copy of which has been provided to Contractor with original maintained on file in the Purchasing Division of the Finance Department. The Work includes all material, labor, insurance, tools, equipment, machinery, water, heat, utilities, transportation, facilities, services and any other miscellaneous items and work reasonably inferable from the Contract Documents. The term "reasonably inferable" takes into consideration the understanding of the Parties that some details necessary for proper execution and completion of the Work may not be shown on the drawings or included in the specifications or Scope of Work, but they are a requirement of the Work if they are a usual and customary component of the Work or are otherwise necessary for proper and complete installation and operation of the Work. Contractor shall complete the Work in strict accordance with the Contract Documents. In the event of any discrepancy among the terms of the various Contract Documents, the provision most beneficial to the County, as determined by the County in its sole discretion, shall govern.
- B. Notice to Proceed. The County will issue a Notice to Proceed, which Notice to Proceed shall state the dates for beginning Work ("Commencement Date") and the Expected Date of Final Completion (defined in Section 4(A) below). Unless otherwise approved, the Contractor shall perform its obligations under this Agreement as expeditiously as is consistent with reasonable skill and care and the orderly progress of the Work.
- C. Plans; Drawings and Specifications. The plans, drawings and specifications, a true and correct copy of which has been provided to Contractor with original maintained on

file in the County Purchasing Department, are hereby acknowledged by the Parties and incorporated herein by reference.

- D. Shop Drawings, Product Data, and Samples. Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents, but must be in conformity therewith. The purpose of their submittal is to demonstrate, for those portions of the Work for which submittals are required by the Contract Documents, the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.
- (i) “Shop Drawings” are drawings, diagrams, schedules and other data specifically prepared for the Work by the Contractor or a subcontractor, sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.
 - (ii) “Product Data” are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
 - (iii) “Samples” are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

The Contractor shall review for compliance with the Contract Documents and shall approve and submit to the Contract Administrator Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the County or of separate contractors. By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Contract Administrator without action. The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved in writing by the Contract Administrator, provided that submittals that are not required by the Contract Documents may be returned without action.

The Work shall be completed in accordance with approved submittals, provided that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Contract Administrator’s approval of Shop Drawings, Product Data, Samples or similar submittals, unless the Contractor has

specifically informed the Contract Administrator in writing of such deviation at the time of submittal and (1) the Contract Administrator has given written approval to the specific deviation as a minor change in the Work, or (2) a written Change Order has been issued and approved to authorize the deviation. The Contract Administrator's approval of the Shop Drawings, Product Data, Samples or similar submittals shall not relieve the Contractor of responsibility for errors or omissions therein.

The Contractor shall, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, direct the Contract Administrator's attention to any additional revisions included other than those requested by the Contract Administrator on previous submittals. In the absence of such written notice drawing the Contract Administrator's attention to such additional revisions, the Contract Administrator's approval of a resubmission shall not apply to such additional revisions.

The Contractor shall maintain at the Project site(s) one record copy of the Contract Documents in good order and marked currently to record field changes and selections made during construction and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These documents shall be available to the County and Contract Administrator and shall be delivered to the Contract Administrator or County upon completion of the Work.

Section 4. Contract Term; Liquidated Damages; Expedited Completion; Partial Occupancy or Use

- A. Contract Term. The term of this Agreement ("Term") shall commence on the Effective Date and continue until the earlier of the Expected Date of Final Completion or the proper termination and non-renewal of this Agreement (provided those certain obligations, including but not limited to Warranty obligations, will survive termination/expiration of this Agreement). Contractor warrants and represents that it will perform its Work in a prompt and timely manner, which shall not impose delays on the progress of the Work. The Contractor shall commence Work pursuant to this Agreement within five (5) business days of the Commencement Date provided by the County and the Parties intend that all Work shall be substantially completed on or before **three hundred sixty (360) days following the commencement date specified in the Notice to Proceed. Final Completion shall be three hundred ninety (390) days following the commencement date specified in the Notice to Proceed.** Every effort will be made by Contractor to shorten this period. If the Term of this Agreement continues beyond the fiscal year in which this Agreement is executed, the Parties agree that this Agreement, as required by O.C.G.A. § 36-60-13, shall terminate absolutely and without further obligation on the part of the County on June 30 of each year of the Term, and further, that this Agreement shall automatically renew on July 1 of each subsequent year absent the County's provision of written notice of non-renewal to Contractor at least five (5) calendar days prior to the end of the then

current fiscal year. Title to any supplies, materials, equipment, or other personal property shall remain in Contractor until fully paid for by the County.

- B. Time is of the Essence; Liquidated Damages. Contractor specifically acknowledges that TIME IS OF THE ESSENCE of this Agreement and that County will suffer financial loss if the Work is not completed in accordance with the deadlines specified in Section 4(A) above and within the Contract Documents. The County and Contractor also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by the County if the Work is not completed within the specified times. Accordingly, instead of requiring any such proof, the County and Contractor agree that, as liquidated damages for delay (but not as a penalty), the Contractor shall pay to the County **five hundred dollars and 00/100 (\$500.00)** for each and every calendar day that expires after a deadline provided in the Contract Documents.
- C. Expediting Completion. The Contractor is accountable for completing the Work within the time period provided in the Contract Documents. If, in the judgment of the County, the Work is behind schedule and the rate of placement of work is inadequate to regain scheduled progress to ensure timely completion of the entire Work or a separable portion thereof, the Contractor, when so informed by the County, shall immediately take action to increase the rate of work placement by:
- (1) An increase in working forces;
 - (2) An increase in equipment or tools;
 - (3) An increase in hours of work or number of shifts;
 - (4) Expediting delivery of materials; and/or
 - (5) Other action proposed if acceptable to County.

Within five (5) calendar days after such notice from County that the Work is behind schedule, the Contractor shall notify the County in writing of the specific measures taken and/or planned to increase the rate of progress. The Contractor shall include an estimate as to the date of scheduled progress recovery. Should the County deem the plan of action inadequate, the Contractor shall take additional steps to make adjustments as necessary to its plan of action until it meets with the County's approval and such approval is provided in writing by the County.

- D. Partial Occupancy or Use. The County may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement between the County and Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the County and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and

insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. Immediately prior to such partial occupancy or use, the County, Contractor and Contract Administrator shall jointly inspect the area to be occupied, or portion of the Work to be used, in order to determine and record the condition of the Work. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

Section 5. Contractor's Compensation; Time and Method of Payment

- A. Maximum Contract Price. The total amount paid under this Agreement as compensation for Work performed and reimbursement for costs incurred shall not, in any case, exceed \$_____. (the "Maximum Contract Price"), except as outlined in Section 6 below. The compensation for Work performed shall be based upon the amount specified in Exhibit A, and Contractor represents that the Maximum Contract Price is sufficient to perform all of the Work set forth in and contemplated by this Agreement.
- B. Additional Payment Requirements. Additional payment requirements are included as "**Exhibit G**", attached hereto and incorporated herein by reference.
- C. Material Deviations. Any material deviations in tests or inspections performed, or times or locations required to complete such tests or inspections, and like deviations from the Work described in this Agreement shall be clearly communicated to the County *before* charges are incurred and shall be handled through written Change Orders, as described in Section 6 below. Whenever the Contract Administrator considers it necessary or advisable, it shall have authority to require inspection or testing of the Work. However, neither this authority of the Contract Administrator nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Contract Administrator to the Contractor, subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.
- D. Taxes. The County is a governmental tax-exempt entity and shall not be responsible for paying any taxes on any materials or services provided for herein. At Contractor's request, County shall provide evidence of its tax-exempt status. To the extent, if any, that the County furnishes tangible personal property to Contractor for incorporation into the Project, Contractor shall be responsible for paying the amount of tax owed for such tangible personal property.

Section 6. Change Orders

- A. Change Order Defined. A "Change Order" means a written modification of the Contract Documents, signed by representatives of the County and the Contractor with appropriate authorization.
- B. Right to Order Changes. The County reserves the right to order changes in the Work to be performed under this Agreement by altering, adding to, or deducting from the Work. All such changes shall be incorporated in written Change Orders and executed by the Contractor and the County. Such Change Orders shall specify the changes ordered and any necessary adjustment of compensation and completion time. If the Parties cannot reach an agreement on the terms for performing the changed work within a reasonable time to avoid delay or other unfavorable impacts as determined by the County in its sole discretion, the County shall have the right to determine reasonable terms, and the Contractor shall proceed with the changed work.
- C. Change Order Requirement. Any work added to the scope of this Agreement by a Change Order shall be executed under all the applicable conditions of this Agreement. No claim for additional compensation or extension of time shall be recognized, unless contained in a written Change Order duly executed on behalf of the County and the Contractor.
- D. Authority to Execute Change Order. The County Manager has authority to execute, without further action of the Barrow County Board of Commissioners, any number of Change Orders so long as their total effect does not materially alter the terms of this Agreement or materially increase the Maximum Contract Price, as set forth in Section 5(A) above. Any such Change Orders materially altering the terms of this Agreement, or any Change Order increasing the price by more than Twenty-Five Thousand Dollars (\$25,000.00), must be approved by resolution of the Barrow County Board of Commissioners.
- E. Minor Changes in the Work. The Contract Administrator will have the authority to order minor changes in the Work not involving adjustment in the Maximum Contract Price or extension of the Term and not inconsistent with the intent of the Contract Documents. Such changes shall be affected by written order signed by the Contract Administrator. The Contractor shall carry out such written orders promptly. If the minor changes subsequently may affect adjustments in the Maximum Contract Price or the Term, the changes shall then be converted to a written Change Order by the requesting Party.

Section 7. Covenants of Contractor

- A. Ethics Code; Conflict of Interest. Contractor agrees that it shall not engage in any activity or conduct that would result in a violation of the Barrow County Code of Ethics or any other similar law or regulation. Contractor certifies that to the best of his knowledge no circumstances exist which will cause a conflict of interest in performing

the Work. Should Contractor become aware of any circumstances that may cause a conflict of interest during the Term of this Agreement, Contractor shall immediately notify the County. If the County determines that a conflict of interest exists, the County may require that Contractor take action to remedy the conflict of interest or terminate the Agreement without liability. The County shall have the right to recover any fees paid for services rendered by Contractor when such services were performed while a conflict of interest existed, if Contractor had knowledge of the conflict of interest and did not notify the County within five (5) business days of becoming aware of the existence of the conflict of interest.

- B. Meetings. The Contractor is required to meet with the County's personnel, or designated representatives, to resolve technical or contractual problems that may occur during the Term of this Agreement at no additional cost to the County. Meetings will occur as problems arise and will be coordinated by the County or the Contract Administrator. The Contractor will be given a minimum of three (3) full business days' notice of meeting date, time, and location. Face-to-face meetings are desired. However, at the Contractor's option and expense, a conference call meeting may be substituted. Consistent failure to participate in problem resolution meetings, two consecutive missed or rescheduled meetings, or failure to make a good faith effort to resolve problems, may result in termination of the contract for cause.
- C. Expertise of Contractor. Contractor accepts the relationship of trust and confidence established between it and the County, recognizing that the County's intention and purpose in entering into this Agreement is to engage an entity with the requisite capacity, experience, and professional skill and judgment to provide the Work in pursuit of the timely and competent completion of the Work undertaken by Contractor under this Agreement. The Contractor agrees to use its best efforts, skill, judgment, and abilities to perform its obligations and to further the interests of County and the Project in accordance with County's requirements and procedures, and Contractor shall employ only persons duly qualified in the appropriate area of expertise to perform the Work described in this Agreement.
- D. Proper Execution by Contractor. Contractor agrees that it will perform its services in accordance with the usual and customary standards of the Contractor's profession or business and in compliance with all federal, state, and local laws, regulations, codes, ordinances, or orders applicable to the Project, including, but not limited to, O.C.G.A. § 50-5-63, any applicable records retention requirements, and Georgia's Open Records Act (O.C.G.A. § 50-18-70, *et seq.*). Any additional work or costs incurred as a result of error and/or omission by Contractor as a result of not complying with the Contract Documents or not meeting the applicable standard of care or quality, including but not limited to those of repeated procedures and compensation for the Contract Administrator's services or expenses, will be provided at Contractor's expense and at no additional cost to the County. This provision shall survive termination of this Agreement.

It is the Contractor's responsibility to be reasonably aware of all applicable laws, statutes, ordinances, building codes, and rules and regulations. If the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Contract Administrator and the County in writing of any portions of the Contract Documents that are at variance with the applicable laws, statutes, ordinances, building codes, and rules and regulations.

The Contractor's duties shall not be diminished by any approval by the County or Contract Administrator of Work completed or produced; nor shall any approval by the County or Contract Administrator of Work completed or produced release the Contractor from any liability therefor, it being understood that the County is ultimately relying upon the Contractor's skill and knowledge in performing the Work required under the Contract Documents.

Organization of the specifications into divisions, sections and articles, and arrangement of drawings shall not control the Contractor in dividing the Work among subcontractors or in establishing the extent of Work to be performed by any trade.

E. Familiarity with the Work.

- (1) *Contractor Familiarity with Work.* Contractor represents that it has familiarized itself with the nature and extent of the Contract Documents, the Work, work site(s), locality, and all local conditions, laws and regulations that in any manner may affect cost, progress, performance, or furnishing of the Work. Since the Contract Documents are complementary, before starting each portion of the Work, the Contractor shall carefully study and compare the various Contract Documents, site conditions, authorities, tests, reports and studies relative to that portion of the Work, as well as the information furnished by the County, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the Project site(s) affecting it. Contractor represents and agrees that it has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of discovering errors, omissions, inconsistencies, or ambiguities in the Contract Documents; however, any errors, inconsistencies, omissions, or ambiguities discovered by the Contractor shall be reported promptly to the Contract Administrator and County in writing. Contractor represents that it has given the County written notice of all errors, omissions, inconsistencies, or ambiguities that the Contractor has discovered in the Contract Documents so far, and the written resolution thereof by the County is acceptable to the Contractor. Further, Contractor acknowledges that its obligation to give

notice of all such errors, omissions, inconsistencies, or ambiguities shall be continuing during the Term of this Agreement. Any failure on the part of the Contractor to notify the Contract Administrator and County in writing of any errors, omissions, inconsistencies, or ambiguities in the Contract Documents that Contractor discovered or reasonably should have discovered shall result in a waiver and full release by the Contractor of any future arguments or defenses based on such errors, omissions, inconsistencies, or ambiguities against the County. Further, if the Contractor fails to perform its obligations pursuant to this paragraph, the Contractor shall pay such costs and damages to the County as would have been avoided if the Contractor had performed such obligations.

- (2) *Inspection of Prior Work.* If part of the Contractor's Work depends for proper execution or results upon construction or operations by a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Contract Administrator apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the County's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable, and Contractor shall be responsible for all costs and damages resulting from its failure to report reasonably discoverable defects.
- (3) *Contractor Requests for Information.* If, with undue frequency (as determined by the County in its sole discretion), the Contractor requests information that is obtainable through reasonable examination and comparison of the Contract Documents, site conditions, and previous correspondence, interpretations or clarifications, the Contractor shall be liable to the County for reasonable charges from the Contract Administrator for the additional services required to review, research and respond to such requests for information.

- F. Supervision, Inspection and Construction Procedures. The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Agreement, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety therefor and, except as stated below, shall be fully and solely responsible for the jobsite safety for such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the County and Contract Administrator and shall not

proceed with that portion of the Work without further written instructions from the County or Contract Administrator as approved in writing by the County.

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of this Agreement. The Contractor shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury or loss to: (a) employees and other persons who may be affected, (b) the Work and materials and equipment to be incorporated therein, whether in storage on or off the Project site(s), under care, custody or control of the Contractor or Contractor's subcontractors or sub-subcontractors, and (c) other property at the Project site(s) or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction. The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the Project site(s) by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the County and Contract Administrator in writing.

- G. Tests and Inspections. Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, or ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made promptly at an appropriate time to avoid unreasonable delay in the Work. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the County, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Contract Administrator timely notice of when and where tests and inspections are to be made so that the Contract Administrator may be present for such procedures. Required permits or certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and delivered to the Contract Administrator within ten (10) calendar days of issuance.
- H. Budgetary Limitations. Contractor agrees and acknowledges that budgetary limitations are not a justification for breach of sound principals of Contractor's profession and industry. Contractor shall take no calculated risk in the performance

of the Work. Specifically, Contractor agrees that, in the event it cannot perform the Work within the budgetary limitations established without disregarding sound principals of Contractor's profession and industry, Contractor will give written notice immediately to the County.

- I. County's Reliance on the Work. The Contractor acknowledges and agrees that the County does not undertake to approve or pass upon matters of expertise of the Contractor and that therefore, the County bears no responsibility for Contractor's Work performed under this Agreement. The Contractor acknowledges and agrees that the acceptance of Work by the County is limited to the function of determining whether there has been compliance with what is required to be produced under this Agreement. The County will not, and need not, inquire into adequacy, fitness, suitability or correctness of Contractor's performance. Contractor further agrees that no approval of designs, plans, or specifications by any person, body, or agency shall relieve Contractor of the responsibility for adequacy, fitness, suitability, and correctness of Contractor's Work under professional and industry standards, or for performing services under this Agreement in accordance with sound and accepted professional and industry principles.
- J. Contractor's Reliance on Submissions by the County. Contractor must have timely information and input from the County in order to perform the Work required under this Agreement. Contractor is entitled to rely upon information provided by the County, but Contractor shall be required to provide immediate written notice to the County if Contractor knows or reasonably should know that any information provided by the County is erroneous, inconsistent, or otherwise problematic.
- K. Uncovering and Correction of Work. If a portion of the Work is covered contrary to the Contract Administrator's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Contract Administrator, be uncovered for examination by the Contract Administrator and be replaced at the Contractor's expense without change in the Agreement Term.

If a portion of the Work has been covered which the Contract Administrator has not specifically requested to examine prior to its being covered or which the Contract Documents did not require to remain uncovered until examined, the Contract Administrator may request to see such Work, and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the County's expense, which expense shall be agreed upon in writing prior to being incurred. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense, unless the condition was caused by the County, in which event the County shall be responsible for payment of such costs including reasonable charges, if any, by the Contract Administrator for additional service, which expense shall be agreed upon in writing prior to being incurred.

If the County prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the County may do so instead of requiring its removal and correction, in which case the Maximum Contract Price will be reduced as appropriate and equitable. Such adjustment shall be affected whether or not final payment has been made.

- L. Clean Up. Contractor shall keep the Project site(s) and surrounding area free from accumulation of waste materials or rubbish caused by operations under this Agreement. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials. If the Contractor fails to clean up as provided in the Contract Documents, the County may do so, and the cost thereof shall be charged to the Contractor.
- M. Contractor's Representative. _____ shall be authorized to act on Contractor's behalf with respect to the Work as Contractor's designated representative.
- N. Independent Contractor. Contractor hereby covenants and declares that it is engaged in an independent business and agrees to perform the Work as an independent contractor and not as the agent or employee of the County. Nothing contained in this Agreement shall be construed to make the Contractor or any of its employees, servants or subcontractors an employee, servant or agent of the County for any purpose. The Contractor agrees to be solely responsible for its own matters relating to the time and place the Work is performed and the method used to perform such Work; the instrumentalities, tools, supplies, and/or materials necessary to complete the Work; hiring of subcontractors, agents, or employees to complete the Work; and the payment of employees, including benefits and compliance with Social Security, withholding, and all other regulations governing such matters. The Contractor agrees to be solely responsible for its own acts and those of its subordinates, employees, and subcontractors during the life of this Agreement. There shall be no contractual relationship between any subcontractor or supplier and the County by virtue of this Agreement with the Contractor. Any provisions of this Agreement that may appear to give the County the right to direct Contractor as to the details of the services to be performed by Contractor or to exercise a measure of control over such services will be deemed to mean that Contractor shall follow the directions of the County with regard to the results of such services only. It is further understood that this Agreement is not exclusive, and the County may hire additional entities to perform Work related to this Agreement.

Inasmuch as the County and the Contractor are independent of each other, neither has the authority to bind the other to any third person or otherwise to act in any way as the representative of the other, unless otherwise expressly agreed to in writing

signed by both Parties hereto. The Contractor agrees not to represent itself as the County's agent for any purpose to any party or to allow any employee of the Contractor to do so, unless specifically authorized, in advance and in writing, to do so, and then only for the limited purpose stated in such authorization. The Contractor shall assume full liability for any contracts or agreements the Contractor enters into on behalf of the County without the express knowledge and prior written consent of the County.

- O. Responsibility of Contractor and Indemnification of County. The Contractor covenants and agrees to take and assume all responsibility for the Work rendered in connection with this Agreement. The Contractor shall bear all losses and damages directly or indirectly resulting to it and/or the County on account of the performance or character of the Work rendered pursuant to this Agreement. To the fullest extent permitted by law, Contractor shall defend, indemnify, and hold harmless the County and the County's elected and appointed officials, officers, boards, commissions, employees, representatives, consultants, servants, agents, attorneys and volunteers (individually an "Indemnified Party" and collectively "Indemnified Parties") from and against any and all claims, suits, actions, judgments, injuries, damages, losses, costs, expenses and liability of any kind whatsoever, including, but not limited to, attorney's fees and costs of defense ("Liabilities"), which may arise from or be the result of an alleged willful, negligent, or tortious act or omission arising out of the Work, performance of contracted services, or operations by the Contractor, any subcontractor, anyone directly or indirectly employed by the Contractor or subcontractor, or anyone for whose acts the Contractor or subcontractor may be liable, regardless of whether or not the act or omission is caused in part by a party indemnified hereunder. This indemnity obligation does not include Liabilities caused by or resulting from the sole negligence of an Indemnified Party. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this provision.

In any and all claims against an Indemnified Party, by any employee of the Contractor, its subcontractor, anyone directly or indirectly employed by the Contractor or subcontractor, or anyone for whose acts the Contractor or subcontractor may be liable, the indemnification obligation set forth in this provision 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 workers' or workmen's compensation acts, disability benefit acts, or other employee benefit acts. This obligation to indemnify, defend, and hold harmless the Indemnified Party(ies) shall survive expiration or termination of this Agreement, provided that the claims are based upon or arise out of actions or omissions that occurred during the performance of this Agreement.

- P. Insurance.

- (1) Requirements: The Contractor shall have and maintain in full force and effect for the duration of this Agreement, insurance insuring against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Work by the Contractor, its agents, representatives, employees or subcontractors. All policies shall be subject to approval by the County as to form and content. These requirements are subject to amendment or waiver if so approved in writing by the County Manager.
- (2) Minimum Limits of Insurance: Contractor shall maintain the following insurance policies with coverage and limits no less than:
 - (a) *Commercial General Liability*: \$1,000,000 (one million dollars) combined single limit per occurrence comprehensive/extended/enhanced Commercial General Liability policy with coverage including bodily and personal injury, sickness, disease or death, injury to or destruction of property, including loss of use resulting therefrom, damage to premises/operations, products/ completed operations, independent consultants and contractual liability (specifically covering the indemnity), broad from property damage, and underground, explosion and collapse hazard. This coverage may be achieved by using an excess or umbrella policy. The policy or policies must be on "an occurrence" basis ("claims made" coverage is not acceptable). If a general aggregate limit applies, the general aggregate limit shall apply separately to this project/location, and the general aggregate limit shall be twice the required occurrence limit.
 - (b) *Commercial Automobile Liability (owned, non-owned, hired)*: \$1,000,000 (one million dollars) combined single limit per occurrence \$2,000,000 (two million dollars) aggregate for comprehensive Commercial Automobile liability coverage (owned, non-owned, hired) including bodily and personal injury, sickness, disease or death, injury to or destruction of property, including loss of use resulting therefrom.
 - (c) *Workers' Compensation and Employers' Liability*: Workers' Compensation policy with limits as required by the State of Georgia and Employers' Liability limits of \$1,000,000 (one million dollars) per occurrence or disease. (If Contractor is a sole proprietor, who is otherwise not entitled to coverage under Georgia's Workers' Compensation Act, Contractor must secure Workers' Compensation coverage approved by both the State Board of Workers' Compensation and the Commissioner of Insurance. The amount of such coverage shall be the same as what is otherwise required of employers entitled

to coverage under the Georgia Workers' Compensation Act. Further, the Contractor shall provide a certificate of insurance indicating that such coverage has been secured and that no individual has been excluded from coverage.)

If higher limits are maintained by Contractor than shown above, the County shall be entitled to coverage for any additional insurance proceeds in excess of the specified minimum limits maintained by the Contractor.

- (3) Deductibles and Self-Insured Retentions: Any deductibles or self-insured retentions must be declared to and approved by the County in writing so that the County may ensure the financial solvency of the Contractor; self-insured retentions should be included on the certificate of insurance.
- (4) Other Insurance Provisions: Each policy shall contain, or be endorsed to contain, the following provisions respectively:
 - (a) General Liability, Automobile Liability and Umbrella Liability Coverage.
 - (i) *Additional Insured Requirement.* The County and County's elected and appointed officials, officers, boards, commissioners, employees, representatives, consultants, servants, agents and volunteers (individually "Insured Party" and collectively "Insured Parties") shall be named as additional insureds as respects: liability arising out of activities performed by or on behalf of the Contractor; products and completed operations of the Contractor; premises owned, leased, or used by the Contractor; automobiles owned, leased, hired, or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the Insured Parties. Nothing contained in this section shall be construed to require the Contractor to provide liability insurance coverage to any Insured Party for claims asserted against such Insured Party for its sole negligence.
 - (ii) *Primary Insurance Requirement.* The Contractor's insurance coverage shall be primary noncontributing insurance as respects to any other insurance or self-insurance available to the Insured Parties. Any insurance or self-insurance maintained by the Insured Parties shall be in excess of the Contractor's insurance and shall not contribute with it.

- (iii) *Reporting Requirement.* Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Insured Parties.
 - (iv) *Separate Coverage.* Coverage shall state that the Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to limits of insurance provided.
 - (v) *Defense Costs/Cross Liability.* Coverage shall be provided on a "pay on behalf" basis, with defense costs payable in addition to policy limits. There shall be no cross liability exclusion.
 - (vi) *Subrogation.* The insurer shall agree to waive all rights of subrogation against the Insured Parties for losses arising from Work performed by the Contractor for the County.
- (b) Workers' Compensation Coverage: The insurer providing Workers' Compensation Coverage will agree to waive all rights of subrogation against the Insured Parties for losses arising from Work performed by the Contractor for the County.
- (c) All Coverages:
- (i) *Notice Requirement.* Each insurance policy required by this Agreement shall be endorsed to state that coverage shall not be reduced, suspended, voided, or canceled except after thirty (30) calendar days' prior written notice (or 10 calendar days if due to non-payment) has been given to the County. In addition, Contractor shall provide written notice to County at least thirty (30) days prior to any reduction, suspension, voiding, or cancellation of coverage. The County reserves the right to accept alternate notice terms and provisions, provided they meet the minimum requirements under Georgia law.
 - (ii) *Starting and Ending Dates.* Policies shall have concurrent starting and ending dates.
 - (iii) *Incorporation of Indemnification Obligations.* Policies shall include a Project-specific endorsement incorporating the indemnification obligations assumed by the Contractor under the terms of this Agreement, including but not limited to Section 7(O) of this Agreement.

- (6) Acceptability of Insurers: The insurance to be maintained by Contractor must be issued by a company licensed or approved by the Insurance Commissioner to transact business in the State of Georgia. Such insurance shall be placed with insurer(s) with an A.M. Best Policyholder's rating of no less than "A-" and with a financial rate of Class VII or greater. The Contractor shall be responsible for any delay resulting from the failure of its insurer to provide proof of coverage in the proscribed form.
- (6) Verification of Coverage: Contractor shall furnish to the County for County approval certificates of insurance and endorsements to the policies evidencing all coverage required by this Agreement prior to the start of work. Without limiting the general scope of this requirement, Contractor is specifically required to provide an endorsement naming the County as an additional insured when required. The certificates of insurance and endorsements for each insurance policy are to be on a form utilized by Contractor's insurer in its normal course of business and are to be signed by a person authorized by that insurer to bind coverage on its behalf, unless alternate sufficient evidence of their validity and incorporation into the policy is provided. The County reserves the right to require complete, certified copies of all required insurance policies at any time. The Contractor shall provide proof that any expiring coverage has been renewed or replaced prior to the expiration of the coverage.
- (7) Subcontractors: Contractor shall either (1) ensure that its insurance policies (as described herein) cover all subcontractors and the Work performed by such subcontractors or (2) ensure that any subcontractor secures separate policies covering that subcontractor and its Work. All coverage for subcontractors shall be subject to all of the requirements stated in this Agreement, including, but not limited to, naming the Insured Parties as additional insureds.
- (8) Claims-Made Policies: Contractor shall extend any claims made insurance policy for at least six (6) years after termination or final payment under the Agreement, whichever is later, and have an effective date which is on or prior to the Effective Date.
- (9) Progress Payments: The making of progress payments to the Contractor shall not be construed as relieving the Contractor or its subcontractor or insurance carriers from providing the coverage required in this Agreement.
- Q. Bonds. The Contractor shall provide Performance and Payment Bonds on the forms attached hereto as "**Exhibits B.1 and B.2,**" each in the penal sum of 100% of the Maximum Contract Price stated in Section 5 above, and with a surety licensed to do business in Georgia and listed on the Treasury Department's most current list (Circular

570 as amended). Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under this Agreement, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

- R. Assignment of Agreement. The Contractor covenants and agrees not to assign or transfer any interest in, or delegate any duties of this Agreement, without the prior express written consent of the County. As to any approved subcontractors, the Contractor shall be solely responsible for reimbursing them, and the County shall have no obligation to them.
- S. Employment of Unauthorized Aliens Prohibited – E-Verify Affidavit. Pursuant to O.C.G.A. § 13-10-91, the County shall not enter into a contract for the physical performance of services unless:
 - (1) the Contractor shall provide evidence on County provided forms, attached hereto as “**Exhibits E.1 and E.2**” (affidavits regarding compliance with the E-Verify program to be sworn under oath under criminal penalty of false swearing pursuant to O.C.G.A. § 16-10-71), that it and its subcontractors have registered with, are authorized to use and use the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91, and that they will continue to use the federal work authorization program throughout the contract period, **or**
 - (2) the Contractor provides evidence that it is not required to provide an affidavit because it is an *individual* licensed pursuant to Title 26 or Title 43 or by the State Bar of Georgia and is in good standing.

The Contractor hereby verifies that it has, prior to executing this Agreement, executed a notarized affidavit, the form of which is provided in “**Exhibit E.1**”, and submitted such affidavit to County or provided the County with evidence that it is an individual not required to provide such an affidavit because it is licensed and in good standing as noted in sub-subsection (2) above. Further, Contractor hereby agrees to comply with the requirements of the federal Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603, O.C.G.A. § 13-10-91 and Georgia Department of Labor Rule 300-10-1-.02.

In the event the Contractor employs or contracts with any subcontractor(s) in connection with the covered contract, the Contractor agrees to secure from such subcontractor(s) attestation of the subcontractor’s compliance with O.C.G.A. § 13-10-91 and Rule 300-10-1-.02 by the subcontractor’s execution of the subcontractor affidavit, the form of which is attached hereto as “**Exhibit E.2**”, which subcontractor affidavit shall become part of the contractor/subcontractor agreement, or evidence that the subcontractor is not required to provide such an affidavit because it is licensed and in good standing as noted in sub-subsection (2) above. If a subcontractor

affidavit is obtained, Contractor agrees to provide a completed copy to the County within five (5) business days of receipt from any subcontractor.

Where Contractor is required to provide an affidavit pursuant to O.C.G.A. § 13-10-91, the County Manager or his/her designee shall be authorized to conduct an inspection of the Contractor's and Contractor's subcontractors' verification process at any time to determine that the verification was correct and complete. The Contractor and Contractor's subcontractors shall retain all documents and records of their respective verification process for a period of five (5) years following completion of the contract. Further, where Contractor is required to provide an affidavit pursuant to O.C.G.A. § 13-10-91, the County Manager or his/her designee shall further be authorized to conduct periodic inspections to ensure that no County Contractor or Contractor's subcontractors employ unauthorized aliens on County contracts. By entering into a contract with the County, the Contractor and Contractor's subcontractors agree to cooperate with any such investigation by making their records and personnel available upon reasonable notice for inspection and questioning. Where a Contractor or Contractor's subcontractors are found to have employed an unauthorized alien, the County Manager or his/her designee may report same to the Department of Homeland Security. The Contractor's failure to cooperate with the investigation may be sanctioned by termination of the contract, and the Contractor shall be liable for all damages and delays occasioned by the County thereby.

Contractor agrees that the employee number category designated below is applicable to the Contractor. [Information only required if a contractor affidavit is required pursuant to O.C.G.A. § 13-10-91.]

- _____ 500 or more employees.
- _____ 100 or more employees.
- _____ Fewer than 100 employees.

Contractor hereby agrees that, in the event Contractor employs or contracts with any subcontractor(s) in connection with this Agreement and where the subcontractor is required to provide an affidavit pursuant to O.C.G.A. § 13-10-91, the Contractor will secure from the subcontractor(s) such subcontractor(s') indication of the above employee number category that is applicable to the subcontractor.

The above requirements shall be in addition to the requirements of State and federal law and shall be construed to be in conformity with those laws.

T. Records, Reports and Audits.

(1) Records:

- (a) Books, records, documents, account ledgers, data bases, and similar materials relating to the Work performed for the County under this

Agreement ("Records") shall be established and maintained by the Contractor in accordance with applicable law and requirements prescribed by the County with respect to all matters covered by this Agreement. Except as otherwise authorized or required, such Records shall be maintained for at least three (3) years from the date that final payment is made to Contractor by County under this Agreement. Furthermore, Records that are the subject of audit findings shall be retained for three (3) years or until such audit findings have been resolved, whichever is later.

- (b) All costs claimed or anticipated to be incurred in the performance of this Agreement shall be supported by properly executed payrolls, time records, invoices, contracts, or vouchers, or other official documentation evidencing in proper detail the nature and propriety of the charges. All checks, payrolls, invoices, contracts, vouchers, orders, or other accounting documents pertaining in whole or in part to this Agreement shall be clearly identified and readily accessible.

- (2) Reports and Information: Upon request, the Contractor shall furnish to the County any and all Records in the form requested by the County. All Records stored on a computer database must be of a format compatible with the County's computer systems and software.

- (3) Audits and Inspections: At any time during normal business hours and as often as the County may deem necessary, Contractor shall make available to the County or County's representative(s) for examination all Records. The Contractor will permit the County or County's representative(s) to audit, examine, and make excerpts or transcripts from such Records. Contractor shall provide proper facilities for County or County's representative(s) to access and inspect the Records, or, at the request of the County, shall make the Records available for inspection at the County's office. Further, Contractor shall permit the County or County's representative(s) to observe and inspect any or all of Contractor's facilities and activities during normal hours of business for the purpose of evaluating Contractor's compliance with the terms of this Agreement. In such instances, the County or County's representative(s) shall not interfere with or disrupt such activities.

- U. Confidentiality. Contractor acknowledges that it may receive confidential information of the County and that it will protect the confidentiality of any such confidential information and will require any of its subcontractors, contractors, and/or staff to likewise protect such confidential information. The Contractor agrees that confidential information it receives or such reports, information, opinions, or conclusions that Contractor creates under this Agreement shall not be made available to, or discussed with, any individual or organization, including the news media,

without prior written approval of the County. Contractor shall exercise reasonable precautions to prevent the unauthorized disclosure and use of County information whether specifically deemed confidential or not.

Contractor acknowledges that the County's disclosure of documentation is governed by Georgia's Open Records Act, and Contractor further acknowledges that, if Contractor submits records containing trade secret information and if Contractor wishes to keep such records confidential, Contractor must submit and attach to such records an affidavit affirmatively declaring that specific information in the records constitutes trade secrets pursuant to Article 27 of Chapter 1 of Title 10, and the Parties shall follow the requirements of O.C.G.A. § 50-18-72(a)(34) related thereto.

- V. Licenses, Certifications and Permits. The Contractor covenants and declares that it has obtained all diplomas, certificates, licenses, permits, or the like required of the Contractor by any and all national, state, regional, county or local boards, agencies, commissions, committees or other regulatory bodies in order to perform the Work contracted for under this Agreement; provided that some permits or licenses related to the Project may be obtained as part of the Work and shall be obtained as required. The Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work, which are customarily secured after execution of the Agreement and which are legally required. Contractor shall furnish copies of such permits, licenses, etc. to the County within ten (10) days after issuance.
- W. Key Personnel. All of the individuals identified in "**Exhibit H**", attached hereto, are necessary for the successful completion of the Work due to their unique expertise and depth and breadth of experience. There shall be no change in Contractor's Project Manager or members of the Project team, as listed in "**Exhibit H**", without written approval of the County. Contractor recognizes that the composition of this team was instrumental in the County's decision to award the Work to Contractor and that compelling reasons for substituting these individuals must be demonstrated for the County's consent to be granted. Any substitutes shall be persons of comparable or superior expertise and experience. Failure to comply with the provisions of this paragraph shall constitute a material breach of Contractor's obligations under this Agreement and shall be grounds for termination.
- X. Authority to Contract. The Contractor covenants and declares that it has obtained all necessary approvals of its board of directors, stockholders, general partners, limited partners, or similar authorities to simultaneously execute and bind Contractor to the terms of this Agreement, if applicable.
- Y. Ownership of Work. All reports, designs, drawings, plans, specifications, schedules, work product, and other materials, including those in electronic form, prepared or in the process of being prepared for the Work to be performed by the Contractor

("Materials") shall be the property of the County, and the County shall be entitled to full access and copies of all Materials in the form prescribed by the County. Any Materials remaining in the hands of the Contractor or subcontractor upon completion or termination of the Work shall be delivered immediately to the County whether or not the Project or Work is commenced or completed, provided, however, that Contractor may retain a copy of any deliverables for its records. The Contractor assumes all risk of loss, damage or destruction of or to Materials. If any Materials are lost, damaged, or destroyed before final delivery to the County, the Contractor shall replace them at its own expense. Any and all copyrightable subject matter in all Materials is hereby assigned to the County, and the Contractor agrees to execute any additional documents that may be necessary to evidence such assignment.

- Z. Nondiscrimination. In accordance with Title VI of the Civil Rights Act of 1964, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and all other provisions of Federal law, the Contractor agrees that, during performance of this Agreement, Contractor, for itself, its assignees and successors in interest, will not discriminate against any employee or applicant for employment, any subcontractor, or any supplier because of race, color, creed, national origin, gender, age or disability. In addition, Contractor agrees to comply with all applicable implementing regulations and shall include the provisions of this paragraph in every subcontract for services contemplated under this Agreement.

Section 8. Covenants of the County

- A. Right of Entry. County shall provide for right of entry for Contractor and Contractor's equipment as required for Contractor to complete the Work; provided that Contractor shall not unreasonably encumber the Project site(s) with materials or equipment.
- B. County's Representative. _____ shall be authorized to act on County's behalf with respect to the Work as the County's designated representative on this Project; provided that any changes to the Work or the terms of this Agreement must be approved as provided in Section 6 above.

Section 9. Final Project Documents; Warranty

- A. Final Project Documents. Prior to final payment, Contractor shall deliver to County a written assignment of all warranties, guaranties, certificates, permits, and other documents, including without limitation, all contractors' and manufacturers' warranties. At such time, Contractor shall also deliver to the County copies of all as-built drawings, operations, and maintenance manuals, and any other pertinent documents relating to the construction and operation of the Work that is not

otherwise in the possession of the County.

- B. Warranty. The Contractor warrants to the County and the Contract Administrator that materials and equipment furnished under the Agreement will be of good quality and new, unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, is considered defective. This warranty excludes remedy for damage or defect caused by abuse by the County or modifications to the Work not executed by the Contractor or an employee/subcontractor/sub-subcontractor thereof.

Except as may be otherwise specified or agreed, the Contractor shall repair or replace all defects in materials, equipment, or workmanship appearing within one (1) year(s) (the "Warranty Period") from the date of Final Completion (as defined in "**Exhibit G**", attached hereto and incorporated herein by reference) at no additional cost to the County. Further, Contractor shall provide all maintenance services, including parts and labor, for one (1) year(s) (the "Maintenance Period") from the date of Final Completion at no additional cost to the County. An inspection shall be conducted by the County or its representative(s) near the completion of the respective Warranty Period/Maintenance Period to identify any issues that must be resolved by the Contractor. After the expiration of the Maintenance Period, County shall be responsible for repairing issues resulting from normal wear and tear and shall be responsible for general maintenance of the equipment; however, expiration of any Warranty Period or Maintenance Period shall not affect the Contractor's continued liability under an implied warranty of merchantability and fitness. All warranties implied by law, including fitness for a particular purpose and suitability, are hereby preserved and shall apply in full force and effect beyond any Warranty Period or Maintenance Period. County may purchase additional maintenance services from the Contractor upon a written bid for such services being executed by authorized representatives of both Parties, and upon execution, such bid for additional services shall be incorporated herein by this reference.

Section 10. Termination

- A. For Convenience. The County may terminate this Agreement for convenience at any time upon providing written notice thereof to Contractor at least seven (7) calendar days in advance of the termination date.
- B. For Cause. The Contractor shall have no right to terminate this Agreement prior to completion of the Work, except in the event of County's failure to pay the Contractor within thirty (30) calendar days of Contractor providing the County with notice of a delinquent payment and an opportunity to cure. The County may terminate this

Agreement for cause as provided in Section 11 of this Agreement. The County shall give Contractor at least seven (7) calendar days' written notice of its intent to terminate the Agreement for cause and the reasons therefor, and if Contractor, or its Surety, fails to cure the default within that period, the termination shall take place without further notice. The County shall then make alternative arrangements for completion of the Project.

- C. Statutory Termination. In compliance with O.C.G.A. § 36-60-13, this Agreement shall be deemed terminated as provided in Section 4(A) of this Agreement. Further, this Agreement shall terminate immediately and absolutely at such time as appropriated or otherwise unobligated funds are no longer available to satisfy the obligation of the County.
- D. Payment. Provided that no damages are due to the County for Contractor's failure to perform in accordance with this Agreement, and except as otherwise provided herein, the County shall, upon termination for convenience or statutory termination, pay Contractor for Work performed prior to the date of termination in accordance with Section 5 herein. The County shall have no further liability to Contractor for such termination. At its sole discretion, the County may pay Contractor for additional value received as a result of Contractor's efforts, but in no case shall said payment exceed any remaining unpaid portion of the Maximum Contract Price.

If this Agreement is terminated for cause, the County will make no further payment to the Contractor or its Surety until the Project is completed and all costs of completing the Project are paid. If the unpaid balance of the amount due the Contractor, according to this Agreement, exceeds the cost of finishing the Project, County shall provide payment to the Contractor (or its Surety) for services rendered and expenses incurred prior to the termination date, provided that such payment shall not exceed the unpaid balance of the amount otherwise payable under this Agreement minus the cost of completing the Project. If the costs of completing the Project exceed the unpaid balance, the Contractor or its Surety shall pay the difference to the County.

- E. Assumption of Contracts. The County reserves the right in termination for cause to take assignment of all contracts between the Contractor and its subcontractors, vendors, and suppliers. The County will promptly notify the Contractor of the contracts the County elects to assume. Upon receipt of such notice, the Contractor shall promptly take all steps necessary to effect such assignment.
- F. Conversion to Termination for Convenience. If the County terminates this Agreement for cause and it is later determined that the County did not have grounds to do so, the termination will be converted to and treated as a termination for convenience under the terms of Section 10(A) above.

- G. Requirements Upon Termination. Upon termination, the Contractor shall: (1) promptly discontinue all services, cancel as many outstanding obligations as possible if requested to do so by the County, and not incur any new obligations, unless the County directs otherwise; and (2) promptly deliver to the County all data, drawings, reports, summaries, and such other information and materials as may have been generated or used by the Contractor in performing this Agreement, whether completed or in process, in the form specified by the County.
- H. Reservation of Rights and Remedies. The rights and remedies of the County and the Contractor provided in this Section are in addition to any other rights and remedies provided under this Agreement or at law or in equity.

Section 11. County's Rights; Contractor Default

- A. County Rights Related to the Work.
- (1) *County's Right to Stop the Work.* If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents, as required by the Contract Administrator, or persistently fails to carry out Work in accordance with the Contract Documents, the County may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the County to stop the Work shall not give rise to a duty on the part of the County to exercise this right for the benefit of the Contractor or any other person or entity. Such a stoppage of Work shall not extend the Expected Date of Final Completion of the Work.
- (2) *County's Right to Carry Out the Work.* If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven (7) calendar day period after receipt of written notice from the County to commence and/or continue correction of such default or neglect with diligence and promptness, the County may, without prejudice to other remedies the County may have, correct such deficiencies. In such case, an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including County's expenses and compensation for the Architect/Engineer's and/or Contract Administrator's additional services (if any) made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the County.
- B. Contractor Default. For the purposes of this Agreement, Contractor shall be in default if any of the following occur during the Term of this Agreement: (a) a failure to fulfill in a timely and proper manner Contractor's obligations under this Agreement; (b) Contractor violates any of the material provisions, agreements, representations or covenants of this Agreement or any applicable city, state, or federal laws, which do not fall within the force majeure provisions of this Agreement; (c) the Contractor becomes insolvent or unable

to pay its debts as they mature, or makes an assignment for the benefit of creditors, or files a bankruptcy petition under the United States Bankruptcy Code; or (d) Contractor is the subject of a judgment or order for payment of money, which judgment or order exceeds \$100,000 and is no longer subject to appeal or, in the opinion of the County, would be fruitless to appeal and where (i) such judgment or order shall continue undischarged or unpaid for a period of thirty (30) calendar days, (ii) an insurer acceptable to the County has not acknowledged that such judgment or order is fully covered by a relevant policy of insurance, or (iii) the County is otherwise reasonably satisfied that such judgment or order is not likely to be satisfied or complied with within sixty (60) calendar days of its issuance.

In the event of Contractor's default under this Agreement, the County shall send written notice to the Contractor setting forth the specific instances of the default and providing the Contractor with at least seven (7) calendar days to cure or otherwise remedy the default to the reasonable satisfaction of the County. If the default is not remedied during the stated cure period, then the County may, at its election: (a) in writing terminate the Agreement in whole or in part; (b) cure such default itself and charge the Contractor for the costs of curing the default against any sums due or which become due to the Contractor under this Agreement; and/or (c) pursue any other remedy then available, at law or in equity, to the County for such default.

Section 12. Construction Administration

If a Contract Administrator other than the County has been hired in relation to the Project, the Contract Administrator's administration of the construction of the Project shall be as described in "Exhibit I", attached hereto. The Contractor agrees to the construction administration provisions contained in "Exhibit I."

Section 13. Miscellaneous

- A. Complete Agreement. This Agreement, including all of the Contract Documents, constitutes the complete agreement between the Parties and supersedes any and all other agreements, either oral or in writing, between the Parties with respect to the subject matter of this Agreement. No other agreement, statement, or promise relating to the subject matter of this Agreement not contained in this Agreement or the Contract Documents shall be valid or binding. This Agreement may be modified or amended only by a written document signed by representatives of both Parties with appropriate authorization.
- B. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Georgia without regard to choice of law principles. If any action at law or in equity is brought to enforce or interpret the provisions of this Agreement, the rules, regulations, statutes and laws of the State of Georgia will control. Any action or suit related to this Agreement shall be brought in the Superior

Court of Barrow County, Georgia and Contractor submits to the jurisdiction and venue of such court.

- C. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument.
- D. Invalidity of Provisions; Severability. Should any article(s) or section(s) of this Agreement, or any part thereof, later be deemed illegal, invalid or unenforceable by a court of competent jurisdiction, the offending portion of the Agreement should be severed, and the remainder of this Agreement shall remain in full force and effect to the extent possible as if this Agreement had been executed with the invalid portion hereof eliminated, it being the intention of the Parties that they would have executed the remaining portion of this Agreement without including any such part, parts, or portions that may for any reason be hereafter declared invalid.
- E. Business License. Prior to commencement of the Work to be provided hereunder, Contractor shall apply to the County for a business license, pay the applicable business license fee, and maintain said business license during the Term of this Agreement, unless Contractor provides evidence that no such license is required.
- F. Notices.

(1) Communications Relating to Day-to-Day Activities.

All communications relating to the day-to-day activities of the Work shall be exchanged between _____ for the County and _____ for the Contractor.

(2) Official Notices.

All other notices, requests, demands, writings, or correspondence, as required by this Agreement, shall be in writing and shall be deemed received, and shall be effective, when (1) personally delivered, or (2) on the third calendar day after the postmark date when mailed by certified mail, postage prepaid, return receipt requested, or (3) upon actual delivery when sent *via* national overnight commercial carrier to the Party at the addresses given below, or at a substitute address previously furnished to the other Party by written notice in accordance herewith:

NOTICE TO COUNTY shall be sent to:

Barrow County
County Manager
Barrow County Historic Courthouse

30 N. Broad Street
Winder, GA 30680

NOTICE TO CONTRACTOR shall be sent to:

- G. Waiver of Agreement. No failure by the County to enforce any right or power granted under this Agreement, or to insist upon strict compliance by Contractor with this Agreement, and no custom or practice of the County at variance with the terms and conditions of this Agreement shall constitute a general waiver of any future breach or default or affect the County's right to demand exact and strict compliance by Contractor with the terms and conditions of this Agreement. Further, no express waiver shall affect any term or condition other than the one specified in such waiver, and that one only for the time and manner specifically stated.
- H. Survival. All sections of this Agreement which by their nature should survive termination will survive termination, including, without limitation, confidentiality obligations, warranties, and insurance maintenance requirements.
- I. Sovereign Immunity. Nothing contained in this Agreement shall be construed to be a waiver of the County's sovereign immunity or any individual's qualified good faith or official immunities.
- J. No Personal Liability. Nothing herein shall be construed as creating any individual or personal liability on the part of any of County's elected or appointed officials, officers, boards, commissions, employees, representatives, consultants, servants, agents, attorneys or volunteers. No such individual shall be personally liable to the Contractor or any successor in interest in the event of any default or breach by the County or for any amount which may become due to the Contractor or successor or on any obligation under the terms of this Agreement. Likewise, Contractor's performance of services under this Agreement shall not subject Contractor's individual employees, officers, or directors to any personal liability, except where Contractor is a sole proprietor. The Parties agree that their sole and exclusive remedy, claim, demand, or suit shall be directed and/or asserted only against Contractor or the County, respectively, and not against any elected or appointed official, officers, boards, commissions, employees, representatives, consultants, servants, agents, attorneys and volunteers.
- K. Force Majeure. Neither the County nor Contractor shall be liable for their respective non-negligent or non-willful failure to perform or shall be deemed in default with respect to the failure to perform (or cure a failure to perform) any of their respective duties or obligations under this Agreement or for any delay in such performance due to: (i) any cause beyond their respective reasonable control; (ii) any act of God; (iii)

any change in applicable governmental rules or regulations rendering the performance of any portion of this Agreement legally impossible; (iv) earthquake, fire, explosion, or flood; (v) strike or labor dispute, excluding strikes or labor disputes by employees and/or agents of Contractor; (vi) delay or failure to act by any governmental or military authority; or (vii) any war, hostility, embargo, sabotage, civil disturbance, riot, insurrection, or invasion. In such event, the time for performance shall be extended by an amount of time equal to the period of delay caused by such acts, and all other obligations shall remain intact.

- L. Headings. All headings herein are intended for convenience and ease of reference purposes only and in no way define, limit, or describe the scope or intent thereof, or of this Agreement, or in any way affect this Agreement.
- M. No Third-Party Rights. This Agreement shall be exclusively for the benefit of the Parties and shall not provide any third parties with any remedy, claim, liability, reimbursement, cause of action or other right.
- N. Successors and Assigns. Subject to the provision of this Agreement regarding assignment, each Party binds itself, its partners, successors, assigns, and legal representatives to the other Party hereto, its partners, successors, assigns, and legal representatives with respect to all covenants, agreements, and obligations contained in the Contract Documents.
- O. Agreement Construction and Interpretation. Contractor represents that it has reviewed and become familiar with this Agreement. The Parties hereto agree that, if an ambiguity or question of intent or interpretation arises, this Agreement is to be construed as if the Parties had drafted it jointly, as opposed to being construed against a Party because it was responsible for drafting one or more provisions of the Agreement. In the interest of brevity, the Contract Documents may omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.
- P. Material Condition. Each term of this Agreement is material, and Contractor's breach of any term of this Agreement shall be considered a material breach of the entire Agreement and shall be grounds for termination or exercise of any other remedies available to the County at law or in equity.
- Q. Use of Singular and Plural. Words or terms used as nouns in the Agreement shall be inclusive of their singular and plural forms, unless the context of their usage clearly requires contrary meaning.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF, the County and the Contractor have executed this Agreement effective as of the Effective Date first above written.

CONTRACTOR: _____

By: _____

Print Name: _____

Its: _____

[CORPORATE SEAL]
(required if corporation)

Attest/Witness:

Print Name: _____

Its: _____
((Assistant) Corporate Secretary if corporation)

BARROW COUNTY, GEORGIA

By: _____
Pat Graham, Chairman

[COUNTY SEAL]

Attest:

Print Name: _____
Danielle Austin, Barrow County Clerk

"EXHIBIT A"

BID DOCUMENTS FROM CONTRACTOR

“EXHIBITS B.1 AND B.2”

PAYMENT AND PERFORMANCE BONDS

"EXHIBIT B.1"

PERFORMANCE BOND

BARROW COUNTY

KNOW ALL MEN BY THESE PRESENTS THAT _____

(as CONTRACTOR, hereinafter referred to as the "Principal"), and _____

(as SURETY, hereinafter referred to as the "Contractor's Surety"), jointly and severally, and their heirs, executors, administrators, successors, and assigns, are held and firmly bound unto Barrow County, Georgia (as OWNER, hereinafter referred to as the "County"), for the performance due under the Contract in the sum of _____.

WHEREAS, the Principal has entered, or is about to enter, into a certain written agreement with the County for the construction of a project known as _____ (hereinafter referred to as "the Project"), which agreement is incorporated herein by reference in its entirety (hereinafter referred to as the "Contract").

NOW THEREFORE, the conditions of this obligation are as follows:

1. That if (a) the Principal shall fully and completely perform each and all of the terms, provisions and requirements of the Contract, including and during the period of any warranties or guarantees required thereunder, and all modifications, amendments, changes, deletions, additions, and alterations thereto that may hereafter be made, and (b) the Principal shall indemnify and hold harmless the County from any and all losses, liability and damages, claims, judgments, liens, costs and fees of every description, including but not limited to, any damages for delay, which the County may incur, sustain or suffer by reason of the failure or default on the part of the Principal in the performance of any or all of the terms, provisions, and requirements of the Contract, including all modifications, amendments, changes, deletions, additions, and alterations thereto, and any warranties or guarantees required thereunder, then Principal and Surety shall have no

obligation hereunder; otherwise this Performance Bond shall remain in full force and effect;

2. In the event of a failure of performance of the Contract by the Principal, which shall include, but not be limited to, any breach or default of the Contract:

- a. The Contractor's Surety shall commence performance of Principal's obligations and undertakings under this Bond no later than thirty (30) calendar days after written notice from the County to the Contractor's Surety, though the failure of County to provide such notice shall not constitute a failure to comply with a condition precedent to Contractor's Surety's obligations hereunder or release Contractor's Surety from its obligations hereunder;
- b. The means, method or procedure by which the Contractor's Surety undertakes to perform the obligations under this Performance Bond shall be subject to the advance written approval of the County.
- c. Upon notice of the County of Principal's failure of performance or default under or breach of the Contract, Contractor's Surety shall promptly and at its own expense take one of the following actions:
 - (i) Arrange for Principal, with the County's consent, to perform and complete the performance required under the Contract;
 - (ii) Undertake to perform and complete the performance due under the Contract itself, through its agents or independent contractors;
 - (iii) Obtain bids or negotiated proposals from qualified contractors acceptable to the County for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by the County and a contractor selected with the County's concurrence, and in accordance with applicable bidding

requirements, to be secured with performance and payment bonds provided by a qualified surety equivalent to the bonds issued in connection with the Contract, and pay to the County the amount of damages County has incurred as a result of Principal's default under the Contract; or

- (iv) Determine, subject to the approval of the County, the amount for which Contractor's Surety is liable to County and promptly make payment of said amount to County.

3. If Contractor's Surety does not proceed to perform as required hereunder within the thirty (30) day time limit prescribed herein, Contractor's Surety shall be deemed to be in default on the Performance Bond and the County shall be entitled to enforce any remedy available to County at law or equity.
4. Contractor's Surety shall also be responsible for : (a) the responsibilities of the Contractor for the correction of defective work and completion of the performance due under the Contract; (b) any additional legal, design professional, and delay cost resulting from Contractor's default; (c) any liquidated damages due under the Contract, or actual damages if liquidated damages are not provided for in the Contract; and (d) any damages resulting from the failure of Contractor's Surety to perform as required hereunder.
5. This Performance Bond shall be governed by Georgia law, not including Georgia choice-of-law provisions. Exclusive venue for any litigation regarding this performance bond shall be in the Superior Court of Barrow County, Georgia.
6. The County is an intended beneficiary of this Performance Bond.
7. The Contractor's Surety hereby waives notice of any and all modifications, omissions, additions, changes, (including without limitation changes to the contract price), and advance

payments or deferred payments in or about the Contract, and agrees that the obligations undertaken by this Performance Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, and advance payments or deferred payments.

8. The Parties further expressly agree that any action on this Bond may be brought within the time allowed by Georgia law for suit on contracts under seal.

9. Notices hereunder shall be given by certified mail, return receipt requested, or by overnight delivery and shall be effective upon receipt or refusal by the recipient. Addresses for notices hereunder are as follows:

For Notices to Principal:

For Notices to Contractor's Surety:

(Signatures appear on following page)

IN WITNESS WHEREOF, the Principal and Contractor's Surety have hereunto affixed their corporate seals and caused this obligation to be signed by their duly authorized officers or attorneys-in-fact, as set forth below.

CONTRACTOR ("Principal"):

By: _____ (signature)

_____ (print)

Title: _____ (SEAL)

Date: _____

Attest:

_____ (signature)

_____ (print)

Title: _____

Date: _____

CONTRACTOR'S SURETY:

By: _____ (signature)

_____ (print)

Title: _____ (SEAL)

Date: _____

Attest:

_____ (signature)

_____ (print)

Title: _____

Date: _____

(ATTACH SURETY'S POWER OF ATTORNEY)

“EXHIBIT B.2”

PAYMENT BOND

BARROW COUNTY

KNOW ALL MEN BY THESE PRESENTS THAT _____

(as CONTRACTOR, hereinafter referred to as the “Principal”), and _____

(as SURETY, hereinafter referred to as the “Contractor's Surety”), jointly and severally, and their heirs, executors, administrators, successors, and assigns, are held and firmly bound unto Barrow County, Georgia (as OWNER, hereinafter referred to as the “County”), to pay for labor, materials, services, and equipment furnished for use and in the performance of the Contract in the sum of any “Claimant,” as hereinafter defined, in the sum of _____ Dollars.

WHEREAS, the Principal has entered, or is about to enter, into a certain written agreement with the County for the construction of a project known as _____ (hereinafter referred to as “the Project”), which agreement is incorporated herein by reference in its entirety (hereinafter referred to as the “Contract”).

NOW THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to all Claimants, as hereinafter defined, for all labor, equipment, services, and materials used or reasonably required for use in the performance of the Contract, and defends, indemnifies and holds harmless the County from claims, demands, liens, or suits by any person or entity seeking payment for labor, equipment, services, or materials furnished for use in the performance of the Contract, then the Principal and Contractor's Surety shall have no obligation under this Payment Bond; otherwise it shall remain in full force and effect.

1. A “Claimant” shall be defined herein as any Subcontractor (at any level), or other person or entity furnishing labor, equipment, services, or materials used or reasonably required for use in

the performance of the Contract, without regard to whether such labor, equipment, services, or materials are sold, leased, or rented, and without regard to whether such Claimant is or is not in privity of Contract with the Principal or any Subcontractor performing Work on the Project. A "Claim" shall mean any written claim or demand or suit for payment for the furnishing of labor, equipment, services, or materials used, or reasonably required for use, in the performance of the Contract, made or brought by a Claimant.

2. Contractor's Surety's Duty to County

Upon notification by the County of any Claim against the County, or of a Lien filed against the property of the County by a Claimant, Contractor's Surety shall promptly, and at the expense of Contractor's Surety, defend, indemnify, and hold harmless the County against such Claim and shall either settle or resolve the Claim and shall remove, or cause the removal, of any such Lien by bond or otherwise.

3. Contractor's Surety's Duty to a Claimant

Upon notice to Contractor's Surety, either by the County or a Claimant, of a Claim, Contractor's Surety shall, within 30 days after receipt of notice of the Claim, respond to such Claimant, with a copy of such response to be furnished to the County and Principal, which response shall: (a) identify and components of such Claim which are undisputed, and (b) identify any components of such Claim which are disputed and the basis for such dispute. Surety shall then pay or tender, or arrange for payment or tender by Contractor, of any amounts indisputably due to such Claimant, within ten days after said response is given. The fact that Contractor's Surety disputes a portion of a Claim shall not relieve Contractor's Surety from its obligation to defend, indemnify, and hold harmless the County hereunder.

4. This Payment Bond shall be governed by Georgia law, not including Georgia choice-of-law provisions. Exclusive venue for litigation regarding this payment bond shall be in the Superior Court of Barrow County, Georgia.
5. The County is an intended beneficiary of this payment bond.
6. Amounts owed by the County to the Principal under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any construction performance bond issued in connection with the Contract.
7. By the Principal furnishing and the County accepting this Payment Bond, both agree that all funds earned by the Principal in the performance of the Contract shall be dedicated to satisfy obligations of Principal and Contractor's Surety under this Payment Bond, subject to the County's priority to use such funds for the completion of the Work under the Contract and to satisfy amounts due by Principal to the County in connection therewith.
8. The Contractor's Surety hereby waives notice of any and all modifications, omissions, additions, changes (including without limitation changes to the contract price), and advance payments or deferred payments in or about the Contract, and agrees that the obligations undertaken by this Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, and advance payments or deferred payments.
9. The Parties expressly agree that any action on this Bond may be brought within the time allowed by Georgia law for suit on contracts under seal.
10. Notices hereunder shall be given by certified mail, return receipt requested, or by overnight delivery and shall be effective upon receipt or refusal by the recipient. Addresses for notices hereunder are as follows:

For Notices to Principal:

For Notices to Contractor's Surety:

IN WITNESS WHEREOF, the Principal and Contractor's Surety have hereunto affixed their corporate seals and caused this obligation to be signed by their duly authorized officers, as set forth below.

[SIGNATURES ON FOLLOWING PAGE]

CONTRACTOR:

By: _____ (signature)

_____ (printed)

Title: _____ (SEAL)

Date: _____

Attest:

_____ (signature)

_____ (printed)

Title: _____

Date: _____

CONTRACTOR'S SURETY:

By: _____ (signature)

_____ (printed)

Title: _____ (SEAL)

Date: _____

Attest:

_____ (signature)

_____ (printed)

Title: _____

Date: _____

(ATTACH SURETY'S POWER OF ATTORNEY)

"EXHIBIT C"

NONCOLLUSION AFFIDAVIT OF PRIME BIDDER

STATE OF _____
COUNTY OF _____

_____, being first duly sworn, deposes and says that:

(1) He is _____ (Owner, Partner, Officer, Representative, or Agent) of _____ (the "Bidder") that has submitted the attached Bid;

(2) He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

(3) Such Bid is genuine and is not a collusive or sham Bid;

(4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, included in this affidavit, has in any way colluded, conspired, connived, or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price of any other Bidder or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against Barrow County or any person interested in the proposed Contract; and,

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this Affiant.

(6) Bidder has not directly or indirectly violated any law, ordinance or regulation related to the Bid.

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized
Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON
THIS THE _____ DAY OF _____,
2025.

Notary Public

[NOTARY SEAL]

My Commission Expires:

"EXHIBIT D"

FINAL AFFIDAVIT

STATE OF _____
COUNTY OF _____

TO BARROW COUNTY, GEORGIA

I, _____, hereby certify that all suppliers of materials, equipment and service, subcontractors, mechanics, and laborers employed by _____ or any of its subcontractors in connection with the construction of _____ for Barrow County, Georgia have been paid and satisfied in full as of _____, 20____, and that there are no outstanding obligations or claims of any kind for the payment of which Barrow County, Georgia on the above named project might be liable, or subject to, in any lawful proceeding at law or in equity.

Signature

Title

Personally appeared before me this ____ day of _____, 2025. _____, who under oath deposes and says that he is _____ of the firm of _____, that he has read the above statement, and that to the best of his knowledge and belief same is an exact true statement.

Notary Public

[NOTARY SEAL]

My Commission Expires

"EXHIBIT E.1"**CONTRACTOR AFFIDAVIT AND AGREEMENT**

STATE OF _____
COUNTY OF _____

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm, or corporation which is engaged in the physical performance of services on behalf of Barrow County has registered with, is authorized to use, and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91.

Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period, and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A. § 13-10-91(b).

Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User
Identification Number

Date of Authorization

Name of Contractor

Name of Project

Barrow County, Georgia

Name of Public Employer

I hereby declare under penalty of perjury
that the foregoing is true and correct.

Executed on _____, 2025 in
_____ (city), _____ (state).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized
Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON
THIS THE _____ DAY OF _____,
2025.

Notary Public

[NOTARY SEAL]

My Commission Expires:

"EXHIBIT E.2"**SUBCONTRACTOR AFFIDAVIT**

STATE OF _____
COUNTY OF _____

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with _____ (name of contractor) on behalf of Barrow County has registered with, is authorized to use, and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned subcontractor will continue to use the federal work authorization program throughout the contract period, and the undersigned subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the subcontractor with the information required by O.C.G.A. § 13-10-91(b). Additionally, the undersigned subcontractor will forward notice of the receipt of an affidavit from a sub-subcontractor to the contractor within five (5) business days of receipt. If the undersigned subcontractor receives notice that a sub-subcontractor has received an affidavit from any other contracted sub-subcontractor, the undersigned subcontractor must forward, within five (5) business days of receipt, a copy of the notice to the contractor.

Subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User
Identification Number

Date of Authorization

Name of Subcontractor

Name of Project

Barrow County, Georgia
Name of Public Employer

I hereby declare under penalty of perjury
that the foregoing is true and correct.

Executed on _____, 2025 in
_____(city), _____(state).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized
Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE _____ DAY OF _____, 2025.

NOTARY PUBLIC

[NOTARY SEAL]

My Commission Expires:

"EXHIBIT F"

PLANS, DRAWINGS AND SPECIFICATIONS

Plans, drawings and specifications (a true and correct copy of which has been provided to Contractor as included in the RFP maintained on file with the County Purchasing Department), with any modifications (if issued) are provided in Section VIII - Attachments.

“EXHIBIT G”

ADDITIONAL PAYMENT TERMS

- A. **Defined Terms.** Terms used in this Agreement shall have their ordinary meaning, unless otherwise defined below or elsewhere in the Contract Documents.
- (i) “Substantial Completion” means when the Work or designated portion thereof is complete in accordance with the Contract Documents so that any remaining Work includes only (1) Minor Items that can be completed or corrected within the following thirty (30) calendar days, (2) Permitted Incomplete Work that will be completed by the date agreed upon by the Parties, and (3) any Warranty Work. Substantial Completion shall require complete operation of all applicable building systems including, but not limited to, mechanical, electrical, plumbing, fire protection, fire alarm, telecom, data, security, elevators, life safety, and accessibility (if any).
 - (ii) “Minor Item” means a portion or element of the Work that can be totally complete within thirty (30) calendar days.
 - (iii) “Permitted Incomplete Work” means Work that is incomplete through no fault of the Contractor, as determined by the County in its sole discretion.
 - (iv) “Final Completion” means when the Work has been completed in accordance with terms and conditions of the Contract Documents.
- B. **Payment for Work Completed and Costs Incurred.** County agrees to pay the Contractor for the Work performed and costs incurred by Contractor upon certification by the Contract Administrator and the County that the Work was actually performed and costs actually incurred in accordance with this Agreement. Payment shall be based on the value of the Work completed, as provided in the Contract Documents, plus the value of materials and equipment suitably stored, insured, and protected at the construction site, and, only if approved in writing by the County (which approval shall be given at the sole discretion of the County), such materials and equipment suitably stored, insured, and protected off site at a location approved by the County in writing, less retainage (as described below). Compensation for Work performed and reimbursement for costs incurred shall be paid to the Contractor upon receipt and approval by the County of invoices setting forth in detail the Work performed and costs incurred, along with all supporting documents required by the Contract Documents or requested by the County to process the invoice. Invoices shall be submitted on a monthly basis, and such invoices shall reflect costs incurred versus costs budgeted. Each invoice shall be accompanied by

an Interim Waiver and Release upon Payment (or a Waiver and Release upon final payment in the case of the invoice for final payment) procured by the Contractor from all subcontractors in accordance with O.C.G.A. § 44-14-366.

The County shall pay the Contractor within thirty (30) calendar days after approval of the invoice by County staff, less any retainage as described in Section D below. No payments will be made for unauthorized work. Payment will be sent to the designated address by U. S. Mail only; payment will not be hand-delivered, though the Contractor may arrange to pick up payments directly from the County or may make written requests for the County to deliver payments to the Contractor by Federal Express delivery at the Contractor's expense.

- C. Evaluation of Payment Requests. The Contract Administrator will evaluate the Contractor's applications for payment and will either issue to the County a Certificate for Payment (with a copy of the Contractor's application for payment) for such amount as the Contract Administrator determines is properly due, or notify the Contractor and County in writing of the Contract Administrator's reasons for withholding certification in whole or in part. The Contract Administrator may reject Work that does not conform to the Contract Documents and may withhold a Certificate of Payment in whole or in part, to the extent reasonably necessary to protect the County. When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

Even following a Certificate of Payment, the County shall have the right to refuse payment of any invoice or part thereof that is not properly supported, or where requests for payment for Work or costs are in excess of the actual Work performed or costs incurred, or where the Work product provided is unacceptable or not in conformity with the Contract Documents, as determined by the County in its sole discretion. The County shall pay each such invoice or portion thereof as approved, provided that neither the approval or payment of any such invoice, nor partial or entire use or occupancy of the Project by the County, shall be considered to be evidence of performance by the Contractor to the point indicated by such invoice, or of receipt or acceptance by the County of Work covered by such invoice, where such work is not in accordance with the Contract Documents.

- D. Final Payment and Retainage. The County and Contractor shall comply with the provisions of O.C.G.A. § 13-10-80. The Contractor through each invoice may request payment of no more than ninety-five percent (95%) of that portion of the Work completed during the term covered by such invoice until fifty percent (50%) of the Maximum Contract Price, as may be adjusted, is due and the manner of completion of the Work and its progress are reasonably satisfactory to the County. Payment for the remaining five percent (5%) of Work completed and covered by such invoices shall be retained by the County until Substantial Completion. All amounts retained by the County shall be held as a lump sum until Substantial Completion of the Work, regardless of earlier completion of individual component(s) of the Work; provided, however, that, at the

discretion of the County and with the written approval of the Contractor, the retainage of each subcontractor may be released separately as the subcontractor completes his or her work.

At Substantial Completion of the Work and as the Contract Administrator determines the Work to be reasonably satisfactory, the County shall, within thirty (30) days after the invoice and other appropriate documentation as may be required by the Contract Documents are provided to the County, pay the retainage to the Contractor. If at that time there are any remaining incomplete Minor Items or Permitted Incomplete Work, an amount equal to 200 percent of the value of each Minor Item or Permitted Incomplete Work, as determined by the Contract Administrator in its sole discretion, shall be withheld until such item, items or work are completed. The reduced retainage shall be shared by the Contractor and subcontractors as their interests may appear.

The Contractor shall, within ten (10) days from its receipt of retainage from the County, pass through payments to subcontractors and shall reduce each subcontractor's retainage in the same manner as the Contractor's retainage is reduced by the County; provided, however, that the value of each subcontractor's work complete and in place equals fifty percent (50%) of his or her subcontract value, including approved Change Orders and other additions to the subcontract value; provided, further, that the work of the subcontractor is proceeding satisfactorily and the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his or her work including any warranty work as the Contractor in his or her reasonable discretion may require, including, but not limited to, a payment and performance bond. The subcontractor shall, within ten (10) days from the subcontractor's receipt of retainage from the Contractor, pass through payments to lower tier subcontractors and shall reduce each lower tier subcontractor's retainage in the same manner as the subcontractor's retainage is reduced by the Contractor; provided, however, that the value of each lower tier subcontractor's work complete and in place equals fifty percent (50%) of his or her subcontract value, including approved Change Orders and other additions to the subcontract value; provided, further, that the work of the lower tier subcontractor is proceeding satisfactorily and the lower tier subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his or her work including any warranty work as the subcontractor in his or her reasonable discretion may require, including, but not limited to, a payment and performance bond.

Final payment of any retained amounts to the Contractor shall be made after certification by the Contract Administrator that the Work has been satisfactorily completed and is accepted in accordance with the Agreement and Contract Documents.

Neither final payment nor any remaining retainage shall become due until the Contractor submits to the Contract Administrator (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the County or

County property might be responsible or encumbered (less amounts withheld by County) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance, required by the Contract Documents to remain in force after final payment, is currently in effect and will not be canceled or allowed to expire until at least thirty (30) calendar days prior written notice has been given to the County; (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) a release or waiver of liens, claims, security interests, and encumbrances by all subcontractors and material suppliers, and (6), if required by the County, other data establishing payment or satisfaction of obligations, such as receipts, to the extent and in such form as may be designated by the County. If a subcontractor or material supplier refuses to furnish a release or waiver as required by the County, the Contractor may furnish a bond satisfactory to the County to indemnify the County against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the County all money that the County may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

Acceptance of final payment by the Contractor, a subcontractor or material supplier shall constitute a waiver of claims by that payee, except those claims previously made in writing and identified by that payee as unsettled at the time of final application for payment.

“EXHIBIT H”

KEY PERSONNEL

The following individuals are designated as Key Personnel under this Agreement and, as such, are necessary for the successful prosecution of the Work:

[illegible]

"EXHIBIT I"

CONTRACT ADMINISTRATION PROVISIONS

(if issued)

"EXHIBIT J"

GENERAL CONDITIONS

Please refer to the Project Manual, Specifications and Scope of Work attached hereto or otherwise incorporated herein.

"EXHIBIT K"

SUPPLEMENTARY CONDITIONS

Please refer to the Project Manual, Specifications and Scope of Work attached hereto or otherwise incorporated herein.

"EXHIBIT L"

NOTICE OF AWARD

**SECTION VI
GENERAL CONDITIONS
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ARTICLE 1--DEFINITIONS

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

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

Agreement (Also known as Contract) - The written agreement between OWNER and CONTRACTOR covering the WORK to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

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

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

Bonds - Bid, performance and payment bonds and other instruments of security.

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

Contract Documents - The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more

specifically identified in the Agreement, together with all amendments, modifications and supplements issued pursuant to paragraphs 3.4 and 3.5 on or after the Effective Date of the Agreement.

Contract Price - The moneys payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price WORK).

Contract Time - The number of days (computed as provided in paragraph 17.2) or the date stated in the Agreement for the completion of the WORK.

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

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

Drawings - The drawings which show the character and scope of the WORK to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

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

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

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

* General Requirements - Sections of Division I of the Specifications.

Laws and Regulations: Laws or Regulations - Laws, rules, regulations, ordinances, codes and/or orders.

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

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

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

Partial Utilization - Placing a portion of the WORK in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion for all the WORK.

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

Resident Project Representative - The authorized representative of ENGINEER who is assigned to the site or any part thereof.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the WORK and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the WORK.

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

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

Substantial Completion - The WORK (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER'S definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the WORK (or specified part) can be utilized for the purposes for which it is intended; or if there be no such certificate issued, when final payment is due in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to any WORK refer to Substantial Completion thereof. Supplementary Conditions - The part of the Contract Documents which amends or supplements these General Conditions.

Supplier - A manufacturer, fabricator, supplier, distributor, materialman or vendor.

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

Unit Price WORK - WORK to be paid for on the basis of unit prices.

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

WORK Directive Change - A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER, ordering an addition, deletion or revision in the WORK, or responding to differing or unforeseen physical conditions under which the WORK is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.22. A WORK Directive Change may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a WORK Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time as provided in paragraph 10.2.

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

ARTICLE 2 - PRELIMINARY MATTERS

Delivery of Bonds:

2.1 CONTRACTOR shall deliver to OWNER required Bonds in accordance with paragraph 5.1.

Copies of Documents:

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

Commencement of Contract Time; Notice to Proceed:

2.3 The Contract Time will commence to run on the date indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the Contract Time commence to run later than the thirtieth day after the Effective Date of the Agreement.

Starting the Project:

2.4 CONTRACTOR shall start to perform the WORK on the date when the Contract Time commences to run, but no WORK shall be done at the site prior to the date on which the Contract Time commences to run.

Before Starting Construction:

2.5 Before undertaking each part of the WORK, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any WORK affected thereby; however,

CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

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

2.6.1 an estimated progress schedule indicating the starting and completion dates of the various stages of the WORK;

2.6.2 a preliminary schedule of Shop Drawing submissions; and

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

2.7 Before any WORK at the site is started, CONTRACTOR shall deliver to OWNER, with a copy to ENGINEER, certificates (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with paragraphs 5.1 and 5.2, and OWNER shall deliver to CONTRACTOR certificates (and other evidence of insurance requested by CONTRACTOR) which OWNER is required to purchase and maintain in accordance with paragraphs 5.4 and 5.5.

Preconstruction Conference:

2.8 Within twenty days after the Effective Date of the Agreement, but before CONTRACTOR starts the WORK at the site, a conference attended by CONTRACTOR, ENGINEER and others as

appropriate will be held to discuss the schedules referred to in paragraph 2.6, to discuss procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish a working understanding among the parties as to the WORK.

Finalizing Schedules:

2.9 At least ten days before submission of the first Application for Payment, CONTRACTOR, ENGINEER and others as appropriate will finalize the schedules submitted in accordance with paragraph 2.6. The finalized progress schedule will be acceptable to ENGINEER as providing an orderly progression of the WORK to completion within the Contract Time, but such acceptance will neither impose on ENGINEER responsibility for the progress or scheduling of the WORK nor relieve CONTRACTOR from full responsibility therefor. The finalized schedule of Shop Drawing submissions will be acceptable to ENGINEER as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to ENGINEER as to form and substance.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

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

3.2 It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any WORK, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied

whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe WORK, materials or equipment, such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 9.4.

3.3 If, during the performance of the WORK, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so report to ENGINEER in writing at once and before proceeding with the WORK affected thereby shall obtain a written interpretation or clarification from ENGINEER; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

Amending and Supplementing Contract Documents:

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

3.4.1 a formal Written Amendment,

3.4.2 a Change Order (pursuant to paragraph 10.4), or

3.4.3 a WORK Directive Change (pursuant to paragraph 10.1). As indicated in paragraph 11.2 and 12.1, Contract Price and Contract Time may only be changed by a Change Order or a Written Amendment.

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

3.5.1 a Field Order (pursuant to paragraph 9.5),

3.5.2 ENGINEER'S review of a Shop Drawings or sample (pursuant to paragraphs 6.26 and 6.27), or

3.5.3 ENGINEER'S written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.6 Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the WORK under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

ARTICLE 4 - AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands:

4.1 OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the WORK is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER'S furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefore as provided in Article 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

Physical Conditions:

4.2.1 Explorations and Reports: Reference is made to the Supplementary Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon nontechnical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

4.2.2 Existing Structures: Reference is made to the Supplementary Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3) which are at or contiguous to

the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3 Report of Differing Conditions:

If CONTRACTOR believes that:

4.2.3.1 any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2 any physical condition uncovered or revealed at the site differs materially from that indicated, reflected or referred to in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before performing any WORK in connection therewith (except in an emergency as permitted by paragraph 6.22), notify OWNER and ENGINEER in writing about the inaccuracy or difference.

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

4.2.5 Possible Document Change: If ENGINEER concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract Documents is required, a WORK Directive Change or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6 Possible Price and Time Adjustments: In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that these are attributable to any such inaccuracy or difference. If OWNER and CONTRACTOR are unable to agree as to the amount or length thereof, a claim may be made therefor as provided in Articles 11 and 12.

Physical Conditions - Underground Facilities:

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

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

4.3.1.2 CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the WORK with the OWNERS of such Underground Facilities during construction, for the safety and protection thereof as provided in paragraph 6.20 and repairing any damage thereto resulting from the WORK, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2 Not Shown or Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any WORK affected thereby (except in an

emergency as permitted by paragraph 6.22), identify the OWNER of such Underground Facility and give written notice thereof to that OWNER and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of. If the parties are unable to agree as to the amount or length thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Reference Points:

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

ARTICLE 5 - BONDS AND INSURANCE**Performance and Other Bonds:**

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

5.2 If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.3, CONTRACTOR shall within five days thereafter substitute another Bond and Surety, both of which must be acceptable to OWNER.

CONTRACTOR'S Liability Insurance:

5.3 See "Insurance" Section of the Construction Agreement.

Contractual Liability Insurance:

5.4 See "Insurance" Section of the Construction Agreement.

OWNER'S Liability Insurance:

5.5 See "Insurance" Section of the Construction Agreement.

Property Insurance:

Section 5.6 is Deleted

Waiver of Rights:

5.7. See Construction Agreement.

Receipt and Application of Proceeds:

Section 5.8 is Deleted.

Acceptance of Insurance:

5.10 If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 5.1 and 5.2 on the basis of its not complying with the Contract Documents, OWNER shall notify CONTRACTOR in writing thereof within ten days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.7. If CONTRACTOR has any objection to the coverage afforded by or other provisions of the policies of insurance required to be purchased and maintained by OWNER on the basis of their not complying with the Contract Documents, CONTRACTOR shall notify OWNER in writing thereof within ten days of the date of delivery of such certificates to CONTRACTOR in accordance with paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided by each as the other may reasonably request. Failure by OWNER or CONTRACTOR to give any such notice of objection within the time provided shall constitute acceptance of such insurance purchased by the other as complying with the Contract Documents.

Partial Utilization - Property Insurance:

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

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES**Supervision and Superintendence:**

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

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

be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3 CONTRACTOR shall provide competent, suitable qualified personnel to survey and lay out the WORK and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site.

6.4 Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the WORK.

6.5 All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to ENGINEER, or any of ENGINEER'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 to 9.16.

Adjusting Progress Schedule:

6.6 CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) adjustments in the progress schedule to

reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

Substitutes or "Or-Equal" Items:

6.7.1 Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by ENGINEER if sufficient information is submitted by CONTRACTOR to allow ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by ENGINEER will include the following as supplemented in the General Requirements. Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR'S achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the WORK will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for WORK on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the WORK is subject to payment of any license fee or royalty. All variations of the

proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other CONTRACTORS affected by the resulting change, all of which shall be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data about the proposed substitute.

6.7.2 If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to ENGINEER, if CONTRACTOR submits sufficient information to allow ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in paragraph 6.7.1 as applied by ENGINEER and as may be supplemented in the General Requirements.

6.7.3 ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without ENGINEER'S prior written acceptance which will be evidenced by either a Change Order or a reviewed Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute. ENGINEER will record time required by ENGINEER and ENGINEER'S consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER'S

consultants for evaluating each proposed substitute.

Concerning Subcontractors, Suppliers and Others:

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

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

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

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

6.11 All WORK performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER and contains waiver provisions as required by paragraph 5.8. CONTRACTOR shall pay each Subcontractor a just share of any insurance moneys received by CONTRACTOR on account of losses under policies issued pursuant to paragraph 5.4 and 5.5.

Patent Fees and Royalties:

6.12 CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the WORK or the incorporation in the WORK of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process,

product or device is specified in the Contract Documents for use in the performance of the WORK and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys' fees and court and arbitration costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the WORK or resulting from the incorporation in the WORK of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Permits:

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

Laws and Regulations:

6.14.1 CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the WORK. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR'S compliance with any Laws or

Regulations.

6.14.2 If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations. CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any WORK knowing or having reason to know that it is contrary to such Laws or Regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR'S primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Taxes:

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

Uses of Premises:

6.16 CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the OWNER or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the WORK. Should any claim be made against OWNER or ENGINEER by any such OWNER or occupant because of the performance of the WORK, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law.

CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER and ENGINEER harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of ENGINEERS, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or ENGINEER to the extent based on a claim arising out of CONTRACTOR'S performance of the WORK.

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

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

Record Documents:

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

WORK, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety and Protection:

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

6.20.1 all employees on the WORK and other persons and organizations who may be affected thereby;

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

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

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

CONTRACTOR shall notify OWNERS of adjacent property and of Underground Facilities and utility OWNERS when prosecution of the WORK may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or

furnish any of the WORK or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR). CONTRACTOR'S duties and responsibilities for the safety and protection of the WORK shall continue until such time as all the WORK is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the WORK is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.21 CONTRACTOR shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR'S superintendent unless otherwise designated in writing by CONTRACTOR to OWNER.

Emergencies:

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

Shop Drawings and Samples:

6.23 After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, CONTRACTOR shall submit to ENGINEER for review in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.9), or for other appropriate action if so indicated in the Supplementary Conditions, three copies plus the number of copies required by the CONTRACTOR (unless otherwise specified in the General Requirements) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable ENGINEER to review the information as required.

6.24 CONTRACTOR shall also submit to ENGINEER for review with such promptness as to cause no delay in WORK, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

6.25.1 Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and review or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the WORK and the Contract Documents.

6.25.2 At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to ENGINEER for review of each such variation.

6.26 ENGINEER will review with reasonable promptness Shop Drawings and samples, but ENGINEER'S review will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27 ENGINEER'S review of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER'S attention to each such variation at the time of submission as required by paragraph 6.25.2 and ENGINEER has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any review by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 6.25.1.

6.28 Where a Shop Drawing or sample is required by the Specifications, any related WORK performed prior to ENGINEER'S review of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

Continuing the WORK:

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

Indemnification:

6.30 See Construction Agreement.

ARTICLE 7 - OTHER WORK

Related WORK at Site:

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

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

7.3 If any part of the CONTRACTOR'S WORK depends for proper execution or results upon the WORK of any such other CONTRACTOR or utility OWNER (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any delays, defects or deficiencies in such WORK that render it unavailable or unsuitable for such proper execution and results. CONTRACTOR'S failure so to report will constitute an acceptance of the other WORK as fit and proper for integration with CONTRACTOR'S WORK except for latent or nonapparent defects and deficiencies in the other WORK.

Coordination:

7.4 If OWNER contracts with others for the performance of other WORK on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime

CONTRACTORS will be identified in the Supplementary Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Supplementary Conditions. Unless otherwise provided in the Supplementary Conditions, neither OWNER nor ENGINEER shall have any authority or responsibility in respect of such coordination.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.1 OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2 In case of termination of the employment of ENGINEER, OWNER shall appoint an ENGINEER against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER. Any dispute in connection with such appointment shall be subject to arbitration.

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

8.4 OWNER'S duties in respect of providing lands and easements and providing Engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER'S identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing structures which have been utilized by ENGINEER in preparing the Drawings and Specifications.

8.5 OWNER'S responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.3 through 5.6.

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

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

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

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

OWNER'S Representative:

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

Visits to Site:

9.2 ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed WORK and to determine, in general, if the WORK is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the WORK. ENGINEER'S efforts will be directed toward providing for OWNER a greater degree of confidence that the completed WORK will conform to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified design professional, ENGINEER will keep OWNER informed of the progress of the WORK and will endeavor to guard OWNER against defects and deficiencies in the WORK.

Project Representation:

9.3 If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in observing the performance of the WORK. The duties, responsibilities and limitations of authority of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions. If OWNER designates another agent to represent OWNER at the site who is not ENGINEER'S agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Supplementary Conditions.

Clarifications and Interpretations:

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

Authorized Variations in WORK:

9.5 ENGINEER may authorize minor variations in the WORK from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER, and also on CONTRACTOR who shall perform the WORK involved promptly. If CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may

make a claim therefor as provided in Article 11 or 12.

Rejecting Defective WORK:

9.6 ENGINEER will have authority to disapprove or reject WORK which ENGINEER believes to be defective, and will also have authority to require special inspection or testing of the WORK as provided in paragraph 13.9, whether or not the WORK is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7 In connection with ENGINEER'S responsibility for Shop Drawings and samples, see paragraph 6.23 through 6.29 inclusive.

9.8 In connection with ENGINEER'S responsibilities as to Change Orders, see Articles 10, 11 and 12.

9.9 In connection with ENGINEER'S responsibilities in respect of Application for Payment, see Article 14.

Determinations for Unit Prices:

9.10 ENGINEER will determine the actual quantities and classifications of Unit Price WORK performed by CONTRACTOR. ENGINEER will review with CONTRACTOR ENGINEER'S preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER'S written decisions thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other party to the Agreement and to ENGINEER written notice of intention to appeal from such a decision.

Decisions on Disputes:

9.11 ENGINEER will be the initial interpreter of the requirements of the Contract Documents and

judge of the acceptability of the WORK thereunder. Claims, disputes and other matters relating to the acceptability of the WORK or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the WORK and claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Time will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered by the claimant to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.

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

Limitations on ENGINEER'S Responsibilities:

9.13 Neither ENGINEER'S authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such

authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the WORK, or to any surety for any of them.

9.14 Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the WORK, it is intended that such requirement, direction, review or judgment will be solely to evaluate the WORK for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

9.15 ENGINEER will not be responsible for CONTRACTOR'S means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR'S failure to perform or furnish the WORK in accordance with the Contract Documents.

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

ARTICLE 10 - CHANGES IN THE WORK

10.1 Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the WORK; these will be

authorized by a Written Amendment, a Change Order, or a WORK Directive Change. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the WORK involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2 If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a WORK Directive Change, a claim may be made therefor as provided in Article 11 or Article 12.

10.3 CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any WORK performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.4 and 3.5, except in the case of an emergency as provided in paragraph 6.22 and except in the case of uncovering WORK as provided in paragraph 13.9.

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

10.4.1 changes in the WORK which are ordered by OWNER pursuant to paragraph 10.1, are required because of acceptance of defective WORK under paragraph 13.13 or correcting defective WORK under paragraph 13.14, or are agreed to by the parties;

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

10.4.3 changes in the Contract Price or Contract time which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the

provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the WORK and adhere to the progress schedule as provided in paragraph 6.29.

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

ARTICLE 11 - CHANGE OF CONTRACT PRICE

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

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

No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph 11.2.

11.3 The value of any WORK covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1 Where the WORK involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.9.1 through 11.9.3 inclusive).

11.3.2 By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2.1).

11.3.3 On the basis of the Cost of the WORK (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR'S Fee for overhead and profit (determined as provided in paragraphs 11.6 and 11.7).

Cost of the WORK:

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

11.4.1 Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the WORK under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the WORK shall be apportioned on the basis of their time spent on the WORK. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which

shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing WORK after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above.

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

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

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

11.4.5 Supplemental costs including the following:

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

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

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

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

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

11.4.5.6 Losses and damages (and related expenses), not compensated by insurance or otherwise, to the WORK or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the WORK (except losses and damages within the deductible amounts of property insurance established by

OWNER in accordance with paragraph 5.7), provided they have resulted from causes other than the negligence of CONTRACTOR, and Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the WORK for the purpose of determining CONTRACTOR'S Fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

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

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

11.4.5.9 Cost of premiums for additional Bonds and insurance required because of changes in the WORK and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER in accordance with paragraph 5.7.

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

11.5.1 Payroll costs and other compensation of CONTRACTOR'S officers, executives, principals (of partnership and sole proprietorships), general managers, ENGINEERS, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR'S principal or a branch office for general administration of the WORK and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4

- all of which are to be considered administrative costs covered by the CONTRACTOR'S Fee.

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

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

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

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

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

CONTRACTOR'S Fee:

11.6 The CONTRACTOR'S Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1 a mutually acceptable fixed fee; or if none can be agreed upon.

11.6.2 a fee based on the following percentages of the various portions of the Cost of the WORK:

11.6.2.1 for costs incurred under paragraphs 11.4.1 and 11.4.2, the CONTRACTOR'S Fee shall be fifteen percent;

11.6.2.2 for costs incurred under paragraph 11.4.3, the CONTRACTOR'S Fee shall be five percent; and if a subcontract is on the basis of Cost of the WORK Plus a Fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors shall be fifteen percent;

11.6.2.3 no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5;

11.6.2.4 the amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR'S Fee by an amount equal to ten percent of the net decrease; and

11.6.2.5 when both additions and credits are involved in any one change, the adjustment in CONTRACTOR'S Fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.4, inclusive.

11.7 Whenever the cost of any WORK is to be determined pursuant to paragraph 11.4 or 11.5, CONTRACTOR will submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowances:

11.8 It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the WORK so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER. CONTRACTOR agrees that:

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

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

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

Unit Price WORK:

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

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

11.9.3 Where the quantity of any item of Unit Price WORK performed by CONTRACTOR differs by more than twenty-five percent from the estimated quantity of such item indicated in the Proposal and there is no corresponding adjustment with respect to any other item of WORK and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the amount of any such increase.

ARTICLE 12 - CHANGE OF CONTRACT TIME

Section 12.1 Deleted

Section 12.2 Deleted

12.3 All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude recovery for damages (including but not limited to fees and charges of ENGINEERS, architects, attorneys and other professionals and court and arbitration costs) for delay by either party.

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

Warranty and Guarantee:

13.1 CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all WORK will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to CONTRACTOR. All defective WORK, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

Access to WORK:

13.2 ENGINEER and ENGINEER'S representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional

interests will have access to the WORK at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

Tests and Inspections:

13.3 CONTRACTOR shall give ENGINEER timely notice of readiness of the WORK for all required inspections, tests or approvals.

13.4 If Laws or Regulations of any public body having jurisdiction require any WORK (or part thereof) to specifically be inspected, tested or approved, CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish ENGINEER the required certificates of inspection, testing or approval. CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with OWNER'S or ENGINEER'S acceptance of a Supplier of materials or equipment submitted for approval prior to CONTRACTOR'S purchase thereof for incorporation in the WORK. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by OWNER (unless otherwise specified).

13.5 All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

13.6 If any WORK (including the WORK of others) that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR'S expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR'S intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.7 Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR'S obligations to perform the WORK in accordance with the Contract Documents.

Uncovering WORK:

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

13.9 If ENGINEER considers it necessary or advisable that covered WORK be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER'S request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, material and equipment. If it is found that such WORK is defective, CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of ENGINEERS, architects, attorneys and other professionals), and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such WORK is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

OWNER May Stop the WORK:

13.10 If the WORK is defective, or CONTRACTOR fails to supply sufficiently skilled Workers or

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

Correction or Removal of Defective WORK:

13.11 If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all defective WORK, whether or not fabricated, installed or completed, or, if the WORK has been rejected by ENGINEER, remove it from the site and replace it with non-defective WORK. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of ENGINEERS, architects, attorneys and other professionals) made necessary thereby.

One Year Correction Period:

13.12 If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific Provision of the Contract Documents, any WORK is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER'S written instructions, either correct such defective WORK, or if it has been rejected by OWNER, remove it from the site and replace it with non-defective WORK. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective WORK corrected or the rejected WORK removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and

charges of ENGINEERS, architects, attorneys and other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all WORK, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

Acceptance of Defective WORK:

13.13 If, instead of requiring correction or removal and replacement of defective WORK, OWNER (and, prior to ENGINEER'S recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential costs attributable to OWNER'S evaluation of and determination to accept such defective WORK (such costs to be approved by ENGINEER as to reasonableness and to include but not be limited to fees and charges of ENGINEERS, architects, attorneys and other professionals). If any such acceptance occurs prior to ENGINEER'S recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the WORK; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May correct Defective WORK:

13.14 If CONTRACTOR fails within a reasonable time after written notice of ENGINEER to proceed and to correct defective WORK or to remove and replace rejected WORK as required by ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the WORK in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to

CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the WORK, and suspend CONTRACTOR'S services related thereto, take possession of CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and incorporate in the WORK all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER'S representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies under this paragraph will be charged against CONTRACTOR in an amount approved as to reasonableness by ENGINEER, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the WORK; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such direct, indirect and consequential costs will include but not be limited to fees and charges of ENGINEERS, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of WORK of others destroyed or damaged by correction, removal or replacement of CONTRACTOR'S defective WORK. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the WORK attributable to the exercise by OWNER of OWNER'S rights and remedies hereunder.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION**Schedule of Values:**

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

Application for Progress Payment:

14.2 CONTRACTOR shall submit a monthly signed invoice to the ENGINEER for his review and subsequent payment by the County. Invoices shall be received no later than the 15th day of the month following the month that WORK was performed. Invoices shall indicate the value of WORK completed through the previous month and the amount of previous payments. The invoice amount shall be the total value completed through the previous month, less retainage, less the total amount previously paid. CONTRACTOR shall provide proof that all subcontractors and material suppliers have been paid.

The County shall make payment within thirty (30) days after receipt of the original signed invoice from the ENGINEER providing the above conditions are met. Invoices received after the 15th day of the month following the month WORK was performed, will be paid within forty-five (45) days after receipt of the original signed invoice from the ENGINEER provided that the above conditions are met. CONTRACTOR'S final invoice must be received by the County no later than thirty (30) days after the project completion date specified in the Agreement.

Payments will be sent to the designated address by U. S. Mail only; payments will not be hand delivered.

CONTRACTOR'S Warranty of Title:

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

Review of Applications for Progress Payment:

14.4 ENGINEER will, within five days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER'S reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment with ENGINEER'S recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5 ENGINEER'S recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER'S on-site observations of the WORK in progress as an experienced and qualified design professional and on ENGINEER'S review of the Application for Payment and the accompanying data and schedules that the WORK has progressed to the point indicated; that, to the best of ENGINEER'S knowledge, information and belief, the quality of the WORK is in accordance with the Contract Documents (subject to an evaluation of the WORK as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price WORK under paragraph 9.10, and to any other qualifications stated in the recommendation); and that CONTRACTOR is entitled to payment of the amount

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

14.6 ENGINEER'S recommendation of final payment will constitute an additional representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR'S being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

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

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

14.7.2 the Contract Price has been reduced by Written Amendment or Change Order.

14.7.3 OWNER has been required to correct defective WORK or complete WORK in accordance with paragraph 13.14, or

14.7.4 of ENGINEER'S actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.9 inclusive.

OWNER may refuse to make payment of the full

amount recommended by ENGINEER because claims have been made against OWNER on account of CONTRACTOR'S performance or furnishing of the WORK or Liens have been filed in connection with the WORK or there are other items entitling OWNER to a set-off against the amount recommended, but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action.

Substantial Completion:

14.8 When CONTRACTOR considers the entire WORK ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire WORK is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the WORK to determine the status of completion. If ENGINEER does not consider the WORK substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the WORK substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the WORK is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER'S objections, ENGINEER considers the WORK substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of

Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER prior to ENGINEER'S issuing the definitive certificate of Substantial Completion, ENGINEER'S aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

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

Partial Utilization:

14.10 Use by OWNER of any finished part of the WORK, which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and usable part of the WORK that can be used by OWNER without significant interference with CONTRACTOR'S performance of the remainder of the WORK, may be accomplished prior to Substantial Completion of all the WORK subject to the following:

14.10.1 OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the WORK which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER and ENGINEER that said part of the WORK is substantially complete and request ENGINEER to issue a certificate of

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

14.10.2 OWNER may at any time request CONTRACTOR in writing to permit OWNER to take over operation of any such part of the WORK although it is not substantially complete. A copy of such request will be sent to ENGINEER and within a reasonable time thereafter OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the WORK to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If CONTRACTOR does not object in writing to OWNER and ENGINEER that such part of the WORK is not ready for separate operation by OWNER, ENGINEER will finalize the list of items to be completed or corrected and will deliver such list to OWNER and CONTRACTOR together with a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that part of the WORK which will become binding upon OWNER and CONTRACTOR at the time when OWNER takes over such operation (unless they shall have

otherwise agreed in writing and so informed ENGINEER). During such operation and prior to Substantial Completion of such part of the WORK, OWNER shall allow CONTRACTOR reasonable access to complete or correct items on said list and to complete other related WORK.

14.10.3 No occupancy or separate operation of part of the WORK will be accomplished prior to compliance with the requirements of paragraph 5.8 in respect of property insurance.

Final Inspection:

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

Final Application for Payment:

14.12 After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents - all as required by the Contract Documents, and after ENGINEER has indicated that the WORK is acceptable (subject to the provisions of paragraph 14.16), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the WORK. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of

CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the WORK for which OWNER or OWNER'S property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13 If, on the basis of ENGINEER'S observation of the WORK during construction and final inspection, and ENGINEER'S review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, ENGINEER is satisfied that the WORK has been completed and CONTRACTOR'S other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER'S recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the WORK is acceptable subject to the provisions of paragraph 14.16. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance, and with ENGINEER'S recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to CONTRACTOR.

14.14 If, through no fault of CONTRACTOR, final completion of the WORK is significantly delayed and if ENGINEER so confirms, OWNER shall, upon

receipt of CONTRACTOR'S final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the WORK fully completed and accepted. If the remaining balance to be held by OWNER for WORK not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the WORK fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

CONTRACTOR'S Continuing Obligation:

14.15 CONTRACTOR'S obligation to perform and complete the WORK in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Substantial Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the WORK or any part thereof by OWNER, nor any pact of acceptance by OWNER nor any failure to do so, nor any review of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13, nor any correction of defective WORK by OWNER will constitute an acceptance of WORK not in accordance with the Contract Documents or a release of CONTRACTOR'S obligation to perform the WORK in accordance with the Contract Documents (except as provided in paragraph 14.16).

Waiver of Claims:

14.16 The making and acceptance of final payment will constitute:

14.16.1 a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective WORK appearing after final inspection pursuant to paragraph 14.11 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of CONTRACTOR'S continuing obligations under the Contract Documents; and

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

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

OWNER May Suspend WORK:

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

OWNER May Terminate:

15.2 See Construction Agreement, Section 10 "Termination".

ARTICLE 16 - ARBITRATION

Section 16.1 is Deleted

Section 16.2 is Deleted

Section 16.3 is Deleted

Section 16.4 is Deleted

Section 16.5 is Deleted

ARTICLE 17 - MISCELLANEOUS

Giving Notice:

17.1 Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered as stipulated in Section 11E of the Construction Agreement.

Computation of Time:

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

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

General:

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

17.4 The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties,

guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.30, 13.1, 13.13, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition, to and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

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SECTION VII

SUPPLEMENTARY GENERAL CONDITIONS

1. THE GENERAL CONDITIONS: The General Conditions shall apply to all work in the Contract Documents, except as otherwise specified in the Supplementary General Conditions. Requirements of the Supplementary General Conditions supersede those of the General Conditions.
2. COMMENCEMENT AND COMPLETION OF WORK: The Contractor shall commence the Work on the date indicated in the Notice to Proceed and shall diligently prosecute said Work so as to complete the entire project and place it in use within **360** calendar days. Beneficial occupancy shall be obtained in **390** calendar days.
3. SCOPE OF THE WORK: The Work includes the furnishing of all necessary machinery, equipment, tools, labor and other construction means, and all materials (except where otherwise noted) required to perform the Work and Specifications and including the placing of the Work into satisfactory operation.
4. LOCATION: The work under this Contract will be located in Barrow County, Georgia as shown on the Drawings.
5. EXTENSION OF TIME AND FAILURE TO COMPLETE ON TIME: Any and all extensions of time shall be in accordance with the General Conditions, except as otherwise hereinafter provided.

Failure to complete the Project on or before the stipulated completion date will result in the assessment of liquidated damages in the amount of \$500.00 per calendar day.

6. CONSTRUCTION DRAWINGS: The Work shall conform to the following construction drawings:

<u>Sheet No.</u>	<u>Title</u>
COVER	NORTHWEST ELEVATED WATER STORAGE TANK
2	GENERAL NOTES AND LEGEND
3	SITE PLAN
4	WATER TANK PLAN
5-7	CONSTRUCTION DETAILS
8	EROSION CONTROL NOTES
9	EROSION CONTROL PLAN
10	EROSION CONTROL DETAILS
11	NPDES NOTES
12	NPDES CHECKLIST AND STORMWATER MONITORING PLAN
E1-E6	ELECTRICAL PLANS

7. REPORTS AND DRAWINGS USED BY THE ENGINEER: S&ME, INC. REPORT OF GEOTECHNICAL EXPLORATION BARROW COUNTY NW WATER TANK HOSCHTON, GEORGIA (S&ME PROJECT NO. 24800066)
8. SANITARY CONVENIENCES: The CONTRACTOR shall provide adequate sanitary conveniences for use of those employed on the work and their use shall be strictly enforced. Such conveniences shall be made available when the first employees arrive on the site and shall be removed after the departure of the last employees from the job.
9. ENVIRONMENTAL IMPACT: The CONTRACTOR shall conduct all operations so as to minimize, to the

greatest extent possible, adverse environmental impact.

- a. Noise: All equipment and machinery shall be provided with exhaust mufflers maintained in good working order so as to reduce operating noise to minimum levels.
 - b. Dust/Smoke: All equipment movements shall be accompanied by a minimum of dust. Traveled surfaces and earthwork shall be maintained in a moist condition to avoid the generation of dust or the airborne movement of particulate matter under all prevailing atmospheric conditions.

Burning operations will be conducted only with written permission of the OWNER and/or appropriate regulatory agency. The CONTRACTOR shall be responsible for obtaining all permits and comply with all codes, ordinances and regulations pertaining to the burning.
 - c. Traffic: Trucks shall be routed over roads which will result in the least effect on traffic and nuisance to the public. All material shall be loaded in a manner which will preclude the loss of any portion of the load in transit, including covering, if necessary.
 - d. Sedimentation: All points of concentrated runoff from rainfall shall be visually monitored to determine that no eroded material from the construction site is being deposited offsite. Measures shall be taken to promptly eliminate such a deposition if occurring, including the installation of detention basins.
10. CONSTRUCTION STAKEOUT: The OWNER will provide benchmarks and baselines for horizontal and vertical control at the site of the work.
 11. UTILITIES: Utilities such as sewer, water and electric lines encountered in the work shall be protected from injury and maintained in service until moved or replaced as required under this Contract or by others as the case may be, or abandoned as may be necessary for the proper construction and use of the new work.
 12. ADJUSTMENT OF DISCREPANCIES: In all cases of discrepancies between the various dimensions and details shown on drawings, or between the drawings and these specifications, the more expensive construction shall be estimated before construction is started, the matter shall be submitted to the ENGINEER for clarification. Without such a decision, discrepancies shall be adjusted by the CONTRACTOR at his own risk and in settlement of any complications arising from such adjustment, the CONTRACTOR shall bear all of the extra expense involved.
 13. EQUIPMENT ADJUSTMENT AND CALIBRATION: All mechanical and electrical equipment, including related control systems, shall be subjected to preliminary operation and testing by the Contractor before the individual facilities and systems are put into operation. Tests shall be made to determine whether the equipment has been properly assembled, aligned, adjusted, wired and connected. Any changes, adjustments, or replacement of equipment which are due to errors or omissions on the part of the CONTRACTOR or which may be otherwise necessary to comply with the requirements of this Contract, shall be done without additional cost to the OWNER. Upon completion of the checking and adjustment, the CONTRACTOR shall demonstrate that each separate piece of equipment in each system of related items of mechanical equipment and the related instrumentation and control equipment operate in accordance with the requirements of the Contract Documents. Where no specific performance requirements are stated, the test shall show that the equipment operates in accordance with normal application practice of the equipment. The demonstration test shall show that the equipment operates smoothly and without excessive noise

or vibration, that the equipment is responsive to manual and automatic controls, that control and protective devices are properly set, that the equipment will run continuously when continuous operation is intended, and that the equipment will run on a controlled or intermittent basis when this operation is intended. The demonstration test for each piece of equipment shall include check out from each remote control point. All alarm systems and safety lockout systems shall also be demonstrated for proper function along with all process instrumentation and controls.

The demonstration test shall be arranged by the CONTRACTOR who shall notify the ENGINEER not less than 3 days in advance of the date of the test. The CONTRACTOR shall provide personnel from the various trades involved to operate and demonstrate the equipment.

14. SYSTEM START-UP: The CONTRACTOR shall place the various items of equipment into operation, and shall notify the ENGINEER at least 3 days in advance of the date of start-up.
15. INSTRUCTION OF OWNER'S EMPLOYEES: The CONTRACTOR shall provide competent personnel who fully understand the operation of the equipment to instruct the OWNER'S employees in the operation and maintenance of each item and system. Such instruction shall take place prior to acceptance of the installation by the OWNER at such a time or times that are acceptable to the OWNER. The CONTRACTOR shall include the cost of this training in the bid price for this Contract. Training shall be of the on-the-job type, and shall cover all areas of operation and equipment maintenance.

Scheduling of instruction of the OWNER'S employees will be mutually agreed upon between the OWNER, CONTRACTOR and the ENGINEER.

16. OPERATING INSTRUCTION MANUALS: The CONTRACTOR shall prepare and submit 6 copies of a complete set of operating instructions for the overall project and covering all equipment and systems furnished. Operating instructions shall be prepared specifically for each system installed and shall consider the specific equipment and controls included. Operating instructions shall be complete for each separate system, and shall detail start and stop procedures and shall explain all safety devices and detail procedures and precautions for restarting after failure or safety lockout situations.
17. MAINTENANCE INSTRUCTION MANUALS: The CONTRACTOR shall prepare and submit 6 copies of a complete set of maintenance instruction manuals for the overall project and covering all equipment furnished. Manuals shall include complete parts listed for all equipment and recommended spare parts. Manuals shall be prepared specifically for the particular equipment furnished and shall consider the specific operation of this equipment in the particular process system involved. Complete lubrication requirements shall be listed, including recommended lubricant and lubricating intervals or schedule.
18. MAINTENANCE DURING CONSTRUCTION: The CONTRACTOR shall maintain the Work from the beginning of construction operations until final acceptance. This maintenance shall constitute continuous and effective work prosecuted day by day with adequate equipment and forces to the end that the site and structures thereon are kept in satisfactory condition at all times, including satisfactory signing or marking as appropriate and control of traffic where required by use of traffic control devices as required by the State in which this project is located.

Upon completion of the Work, the CONTRACTOR shall remove all construction signs and barriers before final acceptance.

While undergoing improvements, the roads shall be kept open to all traffic by the CONTRACTOR. The CONTRACTOR shall keep the portion of the site being used by public traffic, whether it be through or local traffic, in such condition that traffic will be adequately accommodated. The CONTRACTOR shall bear all cost of signs and markings as required and other maintenance work during construction and before the Work is accepted and of constructing and maintaining such approaches, crossings, intersections, and other features as may be necessary without direct compensation.

19. BARRICADES, DANGER, WARNING & DETOUR SIGNS: The CONTRACTOR shall provide, erect, and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs and other traffic control devices, and shall take all necessary precautions for the protection of the work and safety of the public. Highways and streets closed to traffic shall be protected by effective barricades, and obstructions shall be lighted during hours of darkness. Suitable warning signs shall be provided to properly control and direct traffic.

The CONTRACTOR shall furnish, install, and maintain all necessary barricades, warning signs, and other protection devices in accordance with the State requirements in which the project is located. Temporary signs may be reused, provided they are in good condition and legible. All protective devices shall be kept in a good, legible condition while in use.

As soon as construction advances to the extent that temporary barricades, and signs are no longer needed to inform the traveling public, such signs shall be promptly removed.

The cost of furnishing, erecting, maintaining, and removing protective devices will not be paid for as a separate Bid Item. Where the CONTRACTOR is required to perform any of these functions, the cost thereof shall be included in the overall Bid submitted. Ownership of the temporary warning devices shall remain with the CONTRACTOR.

20. HIGH VOLTAGE ACT: The CONTRACTOR acknowledges the requirement of the State High Voltage Act by execution of this Contract.
21. ACCESS FOR INSPECTION: Access for inspection shall be provided for representatives of the Georgia Department of Natural Resources.
22. INSURANCE: See Section K of the Agreement for Insurance Requirements.
23. Paragraphs 5.6 and 5.7 of the General Conditions and references thereto shall be non-applicable to this contract.
24. Subcontracts: The Contractor shall not contract with any person or entity declared ineligible under Federal laws or regulations from participating in Federally assisted construction projects or to whom the Owner or the Engineer has made reasonable objection. The Contractor shall not be required to contract with anyone to whom he has a reasonable objection. The Contractor shall submit a list of his subcontractors within seven (7) days after Notice of Award.
25. Safety and Protection: Attention is invited to the regulations issued by the Secretary of Labor pursuant to Section 107 of the contract Work Hours and Safety Standards Act (40 U.S.C. 333) entitled "Safety and Health Regulations for Construction" (29 CFR Part 1926). The contractor shall be required to comply with those regulations to the extent that any resulting Contract involves construction.

26. RETAINAGE OF CONTRACTOR'S PAYMENT: The retainage shall be an amount equal to 10% of Contractor's partial pay estimate until 50% of the work has been completed. At 50% completion, further partial payments shall be made in full to the CONTRACTOR and no additional amounts may be retained unless the ENGINEER certifies that the job is not proceeding satisfactorily, but amounts previously retained shall not be paid to the CONTRACTOR. At 50% completion or any time thereafter when the progress of the WORK is not satisfactory, additional amounts may be retained but in no event shall the total retainage be more than 20% of the value of the work completed. Upon substantial completion of the work, any amount retained may be paid to the CONTRACTOR. When the WORK has been substantially completed except for WORK which cannot be completed because of weather conditions, lack of materials or other reasons which in the judgement of the OWNER are valid reasons for non-completion, the OWNER may make additional payments, retaining at all times an amount sufficient to cover the estimated cost of the WORK still to be completed. Partial pay estimates may include stored materials. Contractor must submit invoices and all materials must be located at the site of the work. Retainage will not be held on stored materials.
27. Siltation and soil erosion must be minimized during construction and shall be in accordance with the Rules & Regulations of the State of Georgia.
28. Restore disturbed areas to original or better conditions.
29. USE OF CHEMICALS: All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide disinfectant, polymer, reactant or other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in conformance with the instructions provided by the chemical manufacturer.
30. COORDINATION BETWEEN CONTRACTORS: The General Contractor for this project shall be responsible for coordinating related work items with the subcontractors.

END OF SECTION

SECTION VIII ATTACHMENTS

- Additional Technical Specifications
- Construction Plans
- Ethics Ordinance

SECTION 00840

ADMINISTRATIVE AND PROCEDURAL ITEMS AND FORMS

PART 1 GENERAL

- 1.01 This section of the CONTRACT DOCUMENTS references the various forms and other documents that will become a part of these CONTRACT DOCUMENTS during the course of the WORK.

PART 2 MATERIALS

2.01 FORMS AND DOCUMENTS

- A. Partial Payment Estimate
- B. Contractor's Affidavit and Lien Waiver
- C. Contract Change Order
- D. Field Order
- E. Statement of Substantial Completion

PART 3 EXECUTION

- 3.01 ENGINEER shall provide CONTRACTOR with sufficient copies of the above listed forms and/or documents where applicable for submittal by CONTRACTOR during course of the WORK. (Examples of the listed forms are included in this Section. CONTRACTOR may use these and/or photo copies of same for submittal)
- 3.02 ENGINEER shall use these forms for administrative and procedural duties. (Examples of the listed forms are included in this section)

END OF SECTION 00840

PARTIAL PAYMENT ESTIMATE			Contract No.	
			Partial Payment Estimate No.	
			Page ____ of ____	
OWNER: Barrow County Board of Commissioners Winder, Georgia		CONTRACTOR:		Period of Estimate From _____ to _____
CONTRACT CHANGE ORDER SUMMARY			ESTIMATE	
<u>NO.</u>	<u>ADDITIONS (\$)</u>	<u>DEDUCTIONS (\$)</u>		
			1. Original Contract _____	
			2. Change Orders _____	
			3. Revised Contract (1 + 2) _____	
			4. Work Completed* _____	
			5. Stored Materials* _____	
			6. Subtotal (4 + 5) _____	
			7. Retainage _____	
			8. Previous Payments _____	
			9. Amount Due (6-7-8) _____	
TOTALS	_____	_____	* Detailed breakdown attached.	
NET CHANGE	_____	_____		

CONTRACT TIME

Original (days)_____	On Schedule:	Starting Date_____
Revised_____	Yes: _____	Projected Completion_____
Remaining_____	No: _____	

CONTRACTOR'S CERTIFICATION: The undersigned Contractor certifies that to the best of their knowledge, information and belief the work covered by this payment estimate has been completed in accordance with the contract documents, that all amounts have been paid by the contractor for work for which previous payment estimates were issued and payments received from the owner, and that current payment shown herein is now due. Contractor: _____ By _____ Date _____ APPROVED BY OWNER: Owner: Barrow County Board of Commissioners By _____ Date _____	ENGINEER'S STATEMENT: The undersigned states that the best of their knowledge and belief, the quantities shown in this estimate are correct. Engineer: PRECISION PLANNING, INC. By _____ Date _____

CONTRACTOR'S AFFIDAVIT AND LIEN WAIVER

WHEREAS, _____ (CONTRACTOR) has been paid in full by Barrow County Board of Commissioners (OWNER) for labor, materials, and/or equipment furnished under a contract dated _____, except as contained on the attached payment request.

AND WHEREAS, said labor, materials, and/or equipment was applied to real property located in Barrow County, which is owned by OWNER.

THEREFORE, in consideration of the reliance of OWNER upon this agreement and final payment by OWNER, the CONTRACTOR does hereby:

1. Certify to OWNER that all subcontractors and suppliers to the project have been paid in full.
2. Release, waive, and forever quitclaim unto the OWNER any and all manner of liens CONTRACTOR now has or may acquire in the real property associated with Project.
3. Agree to indemnify and hold harmless OWNER, its successors or assigns, against any loss claim or lien asserted by a subcontractor or supplier against OWNER or against the real property associated with Project.

IN WITNESS WHEREOF, CONTRACTOR has caused this release to be signed by its duly authorized owner, partner, or corporate officer on the ____ day of _____, 20__.

Sworn to and subscribed

before me this _____
day of _____, 20__.

(NAME OF CONTRACTOR)

By: _____

Attest: _____

Notary Public

CONTRACT CHANGE ORDER

Contract No.	Order No.	Date
Project Title:		State: Georgia
Owner: Barrow County Board of Commissioners		County: Barrow County

TO: _____
(Contractor)

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

Description of Changes (Supplemental Plans & Specs. Attached)	Decrease In Contract Price	Increase In Contract Price
TOTAL		

Justification: _____

Previous Contract Amount: _____ \$ _____

Amount of Change Order: _____ \$ _____

Current Contract Amount: \$

Previous Contract Time Days _____ Date _____

Change in Contract Time Days _____

Current Contract Time Days _____ Date _____

REQUESTED: _____ (Owner) _____ (Date)

RECOMMENDED: _____
(Owner's Architect/Engineer) (Date)

ACCEPTED: _____
(Contractor) (Date)

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

No. _____

Date of Issuance: _____ Effective Date: _____

Project: Northwest Elevated Water Storage Tank	Owner: Barrow County Board of Commissioners	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

Attention:

You are hereby directed to promptly execute this Field Order issued in accordance with General Conditions Paragraph 9.05A., for minor changes in the Work without changes in Contract Price or Contract Times. If you consider that a change in Contract Price or Contract Times is required, please notify the Engineer immediately and before proceeding with this Work.

Reference: _____ (Specification Section(s)) _____ (Drawing(s) / Detail(s))

[illegible]

Attachments:

Engineer: _____

Receipt Acknowledged by (Contractor):

Date: _____

Copy to Owner

EJCDC No. C-942 (2002 Edition)

Prepared by the Engineers' Joint Contract Documents Committee and endorsed by the Associated General Contractors of America and the Construction Specifications Institute.

STATEMENT OF SUBSTANTIAL COMPLETION

**Northwest Elevated Water Storage Tank
For Barrow County Board of Commissioners
E23-136**

Contractor: _____

Contract For: _____ **Contract Date:** _____

This Statement* of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

To: _____ Barrow County Board of Commissioners
OWNER

And To: _____
CONTRACTOR

The Work to which this Statement* applies has been observed by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on

Date of Substantial Completion

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. When this Statement* applies to a specified part of the Work the items in the tentative list shall be completed or corrected by CONTRACTOR within ____ days of the above date of Substantial Completion.

Executed by ENGINEER on _____, 20__.

PRECISION PLANNING, INC.
Engineer
By: _____

The CONTRACTOR accepts this Statement* of Substantial Completion on _____, 20__.

Contractor
By: _____

The OWNER accepts the work or designated portion thereof as substantially complete and will assume full possession thereof on _____, 20__.

Barrow County Board of Commissioners
Owner
By: _____

*A PROFESSIONAL ENGINEER'S STATEMENT OF CONDITIONS COMPRISES A DECLARATION OF HIS PROFESSIONAL JUDGEMENT. IT DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, NOR DOES IT RELIEVE ANY PARTY OF HIS RESPONSIBILITY TO ABIDE BY CONTRACT DOCUMENTS, APPLICABLE CODES, STANDARDS, REGULATIONS AND ORDINANCES.



**Northwest Elevated Water Storage Tank
for the Barrow County Board of Commissioners**

Technical Specifications

August 2025

TECHNICAL SPECIFICATIONS

**NORTHWEST ELEVATED WATER STORAGE TANK
FOR THE BARROW COUNTY BOARD OF COMMISSIONERS**

Section Title	Section

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SECTION 01 02 50

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section describes the methods by which measurement will be made of the quantities for which payment will be made for the PROJECT.

1.02 MEASUREMENT OF WORK

- A. WORK shall be measured by the ENGINEER or their designated representative, with assistance from the CONTRACTOR prior to preparation of a payment request by the CONTRACTOR.
- B. Unit quantities that are measured in place shall be measured monthly. The CONTRACTOR shall give the ENGINEER a minimum of two days notice for making all required measurements.
- C. Materials that must be measured as delivered shall be measured at the time of delivery by the ENGINEER or his representative; the CONTRACTOR shall provide sufficient advance notice so that such measurements can be made.
- D. Pay items included in the "Extra Work, If Authorized by the Owner" section on the Bid Schedule are for any additional work that is determined to be required to complete the project but was not originally shown in the Bid Documents or is indicated "as directed by Owner".
- E. WORK completed shall be measured for completion against the schedule of values provided by the CONTRACTOR in accordance with the General Conditions. Related work necessary for a complete and operational job, such as relocation of mail boxes removal of trees, relocation of utilities, field engineering, clearing and grubbing, traffic control, etc., not specifically identified as a pay item shall be included in the unit price bid. No additional payments will be made for such activities.

1.03 PROGRESS PAYMENTS

- A. Progress payments shall be based on the quantity of units installed.
- B. All items of WORK not specifically listed in the Bid Schedule shall be considered incidental to the construction, and the cost of all such work and material shall be included in the prices bid for various items listed.
- C. All items listed for measurement and payment shall include all machinery, plant, materials and labor, etc., to successfully and satisfactorily complete WORK specified.
- D. Payment: The CONTRACTOR will receive payment only for the items listed in the Bid Schedule of his contract, and no separate payments will be made for the work under any section of the CONTRACT DOCUMENTS except as provided for in the Bid Schedule. Where measurements are required to be made by the ENGINEER, for the payment of a pay item, the failure of the CONTRACTOR to give the adequate notification or failure of the CONTRACTOR to give the ENGINEER assistance for the measurement shall result in the forfeiture of payment for the work or item which was not measured.

- E. WORK to be paid for as a "Lump Sum" shall be measured for completion against the "Schedule of Values" provided by the CONTRACTOR and percent complete as determined by the OWNER/ENGINEER. The "Schedule of Values" shall be submitted at the preconstruction conference and shall include quantities and prices of items aggregating the total "Lump Sum" and will subdivide the work into component parts in sufficient detail to serve as the basis for progress payments during construction.

PART 2 PRODUCTS

2.01 STORED MATERIALS

Partial payment shall be made for approved materials stored at the project site, provided invoices for said materials are furnished in accordance with payment request submittal.

PART 3 EXECUTION

3.01 ELEVATED WATER STORAGE TANK (Section 33 16 19)

The basis of payment for this item shall be lump sum to include all labor, equipment, and materials, coordination with OWNER'S geotechnical consultant in design and construction, construction surveying, clearing, grubbing, site preparation, grading including importing or exporting of dirt, excavation and backfilling, removal of unsuitable material, rock removal, import and installation of suitable fill, design and erection of 750,000 gallon elevated water storage tank, design and installation of tank foundations, as-built surveys, painting, concrete, concrete pads, piping and appurtenances, valves, fittings, anchorage, water connections, pressure sensing line assembly, taps, dewatering, all site work; tank drain piping, flap valve, junction box, outlet headwall; 12" DIP drain pipe, fencing and gate, gravel, graded aggregate base, asphalt access drive and access gate, storm piping, all electrical including coordination with electric company and costs for bringing power service to the site; site lighting, tank lighting, SCADA, systems, site dressing, cleanup, mulching, temporary and permanent grassing; disinfection; all inspection, testing, and reporting other than as defined under the Geotechnical Allowance line item; and all other items as specified in the Contract Documents. The mixing system for the tank is not included in this item.

3.02 RESERVOIR HYDRODYNAMIC MIXING SYSTEM (Section 46 41 00)

The basis of payment for this item shall be lump sum to include all labor, equipment, and materials, controls, and appurtenances, for the construction of the reservoir hydrodynamic mixing system.

3.03 STORMWATER/EROSION CONTROL MONITORING PROGRAM (Section 31 25 00)

The basis of payment for this item shall be lump sum to include all labor, equipment and materials necessary to comply with all the requirements of the Georgia NPDES General Permit No. GAR 100002, including, but not limited to completion and submittal of the NOI, sampling and data collection, inspections, daily reporting, and all other items necessary to comply with the permit. Payment of the \$40 per disturbed acre fee to the Georgia Department of Natural Resources will be part of the CONTRACTOR's bid amount for this item.

3.04 ROCK OUTLET TEMP. SEDIMENT TRAP (SD4-C)

The basis of payment for this item shall be lump sum to include all labor, equipment, and materials for construction of the Rock Outlet Temp. Sediment Basin as shown on the drawings. All grading, rip rap, drainage spillways, mulching, and grassing, and all accessories to complete the basin, and all maintenance during construction and removal after construction, including grading and final grassing is included. Work shall be completed in accordance with the Georgia Standard Specification of Transportation Systems, latest edition.

3.05 RIP RAP SPREADER BERMS

Quantities for rip rap spreader berms shall be each (EA) for all work including all labor, equipment, tools, materials, and equipment necessary for furnishing, placing, removal after construction and maintaining rip rap spreader berms as required by the drawings. Rip Rap shall be in accordance with specification section 31 37 00 Rip Rap.

3.06 SITE PREPARATION (Section 31 10 00)

No separate measurement or payment will be made for site preparation for the tank, access drive, water lines, nor for any other appurtenance facilities such as valves, fire hydrants, etc. Payment for all work shall be included in the unit prices bid for the elevated storage tank or per linear foot of the various sizes and type of pipe laid or for the number of units installed for meters, valves, fire hydrants, etc. as provided for in contract Bid Schedule.

3.07 ROCK REMOVAL (Section 31 23 16.26)

No separate measurement or payment will be made for rock removal for the elevated water storage tank, access drive, or waterlines, nor for any other appurtenant facilities such as valves, fire hydrants, piers and pipe protection or encasement. Payment for all rock removal shall be included in the unit prices bid for the elevated storage tank or per linear foot of the various sizes and type of pipe or for the number of units installed for valves, fire hydrants, etc. as provided for in contract Bid Schedule.

3.08 CONSTRUCTION EXITS (Section 31 25 00)

No separate measurement or payment will be made for construction exits. Payment for all work shall be included in the unit prices bid per linear foot of the various sizes and type of pipe laid or for the number of units installed for meters, valves, fire hydrants, etc. as provided for in contract Bid Schedule.

3.09 ORANGE BARRIER FENCE (Section 31 25 00)

Quantities for orange barrier fence shall be the linear feet of fence actually installed. The quantity to be paid shall include all labor, materials, tools, and equipment necessary for furnishing, placing, maintaining, and removing the orange barrier fence. No payment will be made for orange barrier fence that needs to be reinstalled for any reason.

3.10 HAY BALES (Section 31 25 00)

Quantities for hay bales shall be the number of hay bales actually installed for temporary erosion control Best Management Practices (BMP's). The quantity to be paid shall include all labor, materials, tools, and equipment necessary for furnishing, placing, maintaining, and removing each BMP. No payment will be made for hay bales that need to be reinstalled for any reason.

3.11 SILT FENCE (Section 31 25 00)

Quantities for each type of silt fence shall be the linear feet of silt fence actually installed for temporary erosion control Best Management Practices (BMP's). The quantity to be paid shall include all labor, materials, tools, and equipment necessary for furnishing, placing, maintaining, and removing each BMP. No payment will be made for silt fence that needs to be reinstalled for any reason.

3.12 EROSION CONTROL MATTING (Section 31 25 00)

Quantities for each erosion control matting shall be the square yards of matting or blankets actually installed for temporary erosion control Best Management Practices (BMP's) for ditches and slopes. The quantity to be paid shall include all labor, materials, tools, and equipment necessary for furnishing, placing, maintaining, and removing each BMP. No payment will be made for erosion control matting that needs to be reinstalled for any reason.

3.13 RIP RAP (Section 31 37 00)

Quantities for rip rap shall be the square yards of each type of rip rap actually installed at the depth shown on the Drawings for soil stabilization and erosion control Best Management Practices (BMP's). The quantity to be paid shall include all labor, materials, tools, and equipment necessary for furnishing, placing, maintaining, and removing the rip rap as necessary or as directed by the Owner.

3.14 FIRE HYDRANTS (Section 33 12 19)

- A. The quantity of the size and type of fire hydrants will be the actual number installed. The quantity for salvage of existing fire hydrants shall be the actual number of hydrants salvaged.
- B. The price bid for Fire Hydrant Assembly – Complete, shall include all related appurtenances to construct and install the fire hydrants from the in-line tee to the fire hydrant itself at proper grade. This price shall include the fire hydrant, all labor, necessary equipment, fittings, rodding, blocking, valve box and collar, hydrant valve and tee, 6” diameter piping and extensions to set the hydrant at required horizontal and vertical location, and all other related appurtenances. Fire hydrants shall be paid for at the unit price bid.

3.15 WATER MAINS (Section 33 12 13.13)

- A. The quantities of the various sizes and types of watermain will be measured along the centerline of the pipe from center of fitting to center of fitting or to the outside wall of the tank riser pier. No deduction will be made for fittings, valves or vaults.
- B. The price bid shall include, but not be limited to, the pipe material indicated, all fittings, gaskets, bolts, glands, concrete blocking, concrete caps, detection tape and wire, all labor, equipment, clearing and removal and disposal of clearing debris, stripping, storing, and replacement of top soil in lawn and garden areas, excavation, dewatering of trenches, removal and replacement of signs and mailboxes in the path of construction activities, replacement of mailbox approaches, fences, curb and gutter, etc., connection to existing water mains, protection of existing utilities (both overhead and underground), storm pipes, culverts, drainage ditches, all benching, sheeting and bracing, crushed stone bedding, tamping and compaction and backfilling, roadway shoulder repairs, traffic maintenance and protection, dressing and final grading, grassing, testing, cleanup, and all other work incidental to place the water line as shown or indicated in the CONTRACT DOCUMENTS.

3.16 VALVES (Section 33 12 16)

- A. The quantities of the various sizes and types of valves will be the actual number installed on the water main by the CONTRACTOR and approved by the ENGINEER. Valves inside vaults or riser pier shall not be measured separately for payment.
- B. The price bid shall include, but not be limited to, the valve, all labor, necessary equipment, fittings, rodding, blocking, valve box, concrete pad and valve marker, debris cap, and all other work incidental to install valves as shown or indicated in the CONTRACT DOCUMENTS. Valves shall be paid for at the unit price bid. Valves used for tapping existing lines shall be included in the price bid for tapping sleeve and valves.

3.17 TAPPING SLEEVE AND VALVE (Section 33 12 16)

- A. The quantities of the various sizes and types of tapping sleeve and valves will be the actual number installed by the CONTRACTOR and approved by the ENGINEER.

- B. The price bid shall include, but not be limited to, the valve, tapping sleeve, valve box, valve marker, concrete pad, all labor and necessary equipment. Valves shall be paid for at the unit price bid. No separate payment shall be made for connecting to existing lines.

3.18 ALTITUDE VALVE ASSEMBLY VAULT (Section 33 12 16)

The basis of payment for this item shall be lump sum to include all labor, equipment, and materials, to install the altitude valve vault, complete, operational, and connected to the existing water distribution system. This item shall include excavation and backfill, removal of unsuitable fill, import and installation of suitable fill, base stone, concrete vault and appurtenances, piping and appurtenances, fittings, anchorage, all valves, pressure sensing line to the riser pier, connection to existing water mains, erosion control, site dressing, cleanup, grassing, testing and disinfection, and all other items as specified in the Contract Documents. The water main pipe shall be paid under the various sizes and types of water mains and appurtenances, as provided in the Bid Schedule.

3.19 CHECK VALVE ASSEMBLY VAULT (Section 33 12 16)

The basis of payment for this item shall be lump sum to include all labor, equipment, and materials, to install the check valve vault, complete, operational, and connected to the existing water distribution system. This item shall include excavation and backfill, removal of unsuitable fill, import and installation of suitable fill, base stone, concrete vault and appurtenances, piping and appurtenances, fittings, anchorage, all valves, connection to existing water mains, erosion control, site dressing, cleanup, grassing, testing and disinfection, and all other items as specified in the Contract Documents. The water main pipe shall be paid under the various sizes and types of water mains and appurtenances, as provided in the Bid Schedule.

3.20 PROTECTION, RELOCATION AND RESTORATION OF EXISTING UTILITIES
(Section 02 75 00)

No separate measurement or payment will be made for protection, relocation and restoration of existing utilities for water lines or other pipes, nor for any other appurtenant facilities such as valves, fire hydrants, etc. Payment for all such work shall be included in the unit prices bid per linear foot of the various sizes and type of pipe laid as provided for in contract Bid Schedule.

3.21 SITE RESTORATION (Section 32 02 00)

No separate measurement or payment will be made for site restoration. Payment for all such work shall be included in the unit prices bid for the elevated storage tank as provided for in the contract Bid Schedule.

3.22 GRASSING (Section 32 92 00)

No separate measurement or payment will be made for permanent grassing. Payment for all such work shall be included in the unit prices bid for the elevated storage tank as provided for in the contract Bid Schedule. No separate payment shall be made for Temporary Grassing or Mulching.

3.23 GEOTECHNICAL ALLOWANCE

The basis of payment for this item shall be a lump sum allowance. A geotechnical consultant shall be selected by the OWNER. The geotechnical consultant will perform construction materials testing services and installation observations and evaluations related to the foundations for the elevated storage tank, and to observe and monitor earthwork operations and to perform testing activities related to earthwork. The geotechnical consultant may also perform compaction testing for water main installation under this allowance. The Contractor shall make all necessary excavations and shall supply any samples of materials necessary for conducting compaction and density tests. All incidental overhead/processing/handling costs incurred by the CONTRACTOR for the geotechnical allowance shall be included in the price bid for Elevated Water Storage Tank as provided for in the Bid Schedule. No payment will be made for nonproductive time on the part of testing personnel due to the Contractor's failure to properly coordinate

testing activities with the work schedule or the Contractor's problems with maintaining equipment in good working condition. The Contractor shall submit copies of the consultant invoices with each periodic payment request from the firm providing the services.

3.23 EARTHWORK

No separate measurement or payment will be made for earthwork. Payment for all such work shall be included in the lump sum bid for elevated water storage tank, as provided for in the contract bid schedule.

3.24 ASPHALT PAVEMENT RESURFACING

The quantity to be paid under this item shall be square yards of 9.5 mm Superpave, Type 2 Group 2 Only placed to the limits shown on the drawings or as directed by the owner, unit price bid per square yard shall include all labor, equipment, and materials required. Construction shall be in accordance with the Georgia Standard Specification of Transportation Systems, latest edition.

END OF SECTION 01 02 50

SECTION 01 33 00

SUBMITTALS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Pre-Bid Submittal for Equipment and Materials

1. Equipment model numbers or catalog numbers are listed in the specifications to identify a standard or quality required in this project. Alternate equipment or materials may be utilized by and furnished by the CONTRACTOR when such equipment or material has been approved by the OWNER. Prebid submittals shall be submitted to the ENGINEER for evaluation, and he shall recommend to the OWNER whether the equipment or material should be approved or disapproved. Submittals shall be made at least fifteen (15) calendar days prior to the bid opening; and if approved, the approval will be issued by addendum. Submittals made less than fifteen (15) calendar days prior to the bid opening will not allow adequate time for evaluation, and will not be considered for inclusion in the project.
2. *THE PRE-BID SUBMITTALS SHALL LIST ANY AND ALL DEVIATIONS FROM ITEMS SPECIFIED, AND THE ADVANTAGES TO BE DERIVED IF THE DEVIATION IS APPROVED. IF NO DEVIATIONS ARE NOTED, IT WILL BE ASSUMED THAT NO SUCH DEVIATIONS EXIST, AND THE FINAL SUBMITTALS WILL ALLOW NO DEVIATIONS.*
3. Pre-Bid Submittals shall be required for any items different than specified.
4. The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, or those substitute or "or-equal" materials and equipment approved by ENGINEER and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function and quality to be met and any proposed substitute or "or-equal" item. No item of material or equipment will be considered by ENGINEER as a substitute or "or-equal" unless written request for approval has been submitted by Bidder and has been received by ENGINEER at least 15 days prior to the date for receipt of Bids. Each such request shall conform to requirements of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. ENGINEER's decision of approval or disapproval of a proposed item will be final. If ENGINEER approves any proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

B. Shop Drawings and Product Data

1. CONTRACTOR shall submit complete drawings, engineering data and manufacturer's published instructions and recommendations for all equipment, materials, and products to be incorporated into WORK to ENGINEER for review and approval. Submittal of drawings and engineering data shall be in accordance with requirements of Supplementary General Provisions. Shop Drawings and/or engineering data, as appropriate, shall be submitted for the following: (including, but not limited to):
 - a. Complete foundation, fabrication and installation design plans for the 750,000 gallon elevated water storage tank, stamped by a Georgia Registered Professional Engineer.
 - b. Complete Electrical, Lighting and SCADA
 - c. Pipe, valves, valve boxes, hydrants, fittings.
 - d. Concrete Vaults
 - e. Chain Link Fencing and Gate
 - f. Asphalt paving mix design
 - g. Concrete: Proposed mix design of each class of concrete. All concrete and masonry accessories and steel reinforcement, including bending diagrams and bar schedule, ties, spreaders, chairs, inserts, for coatings, waterstops, curing and sealing

- compounds, and epoxy bonding agents.
- h. Concrete Formwork: Shop drawings and design calculations for formwork the CONTRACTOR intends to use in construction of the WORK. CONTRACTOR shall furnish said shop drawings and design calculations at no additional cost to OWNER. CONTRACTOR shall submit to ENGINEER for approval, prior to beginning of concreting operations, engineering data and manufacturer's literature on all form ties, spreaders, bar supports, form coatings, and prefabricated steel forms intended for use in the WORK.
- i. Concrete Reinforcement: Submit shop drawings indicating sizes, spacings, locations and quantities of reinforcing steel, wire fabric, bending and cutting schedules, splicing, stirrup spacing, supporting and spacing devices.
- j. Premixed grouts and mortars: Submit laboratory reports to ENGINEER for approval. Submittal must include sieve analysis of fine and coarse aggregate and mix design. Test results and reports required by manufacturer and testing standards shall be submitted to ENGINEER for his review.
- k. Provide product data on all finishing products. Color samples: Submit two sets of color samples from paint manufacturers proposed for use, for individual color selections. Submit manufacturer's application instructions.
- l. Miscellaneous iron castings, gratings, and steps.
- m. Miscellaneous fabricated metal items including structural steel, stairs, ladders, stop plates, etc.
- n. Grass seed, fertilizer, and commercial mulch.
- 2. Shop drawings and engineering data shall be prepared by original equipment vendors or fabricators, as applicable. Purchase specifications by CONTRACTOR or Supplier shall not be acceptable as substitute for actual vendor drawings and data.
- 3. Shop drawings and each item of engineering data shall bear CONTRACTOR's approved stamp as per Supplementary General Provisions.
- 4. Design calculations and drawings for sheeting and shoring, and concrete formwork shall bear signed and dated stamp of licensed professional engineer.
- 5. A sieve analysis for all purchased material and all material to be reused as pipe bedding, foundation backfill, granular backfill or select backfill.
- 6. The following is required for all cast in place concrete and asphalt concrete to be placed as a part of this project:
 - a. Sources(s) of materials to be used for the various types of pavement.
 - b. Detailed specifications for all materials to be used including the job mix formula for asphaltic concrete paving, application rates, etc.
- 7. The Contractor shall be responsible for the accuracy and completeness of information contained in each submittal assuring the Work shall be done in accordance with the Contract Documents, unless a deviation has been approved. The Contractor shall verify that each feature of every product shall conform to the specified requirements. Submittal documents shall be clearly edited to indicate only those items being submitted in accordance with the Work. All extraneous materials shall be stricken out or removed. The Contractor shall coordinate submittals among his subcontractors and suppliers to meet the specified Work so that the Work shall not be delayed. No extension of time shall be allowed because of failure to properly schedule submittals. The Contractor shall certify on each submittal documents that he/she has reviewed the submittal, verified field conditions, and complied with the Contract Documents.

1.02 PROCEDURES

- A. Deliver submittals digitally to ENGINEER.
- B. Transmit each item identifying Project, CONTRACTOR, SUBCONTRACTOR, major supplier; identify pertinent drawing sheet and detail number, and specification section number, as appropriate. Identify deviations from CONTRACT DOCUMENTS. Provide space for CONTRACTOR and ENGINEER review stamps.

- C. Comply with progress schedule for submittals related to WORK progress. Coordinate submittal of related items.
- D. After ENGINEER review of submittal, revise and resubmit as required, identifying changes made since previous submittal.
- E. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

1.03 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial construction progress schedules in duplicate within ten (10) days after date of OWNER-CONTRACTOR Agreement. After review by ENGINEER, revise and resubmit as required. Submit revised schedules with each Application for Payment, reflecting changes since previous submittal.
- B. Submit horizontal bar chart with separate bar for each major trade or operation, identifying first work day of each week.
- C. Show complete sequence of construction by activity, identifying WORK of separate stages and other logically grouped activities. Show projected percentage of completion for each item of WORK as of time of each Application for Progress Payment.
- D. Show submittal dates required for shop drawings, product data, and samples, and product delivery dates, including those furnished by OWNER and those under Allowances.
- E. Revise schedule to list change orders, for each application for payment.

1.04 SAMPLES

- A. CONTRACTOR shall furnish, at ENGINEER'S request, samples of materials utilized in fabrication or production of equipment, materials, products supplied under these Specifications. Cost of samples requested shall be paid for by CONTRACTOR. Samples will be tested by qualified independent testing laboratory selected by ENGINEER to determine if mechanical and chemical properties of materials supplied are in accordance with requirements of these Specifications and CONTRACT DOCUMENTS. OWNER shall pay for laboratory testing of material samples provided by CONTRACTOR. CONTRACTOR shall pay for all retests made necessary by failure of materials, etc., to conform to requirements set forth herein.
- B. Submit samples to illustrate functional characteristics of the product, with integral parts and attachment devices. Coordinate submittal of different categories for interfacing work.
- C. Include identification on each sample, giving full information.

1.05 OPERATION AND MAINTENANCE MANUALS

Unless otherwise indicated, all items of major equipment shall be supplied with a minimum of six (6) copies of complete operation and maintenance manuals.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01 33 00

SECTION 01 51 00
TEMPORARY UTILITIES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 and 0 Specifications, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Temporary Power
 - 2. Temporary Water
 - 3. Temporary Sanitary Facilities

1.03 DEFINITIONS

- A. Temporary Utilities: Sources of electric power, water, natural gas, etc., obtained from public utilities, other main distribution systems or temporary sources that support the Contractor's activities but are not a part of the permanent construction or are not yet incorporated into the permanent construction.

1.04 PROJECT CONDITIONS AND SCHEDULING

- A. Comply with requirements of regulations, governing authorities and public utilities as to type, quantity, location and use of temporary facilities, utilities and services. Secure and maintain copies of permits, inspection reports or approvals for installation and use of temporary facilities and utilities.
- B. Maintain required temporary facilities until not needed or until Substantial Completion.

1.05 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
 - 1. Building code requirements.
 - 2. Health and safety regulations.
 - 3. Utility company regulations.
 - 4. Police, fire department, and rescue squad rules.
 - 5. Environmental protection regulations.
- B. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.06 COSTS

- A. The CONTRACTOR shall be responsible for the costs of all items necessary for the installation, maintenance, and removal of temporary power, temporary water for potable use and testing, and temporary sanitary facilities. The cost of these items shall be factored into the project unit prices. Obtain and pay for permits and inspections.

- B. CONTRACTOR shall pay costs of energy consumed.
- C. CONTRACTOR shall pay all costs necessary to provide water for temporary potable use and for testing. The cost of the water shall be factored into the project unit prices. CONTRACTOR shall reimburse OWNER at current commercial rates where such water is available.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. May be new or used, as adequate to serve the purpose, which will not create unsanitary conditions.
- B. Temporary Power devices and equipment shall be standard devices meeting UL requirements.

2.02 TEMPORARY CONSTRUCTION FACILITIES

- A. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical or aerated recirculation. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- B. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- C. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- D. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, pilot light for connection of power tools and equipment.

PART 3 – EXECUTION

3.01 GENERAL INSTALLATION

- A. Use qualified personnel or services for installation of temporary facilities. Provide each facility ready to use when needed to avoid delay. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as needed. Do not remove until facilities are no longer needed.
- B. Maintain system to provide continuous service

3.02 TEMPORARY WATER FACILITIES

- A. Maintain system to keep adequate pressure to outlets, including on OWNER's water system when temporary service is connected.
- B. Provide adequate pipe size to supply construction needs.
- C. Provide pumps, pressure tanks, automatic controls, and storage tanks as necessary to pressurize the system.
- C. Disinfect piping used for drinking water.

3.03 TEMPORARY SANITARY FACILITIES

- A. Clean facilities weekly, maintain a sanitary condition, and empty holding tanks when capacity exceeds half full.
- B. Provide toilet paper, paper towels, and soap in suitable dispensers.

3.06 MAINTENANCE, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until project completion.
- C. Termination and Removal: Remove each temporary facility when the need has ended, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference from the temporary facility. Repair damaged facilities, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

END OF SECTION 01 51 00

SECTION 01 57 00

TRAFFIC CONTROL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. CONTRACTOR shall furnish all materials and labor for the installation and continuous maintenance of traffic control devices throughout the project.
- B. This item of work shall include furnishing, installing, maintaining, relocating and removing all traffic control devices used for the purpose of regulating, warning or directing traffic during the construction or maintenance of this project.
- C. Upon completion of work, warning devices are to be removed by the CONTRACTOR. If devices remain on site longer than ten (10) days after project completion, they shall be removed by the OWNER and become his property.

1.02 SAFETY

- A. The governing factor in the execution and staging of work for this project is to provide the public with the safest possible travel conditions along the roadway through the construction zone. The CONTRACTOR shall arrange his operation to keep the closing of any lane of a roadway to an absolute minimum.
- B. No work shall be started on any phase of the project until all appropriate traffic control devices are in place and in operation.
- C. CONTRACTOR is to take all practical precautions to maintain traffic flow, and provide safety of workers and the general public.
- D. At the end of each workday, contractor is to clear the roadway of all dirt and debris and add additional safety devices to maintain safe travel lanes.
- E. When not in use, all traffic control devices shall be removed, placed or covered so as not to be visible to traffic.

1.03 REFERENCES

- A. Manual for Uniform Traffic Control Devices (MUTCD) (latest edition).
- B. Georgia Department of Transportation (Ga. DOT) Standard Specifications Construction of Transportation Systems (latest edition), Section 150.
- C. Georgia Department of Transportation (Ga. DOT) Standard Construction Details (latest edition).

PART 2 PRODUCTS

2.01 PRODUCTS

- A. Traffic Control Devices include: signs and their supports, signals, pavement markings, barricades with sand bags, channelizing devices, warning lights, arrowboards, flaggers, or any other device used for the purpose of regulating, warning or guiding traffic through the construction zone.

- B. All Traffic Control Devices used on this project shall conform to the plans, Ga. DOT Construction Details and Specifications, and MUTCD. No modifications will be allowed without prior written approval of the ENGINEER.
- C. Traffic Control Devices shall be in proper, acceptable condition when in use. Devices which are unclear, damaged, or not correctly positioned shall be promptly restored to fully operational condition.

PART 3 EXECUTION

3.01 EXECUTION

- A. The CONTRACTOR shall be responsible for the proper location, installation, and arrangement of all traffic control devices. Special attention shall be given to advance warning signs during construction operations in order to keep lane assignment consistent with barricade placement at all times. The CONTRACTOR shall cover all Traffic Control Devices which are inconsistent with detour or lane assignment patterns during the transition from one construction stage to another.
- B. Construction signs referring to daytime lane closures during working hours shall be removed or covered during non-working hours.
- C. The CONTRACTOR shall ensure all Traffic Control Devices installed by him are operational 24 hours a day, including weekends and holidays. Provide additional inspections at regular intervals.
- D. When traveling in lanes open to public traffic, the contractor's vehicles shall always move with and not against or across the flow of traffic. These vehicles shall enter or leave work areas in a manner which will not be hazardous to, or interfere with, traffic and shall not park or stop except within designated work areas. Personal vehicles shall not park within the right of way except in specific areas designated by the OWNER.
- E. Private driveways and parking areas shall be accessible at all times unless temporary closings are necessary for construction work and the CONTRACTOR has notified the affected individuals and has approval from them.
- F. If trenches are to remain open overnight, or for an extended period of time, CONTRACTOR is to provide heavy duty cover plates to allow vehicles access.
- G. Delays to the CONTRACTOR by complying with these requirements will be considered incidental to the item for traffic control and protection, and no additional compensation will be allowed.
- H. Where flaggers are required they are to be adequately trained and qualified for the job.
- I. Where the roadway or shoulder must be left in a disturbed condition overnight, provide barricades with flashers at intervals so that they are continuously visible from either direction.
- J. When working adjacent to or over travel lanes, the CONTRACTOR shall ensure that dust or other debris from his operation does not interfere with normal traffic operations of adjacent properties.
- K. CONTRACTOR shall take full responsibility for employees parking and make suitable arrangements for vehicles so that no roadway hazards occur and that trespassing on private property does not occur.

END OF SECTION 01 57 00

SECTION 01 71 23

FIELD ENGINEERING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. General: This Section specifies administrative and procedural requirements for field-engineering services including, but not limited to, land survey work.

1.03 SUBMITTALS

- A. Submit name, address, telephone number and registration number of surveyor prior to beginning work.
- B. Upon request, submit documentation verifying accuracy of survey work. Documentation may include, but is not limited to, original field notes, worksheets, cutsheets, etc.
- C. Submit two sets of prints of "as-constructed" drawings with a surveyor's certificate verifying that elevations and locations are in conformance with the contract drawings.

1.04 QUALITY ASSURANCE

- A. Surveyor Qualifications: Engage a land surveyor registered in the state of Georgia to perform required land-surveying services.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.01 SURVEY REQUIREMENTS

- A. The CONTRACTOR shall provide all construction staking using recognized surveying and engineering practices. The surveyor will locate lines, grades and locations called for in the contract drawings. The OWNER will provide a suitable number of benchmarks and monuments for the CONTRACTOR to use as a reference.
- B. "As Constructed Drawings"

CONTRACTOR shall maintain record drawings in accordance with the Supplementary General Provisions of these CONTRACT DOCUMENTS. The final "as constructed" drawings will show the horizontal location of all water lines, structures, etc. All horizontal locations shall be referenced to the established coordinate systems or to existing streets, roads or major structures. The ENGINEER will provide two sets of construction plans for the CONTRACTOR's use in completing this work.

END OF SECTION 01 71 23

SECTION 01 74 00

CLEANING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

This Section includes administrative and procedural requirements for cleaning during construction and final cleaning prior to Substantial Completion.

1.03 DISPOSAL REQUIREMENTS

Remove and dispose of waste materials, rubbish, debris and trash in compliance with provisions of governing laws, codes, ordinances and regulations. **Do not burn or bury rubbish, trash, debris and waste materials on Project site.**

PART 2 – PRODUCTS

2.01 CLEANING MATERIALS

- A. Use materials which will not create hazards to health or property, and which will not damage surfaces.
- B. Use only materials and methods recommended by manufacturer of material being cleaned.

PART 3 – EXECUTION

3.01 PERIODIC CLEANING

- A. On a regular and frequent basis during progress of WORK, perform cleaning necessary to keep Project site and adjacent properties free from unsightly and unsafe accumulation of scrap and waste materials, debris, rubbish and trash resulting from construction operations.
 - 1. Provide sufficient trash bins and containers for collection of scrap and waste material, debris, rubbish and trash.
 - 2. Provide separate, closable top metal containers for collection of oil and paint soaked rags; empty volatile substance cans and other waste products subject to spontaneous combustion.
 - 3. Designate approved eating areas and provide covered containers conforming to local health codes for collection of waste paper and left-over foodstuffs. Enforce usage of containers by workmen.
- B. Dispose of scrap and waste materials, debris, rubbish and trash by one of the following optional methods:
 - 1. Provide services of company regularly engaged in refuse disposal operations, including usage of large metal dump-type trash containers.
 - 2. Use own forces and equipment for loading, hauling and disposal.

- C. Remove accumulations of scrap and waste materials as bins and containers are filled and not less than once per week.
 - 1. Remove containers containing products subject to spontaneous combustion daily.
 - 2. Remove containers containing waste paper and left-over foodstuff daily.
 - 3. Legally dispose of all waste materials, rubbish, volatile materials and cleaning materials off Project site.
 - 4. Dispose of no materials in waterways.

3.02 DUST CONTROL

During application of finished surface materials, including painting and decorating, employ dust control methods during cleaning operations to prevent dust from contaminating wet and freshly coated surfaces.

3.03 FINAL CLEANING

- A. Site Work
 - 1. All piles of dirt and rocks are to be removed from the work area.
 - 2. All disturbed areas are to be grassed and mulched according to these specifications.
 - 3. All construction debris is to be removed to an approved disposal site.
 - 4. All streets are to be swept with a mechanical sweeper.

3.04 INSPECTION

Prior to occupancy by OWNER of any designated portion of WORK, conduct inspection in presence of OWNER to verify WORK is properly clean and ready for acceptance by OWNER.

END OF SECTION 01 74 00

SECTION 01 77 00

CONTRACT CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

Administrative provisions for Substantial Completion and for final acceptance.

1.02 RELATED REQUIREMENTS

Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.03 SUBSTANTIAL COMPLETION

- A. When the CONTRACTOR considers the work substantially complete, he shall prepare a punch list of uncompleted items and send to the ENGINEER for review. At the same time the CONTRACTOR shall request in writing that the ENGINEER schedules a pre-final inspection.
- B. The ENGINEER will review the punch list submitted by the CONTRACTOR and determine if the project is substantially complete.
- C. If the ENGINEER determines that the project is not substantially complete, he will notify the CONTRACTOR in writing which items need to be finished before the project can be considered substantially complete. The CONTRACTOR shall continue working to complete all punch list items and resubmit a revised punch list when he considers the work is substantially complete.
- D. When the ENGINEER determines that the work is substantially complete, he will schedule a pre-final inspection with the OWNER, CONTRACTOR and ENGINEER. A final punch list will be prepared at this time.
- E. After all punch list items have been completed, the CONTRACTOR shall send a request in writing to the ENGINEER to schedule a final inspection. When all punch list items are complete, the ENGINEER will issue a certificate of substantial completion.

1.04 FINAL COMPLETION

- A. When the CONTRACTOR considers that all of the WORK is complete, he shall submit the following certificates:
 - 1. All WORK has been completed and inspected for compliance with the CONTRACT DOCUMENTS and all deficiencies listed with the certificate of substantial completion have been corrected.
 - 2. All equipment and systems have been tested, adjusted and are fully operational.
 - 3. OWNER's personnel have been fully instructed in the operation of all equipment (include sign off for each system).
 - 4. WORK is complete and ready for final inspection.
- B. Should ENGINEER's inspection find WORK incomplete, he will promptly notify CONTRACTOR in writing listing observed deficiencies.
- C. CONTRACTOR shall remedy deficiencies and send a request for another final inspection.
- D. When ENGINEER finds work is complete, he will process final pay request documents.

1.05 REINSPECTION FEES

Should status of completion of WORK require reinspection by ENGINEER due to failure of WORK to comply with CONTRACTOR's claims on pre-final or final inspection, the OWNER will back charge the CONTRACTOR for each extra reinspection required of the ENGINEER. The CONTRACTOR shall reimburse the OWNER by certified check prior to final payment of retainage.

1.06 CLOSEOUT SUBMITTALS

- A. Evidence of Compliance with Requirements of Governing Authorities: Completed form included at the end of this Section.
- B. Project Record Documents
- C. Evidence of Payment and Release of Liens: In accordance with Conditions of the Contract.
- D. Consent of Surety to Final Payment.

Consent of Surety is to be sent by Surety directly to Precision Planning, Inc. to the attention of Richard Crowder.

1.07 APPLICATION FOR FINAL PAYMENT

- A. Prior to application for final payment, the CONTRACTOR shall give the ENGINEER a list of all additions or deletions not previously approved by change order.
- B. The ENGINEER will review this list and prepare a final close-out change order for the items that are justified by the terms of the contract or approved by field order.
- C. After approval of the final close-out change order, the CONTRACTOR may submit his application for final payment.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

BARROW COUNTY, GEORGIA

_____, CONTRACTOR, for the above referenced project, and the Barrow County Board of Commissioners, OWNER, hereby certify that "as-constructed" drawings for the above-referenced project have been prepared by the CONTRACTOR and provided to the OWNER. The OWNER and CONTRACTOR further certify that the CONTRACTOR has provided the OWNER with all maintenance and operation instructions, and product warranties, and that the OWNER, or OWNER's representative has been trained in the maintenance and operations of the systems installed.

The OWNER and the CONTRACTOR understand that the CONTRACTOR's warranty for the project begins on the date of substantial completion and remains in effect for a period of 1 year. The OWNER understands that he/she shall direct warranty concerns to the CONTRACTOR, during this warranty period and to the product manufacturers for warranties beyond this time period.

CONTRACTOR

Date

OWNER

Date

PRECISION PLANNING, INC.

Date

END OF SECTION 01 77 00

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

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

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. In addition to requirements in General Conditions, Maintain at the site for OWNER, two record copies of:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Approved Change Orders, field orders or other modifications to the Contract.
 - 5. Approved shop drawings, product data, and samples.
 - 6. Field test records.
 - 7. Inspection certificates.
 - 8. Manufacturer's certificates.
- B. Maintain Record Documents in a clean, dry and legible condition. Do not use Record Documents for construction purposes.
- C. Keep Record Documents and samples available for inspection by Engineer.

1.03 RECORDING

- A. Record information on clean sets of drawings and contract specifications. Label each sheet of the Project Record Drawings in the lower right corner with the neatly printed words "**PROJECT RECORD DRAWINGS**".

Two (2) sets of CONTRACT DOCUMENTS and Drawings will remain clean without mark-up for record purposes. CONTRACTOR shall use an additional set for marking measurements, on-site changes, items of construction that are actually used, and other conditions as they are encountered during the course of the WORK. This marked-up set of CONTRACT DOCUMENTS and Drawings shall consist of red-lined copies of plans and shop drawings, shall indicate actual field dimensions, shall represent the work as actually constructed, and shall be recorded on a daily basis. Failure to produce these records on request of ENGINEER or OWNER shall constitute grounds to halt construction with no time extension until steps are taken to see that these records are being properly made.

- B. Provide colored pens or pencils for marking each description of work.
 - 1. The CONTRACTOR shall provide colored pencils for marking record copies of Contract Drawings and Specifications. Use a different colored pencil for each of the following:
(Example)

a. Architectural Work	Red
b. Plumbing Work	Green
c. HVAC Work	Blue
d. Electrical Work	Orange
e. Other written notations	Brown
 - 2. Establish a color code denoting what trade will use what color, and show this on a schedule on the front sheet of the "PROJECT RECORD DOCUMENTS".

- C. Record information concurrently with construction progress. **DO NOT CONCEAL ANY WORK UNTIL REQUIRED INFORMATION IS RECORDED.**
- D. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction, including:
 - 1. Measured depths of elements of foundation in relation to finish first floor or benchmark.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements. Use stations and offsets or coordinates.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
 - 4. Field changes of dimension and detail.
 - 5. Changes made by Modifications.
 - 6. Details not on original Contract Drawings.
 - 7. References to related shop drawings and Modifications.
- E. Prior to final construction inspection, CONTRACTOR shall furnish to ENGINEER two (2) neatly marked sets of construction plans which accurately depict the conditions and records all changes made during construction. ENGINEER shall promptly notify CONTRACTOR in writing if additional information is required.
- F. Other Documents: Maintain manufacturer's certifications, inspection certifications, and field test records, required by individual Specifications sections.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01 78 39

SECTION 02 75 00

PROTECTION, RELOCATION AND RESTORATION OF EXISTING UTILITIES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. CONTRACTOR shall relocate or restore, as indicated on CONTRACT DRAWINGS or as directed by ENGINEER, all existing utilities. **The Utilities Protection Center (UPC) must be contacted at least three regular business days before work begins. The UPC can be reached at the state-wide toll-free number: 811.**
- B. CONTRACTOR shall be required, at his own expense, to do everything necessary to protect, support, and sustain all sewers, culverts, water, or gas pipes, electric lights, power, telephone, or telegraph poles or conduits, and other fixtures laid across or along site of WORK, even to the extent of using hand labor in making trench openings under or over these. OWNER, as well as company or corporation owning said pipes, poles, or conduits must be notified in advance of same by CONTRACTOR, before any such fixtures are removed or disturbed. In case any of said sewer, gas, or water pipes, service pipes, electric lights, power, telephone or telegraph poles or conduits, or other fixtures are damaged they shall be repaired by authorities having control of the same, and expense of said repairs shall be paid by CONTRACTOR or deducted from monies which are due or to become due said CONTRACTOR under this Contract.
- C. No underground or overhead facilities encountered shall be disturbed without proper authority from OWNER, and then only in such manner as OWNER may prescribe and approve.
- D. Should it become necessary to change position, or permanently or temporarily remove any electric conduits, telephone conduits, water pipes, gas pipes, sewerage pipes, or other pipes, conduits, or wires in order to clear structure being built or to permit CONTRACTOR to use a particular method of construction CONTRACTOR shall cease work if necessary, until satisfactory arrangements shall have been made by owners of said pipes, wires, or conduit, to properly care for or relocate same as necessary to permit WORK to proceed as required for proper completion of Contract.
- E. No claims for damages will be allowed CONTRACTOR on account of any delay occasioned thereby.

1.02 GENERAL CONDITIONS

- A. In addition to showing structures to be built under this Contract, Drawings show certain information obtained by ENGINEER regarding pipes, pole lines, conduits, and other structures which exist along lines of WORK, both at and below surface of ground.
- B. ENGINEER and OWNER expressly disclaim any responsibility for accuracy or completeness of information given on Drawings with regard to existing structures, and CONTRACTOR will not be entitled to any extra compensation on account of inaccuracy or incompleteness of such information, said structures being indicated only for convenience of CONTRACTOR who must verify information to his own satisfaction.
- C. Information given upon Drawings will not relieve CONTRACTOR of his obligation to support and protect all pipes, conduits, and other structures which may be encountered during construction of WORK, and to make good all damages done to such pipes, conduits, and other structures, as provided in these Contract Documents.
- D. CONTRACTOR shall locate all underground obstructions prior to excavation so as to prevent any damage to those services or other utilities.

- E. Any such damages must be repaired without delay and cost of such repairs must be borne by CONTRACTOR. All costs for temporary services are the full financial responsibility of the CONTRACTOR.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

3.01 RELOCATION OF WATER LINES

- A. Only when directed and approved by ENGINEER shall any water mains, service lines, or water meters be relocated during progress of WORK.
- B. Material used during relocation of any water mains or appurtenances shall be of same size and strength as existing material.
- C. When existing water lines and appurtenances are removed for relocation and are not to be replaced by new material, they shall be suitably stored until they are relocated.
- D. When existing water lines and appurtenances are removed for relocation and are to be replaced by new material, remaining materials shall be disposed of by CONTRACTOR at his expense.

3.02 RELOCATION OF SANITARY SEWERS

- A. Only when directed and approved by ENGINEER shall any sanitary sewer lines or service laterals be relocated during progress of WORK.
- B. Material used during relocation of any sanitary lines shall be of same size and strength as existing material. As a minimum, materials shall be as specified herein.
- C. Removed material during relocation of sanitary sewers shall be disposed of by CONTRACTOR at his expense.

3.03 RELOCATION OF ELECTRIC POWER POLES AND CONDUITS

- A. Only when directed and approved by ENGINEER shall power pole relocation and electric service be relocated during progress of WORK. Relocation shall be performed by Local Electrical Department.
- B. Temporary electrical service shall be provided when permanent electric service will be interrupted for more than one day.
- C. Cost of relocation of all electric utilities shall be responsibility of CONTRACTOR.

3.04 RELOCATION OF GAS LINES

- A. Only when directed and approved by ENGINEER shall any gas mains and gas services be relocated during progress of WORK. Relocation shall be performed by local gas company.
- B. Temporary gas service shall be provided when permanent gas service will be interrupted for more than one day.
- C. Cost of relocation for gas mains shall be responsibility of CONTRACTOR.

3.05 RELOCATION OF TELEPHONE

- A. Only when directed and approved by ENGINEER shall any telephone/cable television cable and conduit be relocated during progress of WORK. Relocation shall be performed by local telephone company.
- B. Temporary telephone service by digital phone service shall be provided when telephone service will be interrupted for more than one day.
- C. Cost of relocation of telephone/cable television cables and conduits, and temporary phone service, shall be responsibility of CONTRACTOR.

END OF SECTION 02 75 00

SECTION 03 30 00

CONCRETE

PART 1 – GENERAL

1.01 SCOPE OF WORK

Concrete foundation walls, sanitary structures, pipe encasements, and slabs on grade.

1.02 REFERENCES

- A. ACI 350 - Specifications for Concrete Sanitary Engineering Structures.
- B. ACI 318 - Specification for Building Code Requirements for Reinforcing Concrete
- C. ASTM C33 - Concrete Aggregates.
- D. ASTM C94 - Ready-Mixed Concrete.
- E. ASTM C150 - Portland Cement.
- F. ASTM C260 - Air-Entraining Admixtures for Concrete.
- G. ASTM C494 - Chemical Admixtures for Concrete.
- H. Georgia Department of Transportation Standard Specifications (Section 500).

1.03 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 350.
- B. Obtain materials from same source throughout the WORK.
- C. Tests: As listed in "Methods of Sampling and Testing", Section 18, ASTM C94. Qualifications of laboratory, responsibilities of all parties involved, and designation of the party to employ, and to pay for, specified services are covered in the Supplementary General Provisions.
 - 1. Concrete:
 - a. Mix and Control: The verifications and control of concrete mixes shall be the work of an independent testing laboratory. Cost of testing shall be paid by Contractor.
 - b. Laboratory Services shall be as follows:
 - 1) Test aggregates for specifications compliance.
 - 2) Test Portland Cement at each car of cement or on marked bin from which shipped.
 - 2. Verify design mixes: CONTRACTOR shall submit samples proposed for use in concrete to testing laboratory for making trial batches. Verification tests to be deemed satisfactory must produce minimum 28 day strengths 1200 psi higher than the specified design strength unless standard deviations have been established by the concrete supplier in accordance with Section 4 of ACI 318. Furnish written statement of standard deviation, if used, in accordance with ACI 214, established by a registered testing laboratory. Tests for proposed mixes shall consist of making and breaking nine standard cylinders for each mix. Sets of three (3) eight (8) day ages. The results of these tests and curves showing the strength of the concrete at various ages shall be submitted to OWNER. If trial mixes fall below test limits, design mixes or materials shall be revised and resubmitted for retesting. A record of field tests for the same proportioning of the same materials will be accepted in lieu of proof testing.

1.04 TESTS

- A. Testing and analysis of concrete will be performed in accordance to ACI 318.
- B. Submit proposed mix design of each class of concrete to ENGINEER for review prior to commencement of work.
- C. Three concrete test cylinders will be taken for every 75 or less cu yds of each class of concrete placed each day.
- D. One additional test cylinder will be taken during cold weather and cured on site under same conditions as concrete it represents.
- E. One slump test will be taken for each set of test cylinders taken.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I, IA, II, IIA, III, or IIIA Portland Type.
- B. Fine and Coarse Aggregates: ASTM C33.
- C. Water: Clean and not detrimental to concrete.

2.02 ADMIXTURES

- A. Air Entrainment: ASTM C260.
- B. Chemical Admixture: ASTM C494, of any type must be approved by OWNER prior to use, Type A - water reducing.

2.03 CONCRETE MIX

- A. Mix concrete in accordance with ASTM C94.
- B. Provide concrete for all applications of the following characteristics:
 - 1. Class B - Normal Weight 4,000 psi @ 28 days
 - 2. Class C - Normal Weight 3,000 psi @ 28 days
 - 3. Class D - Normal Weight 2,500 psi @ 28 days
- C. Use accelerating admixtures in cold weather only when approved by OWNER. Use of admixtures will not relax cold weather placement requirements.
- D. Use set-retarding admixtures during hot weather only when approved by OWNER.
- E. Add air entraining agent to concrete mix for concrete work subject to freeze-thaw cycling.

PART 3 – EXECUTION

3.01 INSPECTION

Verify anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, held securely, and will not cause hardship in placing concrete.

3.02 PREPARATION

Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Apply bonding agent in accordance with manufacturer's instructions.

3.03 PLACING CONCRETE

- A. Notify ENGINEER minimum 24 hours prior to commencement of concreting operations.
- B. Place concrete in accordance with ACI 350.
- C. Hot Weather Placement: ACI 350.
- D. Cold Weather Placement: ACI 350.
- E. Ensure reinforcement, inserts, embedded parts, formed joints and opening are not disturbed during concrete placement.
- F. Maintain concrete cover around reinforcing as per ACI 350, or as otherwise noted on Drawings.
- G. Place concrete continuously between predetermined construction. Do not break or interrupt successive pours such that cold joints occur.
- H. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify ENGINEER upon discovery.
- I. Placing during non-daylight hours:
 - 1. Concrete shall be placed during daylight hours unless otherwise approved by the Engineer. Placing of concrete in a portion of work shall not be started unless that portion of the work can be completed during daylight. Daylight is defined as the period one hour before sunrise to one hour after sunset.
 - 2. If it is desired by the CONTRACTOR to place concrete during non-daylight hours, the CONTRACTOR shall provide an adequate lighting system approved by the ENGINEER. Approval of the placing of concrete during non-daylight hours shall in no way lessen the responsibility of the CONTRACTOR as related to the WORK.

3.04 FINISHING

Concrete surfaces shall have rough edges tooled-off; irregularities shall be filled pointed-up and spot finished.

3.05 FIELD QUALITY CONTROL

- A. Concrete Control: The verification and control of all concrete shall be performed by an independent testing laboratory. Cost of testing shall be paid by CONTRACTOR.
- B. Laboratory Services shall be as follows:
 - 1. Make, cure, store and break test cylinders conforming to requirements of ASTM C31 "Standard Method of Making and Curing Concrete Test Specimens in the Field"; ASTM C39 "Standard Method of Test for Compressive Strength of Cylindrical Specimens"; ASTM C143 "Standard Method of Test for Slump of Portland Cement Concrete"; ASTM C172 Test cylinders and slump tests shall be made at job site and under no circumstances shall they be taken at a central mixing plant.
 - 2. Reports on all tests conducted by laboratory shall be rendered promptly and distributed as follows:
 - a. ENGINEER - Three (3) copies.
 - b. CONTRACTOR - Two (2) copies.

3. Reports of control cylinders for job placed concrete shall contain the following:
 - a. Time of batching.
 - b. Time of sampling.
 - c. Concrete and air temperature.
 - d. Slump.
 - e. Other information furnished by CONTRACTOR.
 - f. Full description of the location of the concrete from which the concrete for test specimen was taken.
- C. Contractors Function in Concrete Testing
 1. Deliver samples of aggregate and cement in quantities established by laboratory for tests of aggregate and design mixes.
 2. Follow instructions of laboratory in proportioning mixes.
 3. Coordinate laboratory's services with building operation. CONTRACTOR shall supply barrows, shovels, mixing boards, shaded work space for molding cylinders, and similar equipment required by laboratory representative for molding test cylinders.
 4. Keep a daily log, recording quantities of each class of concrete used, the area of location of each quantity of concrete relating to its controlling cylinder and the slump of this concrete, and general weather conditions. The CONTRACTOR shall furnish this information to the laboratory for inclusion in the test reports. The CONTRACTOR shall obtain delivery tickets showing the class and strength of concrete, the size of coarse aggregate and the slump order. The CONTRACTOR shall identify these tickets relative to the area of placement of the concrete and shall retain them on file. He shall produce the tickets, should ENGINEER so request.
- D. Detailed Requirements
 1. Of the test cylinders taken as per Section 1.07, one shall be broken at 7 days, one shall be broken at 28 days and one held in reserve.
 2. The primary function of compression tests in field concrete is to insure production of uniform concrete of desired strength and quality. Compressive strength is not necessarily the most critical factor in proportioning concrete mixes since other factors, such as durability, may impose lower water-cement ratios that are required to meet strength requirements. In such cases, strength will, of necessity, be in excess of structural demands. To obtain maximum information, a sufficient number of field compression tests should be made to be representative of the concrete produced and appropriate statistical methods should be used to interpret the test result. Statistical methods provide the best basis for assessing from such results the potential quality and strength of the concrete in a structure and expressing the results in a useful form. The ACI Standard Recommended Practice for Evaluation of Compression Test Results of Field Concrete, ACI 214-65 shall be used. The Statistical method of determining acceptable concrete will govern operations of costing.

3.06 PATCHING

- A. Notify ENGINEER immediately upon removal of forms.
- B. Patch imperfections.

3.07 DEFECTIVE CONCRETE

- A. Modify or replace concrete not conforming to required levels and lines, details, and elevations.
- B. Repair or replace concrete not properly placed or of the specified type.

3.08 PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

END OF SECTION 03 30 00

SECTION 09 87 00

TANK COATINGS AND FINISHES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Coating and finishing of all new interior and exterior work metal and other surfaces required for a complete job, whether or not every item is specifically mentioned. Submit manufacturer's standard colors for specific applications to OWNER for selection of color and color schemes.
- B. Touching up of shop applied prime coats.
- C. Preparation of surfaces to receive finishes.
- D. Priming and backpriming of interior and exterior finish.
- E. Finishing all millwork.

1.02 REFERENCES

All work on the water storage tank shall fully conform to the requirements of the latest published editions of the following Standards:

- A. ANSI/ASTM D-16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. American Water Works Association (AWWA) Standards
 - 1. AWWA C652 – Disinfection of Water-Storage Facilities.
 - 2. AWWA D102 – Coating Steel Water-Storage Tanks

1.03 DEFINITIONS

Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.04 QUALITY ASSURANCE

- A. Product Manufacturer: Company specializing in manufacturing quality coating and finish products with ten years experience.
- B. Applicator: Company specializing in commercial coating and finishing with five years documented experience.
- C. Provide products for all specified coatings from single manufacturer and production run.
- D. Interior paint shall bear the National Sanitation Foundation seal.
- E. Workmanship shall be of first class quality. Finish painting shall show no drips, runs, sags, holidays, or other defects. The finish coat shall be free from noticeable laps or brush marks. Paint during application shall be continuously stirred. Paint shall be thoroughly worked into all joints, corners, and well brushed out over all surfaces. Should any coat or paint be judged unsatisfactory, the CONTRACTOR shall remove the coat(s) as necessary and repaint at no additional cost to the OWNER.

1.05 REGULATORY REQUIREMENTS

- A. Conform to applicable code for flame/fuel/smoke rating requirements for finishes.
- B. Paint for interior of tank must be approved by the National Sanitation Foundation (NSF).

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site; store and protect products in accordance with manufacturer's recommendations.
- B. Deliver products to site ready-mixed in original container, sealed and labels intact.
- C. Container labeling to include manufacturer's name, type of coatings, brand name, branch code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.
- D. Store coating materials at minimum ambient temperature of 45° F (7° C) and maximum of 90° F (32° C), in well ventilated area unless required otherwise by manufacturer's instructions.
- E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Provide continuous ventilation before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 85 percent, unless approved by manufacturer's representative.
- C. Providing lighting level to ensure proper finish as per manufacturer's requirements.

1.08 EXTRA STOCK

Provide a one gallon (3.785 L) container of each exterior paint color to OWNER.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. COATING

- 1. Tnemec Company, Inc.
 - 2. Induron Protective Coatings
 - 3. Pre-approved equivalent coatings and finishes
- B. Primers shall be products of same manufacturer as coatings or approved by manufacturer for use.
 - C. Seam sealer shall be products of same manufacturer as coatings or approved by manufacturer for use.
 - D. Exterior coating colors will be selected by OWNER from manufacturer's customer mixed color range with final approval based on brush-out submittal by painting CONTRACTOR to Owner/Representative on-site during actual application.

- E. See Part 3 for specific product types.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Moisture content of surfaces shall comply with manufacturer's requirements for appropriate applications.
- D. Beginning of installation means acceptance of existing surfaces.
- F. Results of quality control tests and records for film thickness and holiday testing for inside coating systems shall be provided in accordance with AWWA D102.

3.02 PREPARATION

- A. After tank erection and welding, all seams and adjacent unprimed areas and any shop primed area damaged during construction shall be blasted as follows.
 - 1. Interior Systems: All surfaces to be coated shall be abrasive blast cleaned to a minimum SSPC-SP10 near white blast clean finish standard.
 - 2. Exterior System: All surfaces to be coated shall be abrasive blast cleaned to a minimum SSPC-SP6 commercial blast clean finish standard.
- B. All blasted areas shall be primed immediately with same as shop primer.
- C. Seam Sealer: All non-welded interior seams or joints shall have seam sealer

3.03 PROTECTION

- A. Protect elements surrounding the work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty coating containers from site.

3.04 APPLICATION

- A. Interior Systems
 - 1. Shop Primer Coat
 - a. Shall consist of one coat Tnemec Series 94-H2O or Induron Indurazinc MC67
 - b. Dry film thickness to be 2.5 to 3.5 mils.
 - 2. Striping
 - a. All welded seams and joints shall have a coat of Tnemec Series N140 or Induron PE-70. The application shall be brush or roller applied.
 - b. Dry film thickness to be 2.0 to 3.0 mils.
 - 3. Seam Sealer
 - a. All non-welded joints shall have Tnemec Series 215 or Induron Aquatapoxy A-6

4. Field coatings
 - a. Tnemec Series 21-WH16 off-white or Induron TL-70.
 - b. Dry film thickness to be 12 - 16 mils minimum
 5. Total dry film thickness for the interior coating system shall be not less than 14.5 dry mils. Systems specified are referenced to AWWA D102 Standard.
 6. Acceptable paint manufacturers and their respective paint requirements are listed. Equivalent coating systems from other manufacturers must be submitted to the Engineer for approval. Individual paint requirements shall be in accordance with the latest manufacturer's requirements if different than specified below. The Contractor shall submit color charts to the Engineer for selection of the exterior color.
- B. Exterior System
1. Shop Primer Coat
 - a. Tnemec Series 94-H2O or Induron Indurazinc MC67
 - b. Dry film thickness to be 2.5 – 3.5 mils.
 2. First Field Coat
 - a. Tnemec Series 1095 or Induron PermaClean II
 - b. Dry film thickness to be 2 - 3 mils.
 - c. Color shall be lighter than the topcoat color selected
 3. Second Field Coat Finish
 - a. Tnemec Series 700 or Induron Perma-Gloss Fluorourethane
 - b. Dry film thickness shall be 2 - 3 mils.
 4. Total dry film thickness for the exterior coating system shall be not less than 6.5 dry mils.
 5. Exterior colors to be selected by the OWNER.
 6. Systems specified are referenced to AWWA D102 Standard. Acceptable paint manufacturers and their respective paint requirements are listed. Equivalent coating systems from other manufacturers must be submitted to the Engineer for approval. Individual paint requirements shall be in accordance with the latest manufacturer's requirements if different than specified below. The Contractor shall submit color charts to the Engineer for selection of the exterior color.
- C. Apply coating materials in accordance with manufacturers approved product data.
- D. Apply coating only when moisture content of surfaces is within manufacturer's recommended range.
- E. Apply materials at rate not exceeding manufacturer's recommendations for surface being coated.
- F. Comply with manufacturer's product data for drying time between coats.
- G. Sand and dust between coats to remove defects visible from distance of 5'-0".
- H. Finish Coats: Smooth, free of brush marks, streaks, laps or pile-up of paint, skips, or missed areas.
- I. Make edges of coating adjoining other materials or colors sharp and clean without overlapping.
- J. Surfaces not requiring coating: concrete tank pedestals.

3.05 LETTERING

- A. After finish coats have been applied, CONTRACTOR shall paint the OWNER's name and logo in two (2) places. Size shall be proportional to the tank size. Location of lettering shall be specified in the field by the OWNER. Lettering shall consist of two (2) coats of Tnemac Series 700, Induron Perma-Gloss Fluorourene, or approved equal.
- B. Dry film thickness shall be 2 – 3 dry mils per coat.
- C. Exterior color to be selected by the OWNER.

- D. Attachment 1 at the end of this specification section for the Barrow County logo.

3.06 CLEANING

- A. As WORK proceeds, promptly remove coating where spilled, splashed, or spattered.
- B. During progress of WORK maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.07 DISINFECTION

- A. All cleaning and disinfection shall be in accordance with AWWA C652.
- B. Prior to disinfection, the CONTRACTOR shall thoroughly clean the interior of the tank of all paint chips, dirt or other debris.
- C. After cleaning, disinfection shall precede using method 2 or 3 of AWWA C652 Section 4.
- D. After disinfection has been completed, bacteriological samples shall be taken in accordance with AWWA C652 Section 4.4. Four samples will be taken and tested for chlorine residual and coliform organisms. Two samples are to be taken from the inside of tank near the top and two samples are to be taken from the sample tap at the base of the riser. If the test for coliform organisms is negative, the tank shall be placed in service. If the test is positive, then the tank shall be drained, thoroughly rinsed, disinfected, and tested again.
- E. The tank contractor shall be responsible for all filling, disinfecting, sampling, testing, cleaning, refilling and restarting if necessary.
- F. The OWNER will furnish the water for the initial cleaning and filling. If subsequent cleaning and refilling is required, the CONTRACTOR shall reimburse the OWNER at the rate of \$3.50 per 1000 gallons.

3.08 WARRANTY

Warranty – Coating manufacturer will offer a 15 year gloss and color retention warranty on the exterior finish to the owner. This warranty is between coating manufacturers and owner.



END OF SECTION 09 87 00

SECTION 31 10 00

SITE PREPARATION

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. WORK to be performed under this section shall consist of clearing and grubbing the site within the limits of the Contract as shown on Drawings and disposal of all waste materials.
- B. WORK also included under this section shall include the removal and replacement of existing fences and the erection of temporary fences.
- C. Definitions
 - 1. Clearing: The removal and disposal of all exposed objectionable matter such as trees, brush, logs, buildings, fences, poles, rubbish, loose boulders and other debris resting on or protruding through the ground surface.
 - 2. Grubbing: The removal and disposal of all objectionable matter such as: logs, poles, stumps, structures, boulders, rubbish, abandoned utilities, and other debris which is embedded in the soil.

1.02 REGULATORY REQUIREMENTS

- A. Conform to applicable code for disposal of debris.
- B. Conform to local Fire Department Codes for burning debris on site. Contractor shall obtain all necessary permits prior to burning on site.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Materials used for protection of trees and vegetation not to be removed during clearing operations shall be at Contractor's option. Materials chosen shall be approved by the ENGINEER prior to installation and upon installation shall be approved by the ENGINEER to ensure maximum protection to vegetation.
- B. Materials used for the repair of trees and vegetation damaged outside clearing limits shown on Drawings shall be at Contractor's option but must be approved by the ENGINEER prior to use.
- C. Wound paint shall be a standard bituminous product.
- D. Herbicides shall not be used unless written approval is given by OWNER.
- E. Explosives shall not be used unless written approval is given by OWNER.
- F. Materials used for the replacement or relocation of existing fences shall be of equal or superior quality to those fence materials existing prior to construction unless specified otherwise on the plans.

PART 3 – EXECUTION

3.01 CLEARING

- A. No tree, shrub, or other landscaping plants shall be removed unless absolutely necessary for the construction of the proposed improvements. All shrubs or landscaping plants removed or damaged during construction shall be replaced by the Contractor at his expense, with landscaping approved by the ENGINEER.
- B. Limits of clearing shall be contained within the areas within Right-of-way, Easement and Construction limits as shown on Drawings.
- C. Existing fences that, at the direction of OWNER, can be reused shall be carefully removed and stored at such a distance they shall not be damaged by construction activity.
- D. Fences that cannot be reused shall be removed to such a distance to allow construction activity and shall be replaced with new materials similar to existing fences upon completion of construction.

3.02 GRUBBING

- A. The limits of grubbing shall be contained within Right-of-way, Easement and Construction limits as shown on Drawings.
- B. Stumps and roots shall be grubbed and removed to a depth not less than 2 feet below existing grade or bottom of foundation structure.
- C. All holes or cavities which extend below the subgrade elevation of proposed WORK shall be filled with crushed rock or other suitable material and compacted to the same density as the surrounding material.

3.03 PROTECTION

- A. Streets, roads, adjacent property, and other works to remain shall be protected throughout the work in accordance with local laws and ordinances.
- B. Contractor shall make every effort to protect existing bench marks, R/W markers, monuments, iron pins, property corner markers, etc. If any are disturbed or destroyed, CONTRACTOR shall provide services of a registered land surveyor to replace the markers, as directed by OWNER, at no expense to OWNER.
- C. No trees shall be cut outside of areas designated without specific approval of ENGINEER, and any trees designated shall be protected from damage by CONTRACTOR's construction operations.
- D. Existing trees and other vegetation to remain shall be protected as directed by OWNER.
 - 1. Trees shall be protected by fencing, barricades, or wrapping.
 - 2. Shrub and bushes shall be protected by fencing, barricades, or wrapping. Wrapping of bushes and shrubs with plastic film will not be permitted.
 - 3. Shallow-rooted plants shall be protected at ground surface under and in some cases outside the spread of branches by fencing, barricades, or ground cover protection.
- E. In the event that archaeological resources are uncovered, CONTRACTOR shall notify OWNER prior to proceeding with WORK.

- F. It shall be the responsibility of the CONTRACTOR to inspect the site, determine the amount of work required, and include this work in his proposal.
- G. CONTRACTOR is to erect temporary fences as necessary to preserve the privacy of all affected property owners whose existing fences are being removed or relocated. Temporary fences shall be of sufficient strength and quality to prevent escape of animals and livestock and to prevent the intrusion of animals and people.
- H. It is CONTRACTOR's responsibility to coordinate the removal and erection of fences with each affected property owner and to maintain any temporary and relocated fences throughout the contract period.
- I. CONTRACTOR shall assume all costs incurred by any property owner in the loss of animals or livestock due to an insufficiency of replaced or temporary fences during the contract period and maintenance period thereafter.
- J. It is the CONTRACTOR's responsibility to secure any insurance necessary to protect himself in the event of loss or damage to any animals, livestock and property for the duration of the project and maintenance period.

3.04 DISPOSAL

- A. All trees within the working easements shown on the CONTRACT DOCUMENTS are property of the existing land owners. If the property owner wishes to keep the timber, the CONTRACTOR shall cut the timber in reasonable lengths and stack such timber on OWNER's property. If the property owner does not wish to keep the timber, the timber shall become the property of the CONTRACTOR and shall be removed from the site and disposed of at the CONTRACTOR's expense. All stumps, rubbish, and other material, not suitable as timber, shall be removed from the site at the CONTRACTOR's expense.
- B. CONTRACTOR shall remove and dispose of all excess material resulting from clearing or site preparation operations. CONTRACTOR shall dispose of such materials in a manner acceptable to OWNER and the local governing authority and at an approved location where such materials can be lawfully disposed.
- C. CONTRACTOR may, at no cost, retain any materials of value from clearing operations for his own use or disposal by sale unless otherwise stated in these Specifications. Such material shall be removed from construction area before date of completion of WORK under these Specifications. OWNER assumes no responsibility for protection or safekeeping of any materials so retained by CONTRACTOR.
- D. Materials will not be disposed of by burying unless approved by OWNER. Buried materials will be covered with not less than 2 feet of earth material.
- E. Burning will be permitted if the required permits have been acquired from the local Fire Department. Burning will be permitted only at times when conditions are considered favorable for burning and at locations approved by proper State or local authorities. Materials to be burned shall be piled neatly and, when in a suitable condition, shall be burned completely. Piling for burning shall be done in such a manner and in such locations as to cause the least fire risk. All burning shall be so thorough that the materials are reduced to ashes. No logs, branches, or charred pieces shall be permitted to remain. CONTRACTOR shall at all times take special precautions to prevent fire from spreading to areas beyond the limits of cleared areas and shall have available at all times, suitable equipment and supplies for use in preventing and suppressing fires. Unguarded fires will not be permitted.
- F. Material to be removed from site shall be removed as it accumulates to prevent any unsightly spoil areas.

END OF SECTION 31 10 00

SECTION 31 22 00

EARTHWORK

PART 1 GENERAL

1.01 SCOPE OF WORK

Section includes: Removal, stockpiling, and placement of topsoil, excavation, fill and backfill to meet grades and elevations, and the definition and requirements of rock excavation.

1.02 RELATED WORK

A. Section 31 10 00, Site Preparation

1.03 DEFINITION OF TERMS

- A. Earth Excavation: Removal of material to lines, elevations, and dimensions shown on Drawings and disposition of materials encountered in grading and excavation work except that classified as rock.
- B. Rock (Definition): Solid mineral material with a volume in excess of 1/2 cu yd that cannot be broken down and removed by use of heavy construction equipment, such as a Caterpillar Model 215 track-type hydraulic excavator equipped with a short tip radius rock bucket or a bulldozer such as a Caterpillar Model D8K track-type tractor equipped with single tooth hydraulic ripper, without drilling or blasting. Materials which can be loosened with a pick, hard pan, boulders less than 1/2 cu yd in volume, chert, clay, soft shale, soft and disintegrated rock and any similar material shall not be considered as rock. (All materials to be considered unclassified or common excavation.)
- C. Unauthorized Excavation: Excavation not required by specifications or Drawings or not authorized in writing by OWNER.
- D. Fill: Earth or other material as specified, used to bring an existing grade to a specified grade. Do not use any concrete or masonry product as fill material.
- E. Backfill: Earth, crushed stone, or other materials as specified used to replace material excavated during construction. Spread and compact backfill in same manner as fill.
- F. Subgrade: Compacted fill or backfill of embankments or undisturbed soil of cut sections, which supports base course and wearing surface.
- G. Undercutting: Removal of soft or undesirable materials encountered in undisturbed subgrade below grades specified for excavation.
- H. Topsoil: Fertile soil material as specified used for finish grading.
- I. Shoring: A structure, such as metal, hydraulic, mechanical, or timber shoring system that supports sides of an excavation and which is designed to prevent cave-ins.
- J. Geotechnical Engineer: A Geotechnical Engineer will be selected by the OWNER to be utilized as an on-site technical representative to observe and monitor earthwork operations and to perform testing activities related to earthwork.

1.04 REFERENCES

- A. American Society for Testing and Materials (ASTM), Annual Book of Standards
 - 1. ASTM D 698, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³).
 - 2. ASTM D 2216, Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock.
 - 3. ASTM D 2922, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 4. ASTM D 3017, Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
 - 5. ASTM D 4318, Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soil.
- B. AASHTO M 43, Size of Aggregate for Road and Bridge Construction.
- C. Occupational Safety and Health Administration (OSHA), Code of Federal Regulations 29 CFR Part 1926, Subpart P-Excavations, latest revision.
- D. Georgia Department of Transportation (GDOT), Standard Specifications, Construction of Roads and Bridges, latest edition.

1.05 PROJECT/SITE CONDITIONS

- A. Existing utility lines shown represent approximate locations only. The CONTRACTOR shall make all reasonable attempts to field verify all existing utility lines prior to beginning grading operations. Any deviations from the locations shown on the Drawings shall be reported in writing to the ENGINEER prior to beginning grading operations.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fill and Backfill Material: Satisfactory materials for fill and backfill shall have a plasticity index (PI) of less than 35 in accordance with ASTM D 4318. Material shall be free of organic matter and rock fragments exceeding 3 in. in any dimension, and any other deleterious material.
- B. Size No. 57 stone in accordance with AASHTO M 43, aggregate shall be Class “A” crushed stone aggregate material in accordance with GDOT Subsection 800.01.
- C. Graded Aggregate Base: In accordance with GDOT Section 815. Aggregate shall be Class “A” stone.
- D. Topsoil: Natural, friable, fertile, fine sandy loam soil reasonably free from subsoil, noxious weeds, stones larger than one inch in diameter, lime, cement, ashes, slag, or other deleterious matter which will prevent the formation of a suitable seed bed.

2.02 EQUIPMENT

Choice of equipment to perform required operations in conformance with these specifications shall be the responsibility of the CONTRACTOR. However, any equipment that results in waste or damage of material, or inaccurate work, or is otherwise objectionable is to be promptly replaced.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify that subgrade is not soft, spongy, or composed of otherwise unstable materials.
- B. Verify that areas to be filled or backfilled are free of debris, snow, ice, or water and that the surfaces are not frozen.
- C. Verify that foundation or basement walls are braced to support surcharge forces imposed by backfilling operations.

3.02 INSTALLATION/APPLICATION

- A. Stripping and Stockpiling Topsoil
 1. Strip all vegetative matter, sod, grass, and rubbish from within portions of the job site to be excavated or filled. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material. Topsoil shall be segregated and stockpiled on-site.
 2. Vegetative matter and rubbish shall be disposed of in accordance with Section 31 10 00.
 3. Dispose of excess or unsuitable topsoil in accordance with Section 31 10 00.
- B. Excavation
 1. Carry excavation through whatever materials are encountered to depths shown on Drawings. Removing all unsatisfactory materials within limits of excavation indicated on Drawings. Excavated material shall not be placed nearer the crest of any cut slope than a distance equal to the vertical height of cut.
 2. Do not excavate in vicinity of existing buildings and structures below existing foundations until underpinning and shoring have been installed. Protect or replace existing structures, piping, or foundations which are to be incorporated into final work.
 3. Remove excavated material not required or not suitable for backfill from area of work.
 4. Backfill unauthorized excavation at CONTRACTOR's expense with compacted earth, sand, crushed stone, or concrete as directed by the ENGINEER.
 5. Rock encountered during foundation excavations shall be removed to allow placement of a minimum of 12 in. of graded aggregate base course between the bottom of the concrete footing and the rock surface.
- C. Fill, Backfill and Compaction
 1. Maintain moisture condition of materials to be compacted in stockpiles or borrow sources.
 2. Areas which are at finished subgrade elevation, and/or areas to be filled or backfilled shall be proofrolled prior to filling or backfilling by a fully loaded tandem-axle dump truck or other pneumatic truck tired construction equipment of similar weight. Proofrolling shall be observed by the Geotechnical Engineer's representative. Areas that pump, rut, or deform excessively, shall be undercut and replaced with compacted earth. Undercutting shall extend at least 10 feet beyond building or structure perimeter. Backfill to a density equal to the fill requirement for subsequent backfill material.
 3. All areas receiving fill shall be scarified to a depth of 6 in., brought to within 2% of optimum moisture content, and compacted to density requirements.
 4. Spread material to be compacted in layers that will not exceed 6 in. after compaction.
 5. After placement of loose material in fill, adjust moisture content to bring material within required moisture content limits.
 6. Employ a placement method that does not disturb or damage structures and utilities.
 7. Grade areas adjacent to buildings to drain away from structures and to prevent ponding. Finish surfaces shall be free from irregular surface changes.

8. Backfill against supported foundation walls. Backfill simultaneously on each side of unsupported foundation walls.
9. Fill or backfill material of unacceptable moisture content shall either be conditioned to adjust the moisture content to within the range needed to achieve the required density or removed. Any material having an unacceptable moisture content shall be conditioned or removed at the expense of the CONTRACTOR.
10. Compact fill and backfill associated with holding ponds, and under roads and structures to a minimum of 98% of maximum dry density at not less than 2% below nor more than 2% above the optimum moisture content as determined by ASTM D 698.
11. Compact all fill not accessible to self-propelled or towed compactors by hand-operated power tampers or other approved means to the specified density.
12. Do not place fill material when weather conditions, condition of the subgrade, or condition of the fill material precludes obtaining the specified compaction. Do not use frozen material for fill, and do not place fill material on or against frozen surfaces.

D. Finish Grading

1. Verify that subsoil grades and elevations are correct before topsoil is placed.
2. Scarify subsoil of area to receive topsoil to a depth of 3 in.
3. Areas to receive new topsoil shall be furnished with a uniform layer of topsoil a minimum of 2 in. thick. Topsoil material to be from stockpiled material or approved borrow. Bond to subsoil by rolling with a light roller or by tamping. Hand rake surface.
4. No topsoil is to be placed until seeding can immediately follow the topsoil placement.
5. Topsoil is to be placed to finished lines and grades shown on Drawings.
6. Maintain newly graded topsoiled areas until final acceptance by the OWNER. Restore areas showing settlement or washes to specified grades at the CONTRACTOR's expense.

E. General

1. Maintain excavations free from water, and dispose of excess water by methods approved by ENGINEER. Report spring or seepage water encountered in excavation to ENGINEER.
2. Maintain newly graded areas by CONTRACTOR until final acceptance by ENGINEER. Restore areas showing settlement or washes to specified grades at the CONTRACTOR's expense prior to final acceptance.
3. Provide temporary shoring and bracing as necessary to safely support excavation. Remove shoring and bracing from excavation as backfilling progresses. Shoring shall be in accordance with OSHA 29 CFR Part 1926, Subpart P-Excavations, latest revision.
4. Provide erosion and sediment control to minimize erosion and transport of sediment beyond limits of CONTRACTOR's work area. Methods of control shall conform to Section 31 25 00 and the Drawings.

3.03 FIELD QUALITY CONTROL

A. Testing

1. Compaction of fill and backfill to the specified moisture-density relationship of soils shall be verified by in-place density tests using ASTM D 2922 or other ASTM in-place density tests approved by the ENGINEER. Maximum density determination and in-place density tests shall be performed by the Geotechnical Engineer's representative.
2. Testing for moisture content of soils shall be in accordance with ASTM D 2216 or D 3017. Testing will be performed by the Geotechnical Engineer's representative.
3. In place density/moisture testing shall be conducted after each layer is placed at a frequency of one test per 5,000 ft² of surface area of a compacted layer, with a minimum of two tests performed on each layer. The location of the density/moisture tests shall be selected randomly by the Geotechnical Engineer's representative or as directed by the ENGINEER.
4. Laboratory tests shall be completed for each type of soil to be used for fill/backfill. A sample shall be obtained by the Geotechnical Engineer's representative each time a change in appearance of the material is noted.

- B. Top of subgrade shall be a uniformly smooth grade surface without high or low points and shall not be more than 0.20 ft above or below specified grades. Bind thin layers of added materials to material in place by scarifying and recompact.

3.04 PROTECTION

- A. Protect existing utility lines and structures in work area and existing roadway structures, seeded areas, and other features adjacent to work area during construction activities. Provide adequate shoring and bracing as required to protect and maintain the stability of previously constructed structures and facilities.
- B. Barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction.

END OF SECTION 31 22 00

SECTION 31 23 00

EXCAVATION AND FILL

PART 1 – GENERAL

1.01 SCOPE OF WORK

Work under this section shall include all operations necessary for excavating, backfilling and compaction of material necessary for the construction of pipelines and all appurtenant facilities including concrete saddles, pipe protection, etc., and for the disposal of waste and unsuitable materials.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM), Annual Book of Standards
 - 1. ASTM D 698, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³).
 - 2. ASTM D 2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 - 3. ASTM D 2922, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- A. Occupational Safety and Health Administration (OSHA), Code of Federal Regulations 29 CFR Part 1926, Subpart P – Excavation, latest revision.

1.03 GENERAL

Elevations of the existing ground and the elevations of existing grades of structures are believed to be reasonably correct, but do not purport to be absolutely so, and, together with any schedule of quantities are presented only as an approximation. The CONTRACTOR shall satisfy himself, however, by actual examination of the site of the WORK as to the existing elevations and the amount of work required under this section. If the CONTRACTOR is not willing to accept any ground surface elevations indicated upon the Drawings for payment, he shall so notify the ENGINEER prior to starting any excavation work.

PART 2 – PRODUCTS

2.01 BEDDING STONE

Unless otherwise specified, bedding material shall be angular, graded, crushed stone embedment and shall conform to DOT specification Section 800 Gradation #57, varying in sizes ¼” through ¾”.

2.02 BACKFILL

Reused or imported earth free of stone, clods, broken rock, or concrete larger than 3 inches in largest dimension, or organic matter, rubbish, or other unsuitable material.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Verify bedding and backfill material to be used are acceptable. Do not use frozen material.
- B. Verify areas to be backfilled are free of debris, snow, ice, or water, and surfaces are not frozen.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. When necessary, compact subgrade surfaces to density requirements for backfill material.

3.03 SHEETING, SHORING AND BRACING

- A. CONTRACTOR shall be responsible for supporting and maintaining all excavations required even to the extent of sheeting and shoring the sides and ends of excavations with timber or other supports. All sheeting, shoring and bracing shall have sufficient strength and rigidity to withstand the pressure exerted and to conform with OSHA 29 CFR Part 1926, Subpart P – Excavations, latest revision.
- B. Excavations adjacent to existing or proposed utilities, buildings and structures, or in paved streets or alleys shall be sheeted, shored and braced adequately to prevent undermining beneath or subsequent settlement of such structures or pavements. Underpinning of adjacent utilities and structures shall be done when necessary to maintain utilities and structures in safe condition. The CONTRACTOR shall be held liable for any damage resulting to such utilities, structures or pavements as a result of his operations.
- C. The need and adequacy of sheeting, shoring, bracing, or other provisions to protect men and equipment in a trench or other excavation shall be the sole and exclusive responsibility of CONTRACTOR.

3.04 EXCAVATION

- A. Trench Excavation
 - 1. Trench excavation shall consist of the removal of materials necessary for the construction of pipelines and all appurtenant facilities including collars, concrete saddles, and pipe protection called for on Drawings.
 - 2. Excavation for pipelines shall be made in open cut unless otherwise shown on Drawings. Trenches shall be cut true to lines and grades shown on Drawings. Minimum pipe cover shall be 48" measured from the top of pipe to the ground surface.
 - 3. Use of motor-powered trenching machine will be permitted but full responsibility for the preservation, replacement, and/or repair of damage to any existing utility services and private property shall rest with CONTRACTOR.
 - 4. Bell holes for bell and spigot pipe and/or mechanical joint pipe shall be excavated at proper intervals so the barrel of the pipe will rest for its entire length upon the bottom of the trench or bedding material.
 - 5. Pipe trenches shall not be excavated more than 400 feet in advance of pipe laying and all work shall be performed to cause the least possible inconvenience to the public. Adequate temporary bridges or crossings shall be constructed and maintained where required to permit uninterrupted vehicular and pedestrian traffic.
 - 6. Unless otherwise specified herein or shown on Drawings, wherever pipe trenches are excavated below elevation shown on Drawings, CONTRACTOR, at his own expense, shall fill the void thus made to proper grade with Class D concrete or with compacted layers of crushed rock or other material conforming to requirements specified herein for backfill.
 - 7. In all cases where materials are deposited along open trenches they shall be placed so that no damage will result to the WORK and/or adjacent property in case of rain or other surface wash.
 - 8. Remove soft, spongy, or otherwise unstable materials encountered at elevation of pipe which will not provide a firm foundation for the pipe. Extend bedding depth as necessary to reach firm materials.
- B. Any unauthorized excavation shall be corrected at the CONTRACTOR's expense.

- C. Protect bottom of excavations and soil adjacent to and beneath foundations from frost.
- D. Grade top perimeter of excavation to prevent surface water run-off into excavation.
- E. Notify ENGINEER of unexpected subsurface conditions and discontinue work in affected area until notification to resume work.

3.05 DEWATERING

- A. CONTRACTOR shall provide and maintain at all times during construction, ample means and devices with which to promptly remove and properly dispose of all water from any source entering the excavations or other parts of the WORK. Dewatering shall be accomplished by methods which will ensure a dry excavation and preservation of final lines and grades of bottoms of excavations. Methods of dewatering may include sump pumps, well points, deep wells, or other suitable methods which do not damage or weaken structures, foundations, or subgrades. Shallow excavations may be dewatered using open ditches provided such ditches are kept open and free-draining at all times. Dewatering methods used shall be acceptable to ENGINEER. Footing pits or trenches shall be protected by small earth dikes and plastic covers when they are left open in rainy weather.
- B. Unless specifically authorized by ENGINEER, groundwater encountered within the limits of excavation shall be depressed to an elevation not less than twelve (12) inches below the bottom of such excavation before pipe laying or concreting is started and shall be so maintained. No concrete structures shall be exposed to unequal hydrostatic forces until the concrete has reached its specified 28-day strength. Water shall not be allowed to rise above bedding during pipe laying operations. CONTRACTOR shall exercise care to prevent damage to pipelines or structures resulting from flotation, undermining, or scour. Dewatering operations shall commence when ground or surface water is first encountered and shall be continued until such times as water can safely be allowed to rise in accordance with provisions of this section.
- C. Standby pumping equipment shall be kept on the job site. A minimum of one standby unit (one for each ten in the event well points are used) shall be available for immediate installation should any pumping unit fail. Installation of well points or deep wells shall be adequately sized to accomplish the WORK. Drawings or design of proposed well point or deep well dewatering systems shall be submitted to ENGINEER for review.
- D. CONTRACTOR shall not operate dewatering devices (i.e., pumps, etc.) before the hour of 8:00 AM and after the hours of 8:00 PM in a residential area unless otherwise approved by ENGINEER or OWNER.
- E. If foundation soils are disturbed or loosened by the upward seepage of water or an uncontrolled flow of water, the affected areas shall be excavated and replaced with foundation backfill at no cost to OWNER. Foundation backfill shall be placed in bottom of trench to within 6" of the bottom of pipe. Six (6) inches of bedding stone shall be placed over the top of the foundation backfill.
- F. CONTRACTOR shall dispose of water from the WORK in a suitable manner without damage to adjacent property. Conveyance of water shall be such as to not interfere with construction operations or surrounding property owners. No water shall be drained into WORK built or under construction without prior consent of ENGINEER. CONTRACTOR will be held responsible for the condition of any pipe or conduit which he may use for drainage purposes, and all such pipes or conduits shall be left clean and free of sediment.
- G. Storm water runoff shall be controlled by means of temporary erosion control methods, as shown on Drawings, or as directed by ENGINEER.

- H. Water shall be disposed of in such a manner as not to be a menace to public health and in accordance with applicable Environmental Protection Agency, Corps of Engineers, and State Environmental Protection Division standards and permits.

3.06 BEDDING/BACKFILLING

- A. The backfilling of trenches shall be started immediately after construction of same has been viewed by the Project Observer. Bedding and backfill material shall be earth or aggregate in accordance with Part 2 and the Drawings. Material shall be deposited in the initial horizontal layer to the spring line of the pipe (before compaction) on each side of the pipe. The initial layer shall be thoroughly tamped or rammed around the pipe until the initial layer's density is equal to the density of the adjacent undisturbed soils. The second bedding material layer shall be deposited horizontally to a depth to provide a cover of 12 inches over top of pipe. The remainder of the backfill shall be placed in horizontal layers 18 inch (maximum) in depth. The second and subsequent bedding/backfill layers shall be compacted by compaction tools to a density equal to or greater than the density of the adjacent undisturbed soils, except under roads, structures, and driveways.
- B. Compact aggregate and soil backfill under roads, structures, and driveways to a minimum of 98% of maximum dry density at not less than 2% below nor more than 2% above the optimum moisture content as determined by ASTM D 698.
- C. All backfilling shall be done in such a manner that the pipe or structure over or against which it is being placed will not be disturbed or injured. Any pipe or structure injured, damaged or moved from its proper line or grade during backfilling operations shall be removed and repaired to the satisfaction of OWNER and then re-backfilled.
- D. Backfilling shall not be done in freezing weather except by permission of the ENGINEER, and shall not be done with frozen material or upon frozen materials.
- E. All backfilling shall be left with smooth, even surfaces, properly graded and shall be maintained in this condition until final completion and acceptance of the work. Where directed by the ENGINEER, the backfill shall be mounded slightly above the adjacent ground.
- F. Leave stockpile areas completely free of excess fill materials. After construction and cleanup, stockpile areas shall be seeded in accordance with provisions specified in Section 32 92 00.

3.07 SUBSURFACE OBSTRUCTIONS

- A. In excavating, backfilling, and laying pipe, care must be taken not to remove, disturb, or injure any existing water, telephone, gas pipes, storm drainage pipe, headwalls or catch basins, or other conduits or structures, without the approval of the ENGINEER. If necessary, the CONTRACTOR at his own expense, shall sling, shore up, and maintain such structures in operation, and shall repair any damage to them. Before final acceptance of the work, he shall return all such structures to as good condition as before the work started.
- B. The CONTRACTOR shall give sufficient notice to the interested utility of his intention to remove or disturb any pipe, conduit, etc., and shall abide by their regulations governing such work. In the event that any subsurface structure becomes broken or damaged in the execution of the work, the CONTRACTOR shall immediately notify the proper authorities, and shall be responsible for all damage to persons or property caused by such breaks. Failure of the CONTRACTOR to promptly notify the affected authorities shall make him liable for any needless loss so far as interference with the normal operation of the utility.
- C. When pipes or conduits providing service to adjoining buildings are broken during progress of the work, the CONTRACTOR shall repair them at once.

- D. Delays such as would result in buildings or residences being without services overnight or for a needlessly long period during the day will not be tolerated. Should it become necessary to move the position of a pipe, conduit or structure, it shall be done by the CONTRACTOR in strict accordance with the instructions given by the ENGINEER or the utility involved.
- E. The OWNER or the ENGINEER will not be liable for any claim made by the CONTRACTOR based on underground obstructions being different from that indicated in these CONTRACT DOCUMENTS or Drawings.

3.08 BORROW EXCAVATION

Wherever the backfill of excavated areas or the placement of embankments or other fills require material not available at the site, suitable material shall be obtained from other sources. This may require the opening of borrow pits at points not immediately accessible to the WORK. In such cases, CONTRACTOR shall make arrangements with the property owner and shall pay all costs incident to the borrowed material including royalties, if any, for the use of the material. Before a borrow pit is opened, the quality and suitability of the material to be obtained shall be approved by the ENGINEER. Any soil tests required for approval of the borrowed material proposed, shall be at the OWNER's expense.

3.09 DISPOSAL OF WASTE AND UNSUITABLE MATERIALS

- A. Materials removed by excavation, which are suitable for the purpose, shall be used to extent possible for backfilling pipe trenches and for making embankment fills, subgrades or for such other purposes as may be shown on Drawings. Materials not used for such purposes shall be considered waste material and shall be disposed of at the CONTRACTOR's expense.
- B. Waste materials shall be spread in uniform layers and neatly leveled and shaped. Spoil banks shall be provided with sufficient and adequate openings to permit surface drainage of adjacent lands.
- C. Unsuitable materials, consisting of rock, wood, vegetable matter, debris, soft or spongy clay, peat, and other objectionable material so designated by the ENGINEER, shall be removed from the work site and disposed of by CONTRACTOR at his expense.
- D. No waste material shall be dumped on private property unless written permission is furnished by owner of property and unless a dumping permit is issued from local jurisdiction.

3.10 TESTING

- A. Compaction of fill and backfill to the specified moisture-density relationship of soils shall be verified by in-place density tests using ASTM D 2922 or other ASTM in-place density tests approved by the ENGINEER. Maximum density determination and in-place density tests shall be performed by a soils technician chosen by the OWNER and paid for by the CONTRACTOR. Frequency and location of tests shall be adequate to ensure proper compaction has been achieved.
- B. Areas not meeting the required compaction shall be recompacted until the desired degree of compaction is achieved.

3.11 PROTECTION

Protect excavation by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave-in of loose soil into excavation. Protection shall be in accordance with OSHA 29 CFR Part 1926, Subpart P-Excavations, latest revision.

3.12 FINAL GRADING

- A. After other earthwork operations have been completed, finished surfaces shall be left in smooth and uniform planes such as are normally obtainable from use of hand tools. If CONTRACTOR is able to obtain required degree of evenness by means of mechanical equipment, he will not be required to use hand labor methods. Slopes and ditches shall be neatly trimmed and finished.
- B. Unless otherwise specified or shown on the Drawings, all finished ground surfaces shall be graded and dressed to present a surface varying not more than plus or minus 0.20 foot. Any finished surfaces resulting in inadequate drainage or washouts shall be corrected by the CONTRACTOR at his expense.

3.13 SETTLEMENT

- A. CONTRACTOR shall be responsible for all settlement of backfill, fills, and embankments which may occur during warranty period.
- B. CONTRACTOR shall make, or cause to be made, all repairs or replacements made necessary by settlement within 30 days after receipt of written notice from ENGINEER or OWNER.

END OF SECTION 31 23 00

SECTION 31 23 16.26

ROCK REMOVAL

PART 1 – GENERAL

1.01 SCOPE OF WORK

Removal of all rock materials discovered during excavation for the purpose of construction. Removal shall include drilling and/or blasting incidental thereto and disposal of excavated materials.

1.02 RELATED WORK

- A. Section 312300 – Excavation and Fill

1.03 REFERENCES

- A. NFPA 495 - Code for the Manufacture, Transportation, Storage, and Use of Explosive Materials.
- B. OSHA 2207 - Construction Industry Standards, Subpart T - Demolition.

1.04 QUALITY ASSURANCE

- A. When necessary for prosecution of the WORK, the use of explosives to assist rock removal may be exercised by CONTRACTOR provided this use is in compliance with all local, State, Federal and other Governmental regulations applying to transportation, storage, use and control of explosives.
- B. Explosives Firm: Company specializing in explosives for disintegration of subsurface rock with documented experience.

1.05 SUBMITTALS

- A. The Contractor shall submit to the ENGINEER the following at least 30 working days prior to beginning any blasting operations:
 - 1. Names, addresses, telephone numbers, and qualifications of the blasting subcontractor(s) and explosives supplier(s), including the designated Blaster-In-Charge.
 - 2. Copies of Training Certificates for the designated Blaster-In-Charge, showing that they have received specialized training in the proper handling of explosives.
 - 3. A Blasting Plan, indicating the methods, materials and equipment to be used. The Blasting Plan should indicate the types of explosives to be used, drilling patterns, and a general layout and schedule for executing the work in accordance with state and local regulations.
 - 4. A ground vibration and air blast monitoring plan, indicating structures that will be monitored, monitoring equipment that will be used, and personnel that will perform the monitoring.
- B. At least 24 hours before each blast round, Contractor shall submit a detailed blast round design plan to the Engineer for quality control and record keeping purposes. Review by the Engineer shall not relieve the Contractor of his responsibilities as provided herein. Each blast round design submittal shall include:
 - 1. Location (state, grid coordinates) and limits of the shot.
 - 2. Number, diameter, and depth of blast holes to be detonated in the round, and a plan showing the drill hole pattern, spacing and distance to the free face.
 - 3. Depth of overburden.

4. Total weight of explosives in the round and the types of explosives to be used.
 5. Loading diagram showing the location of explosives, primers, and initiators; and location, depth, and type of stemming to be used in each hole.
 6. Initiation sequence, including delay timer and delay system, total weight of explosive to be detonated on each delay, and a list of the timing of the delays.
 7. Planned seismic monitoring positions, distances from the blast round, and seismograph types to be used to monitor vibrations and air blast overpressures.
 8. Type and amount of blasting mats and/or depth of soil cover to be used over the top surface of the shot.
 9. Any other information required by applicable state/commonwealth and federal regulations.
- C. Within 24 hours after each blast round, Contractor shall submit a blasting report to the Engineer. The blasting report shall include:
1. Date and time of shot.
 2. Blaster's name.
 3. Number and depth of holes detonated.
 4. Weather conditions at the time of detonation.
 5. Type of explosives and detonators used.
 6. Peak particle velocity of ground motion and primary frequency for all ground vibration monitoring stations.
 7. Peak air blast overpressure measured..
 8. Amount of explosive used in each hole, and maximum weight of explosive detonated on any single delay in the blast round.

1.06 REGULATORY REQUIREMENTS

- A. Conform to Rules and Regulations for Explosives and Blasting Agents by the Georgia Safety Fire Commissioner as contemplated by and pursuant to authority set forth in O.C.G.A. Sections 25-2-4, 25-2-17, and 25-8-9.
- B. Obtain permits from authorities having jurisdiction before explosives are brought to site or drilling is started.
- C. All explosives shall be stored securely in compliance with all laws and ordinances, and all such storage places shall be clearly marked DANGEROUS EXPLOSIVES. Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives or blasting agents. Locked storage shall be provided satisfactory to the ENGINEER, never closer than 1000 feet from any road, building, or camping area.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Rock (Definition): Solid mineral material with a volume in excess of 1/2 cu yd that cannot be broken down and removed by use of heavy construction equipment, such as a Caterpillar Model 215 track-type hydraulic excavator equipped with a short tip radius rock bucket or a bulldozer such as a Caterpillar Model D8K track-type tractor equipped with single tooth hydraulic ripper, without drilling or blasting. Materials which can be loosened with a pick, hard pan, boulders less than 1/2 cu yd in volume, chert, clay, soft shale, soft and disintegrated rock and any similar material shall not be considered as rock. (All materials to be considered unclassified or common excavation.)

- B. Explosives: Shall be suitable for intended purposes at the CONTRACTOR's option subject to review by OWNER and ENGINEER.
- C. Delay Devices: Type recommended by explosives firm to be used as accessory to explosives. Subject to review by ENGINEER.
- D. Blasting Mat: When the use of explosives is necessitated during prosecution of the WORK, CONTRACTOR shall incorporate the use of blasting mats of type recommended by explosives firm to lessen the danger of projectiles occasionally resultant from blasting of rock.

PART 3 – EXECUTION

3.01 EXCAVATION

- A. Beginning work of this Section means acceptance of existing condition.
- B. Rock in utility trenches shall be excavated over the horizontal limits of excavation and to depths as follows:

Size of Pipeline (Inches)	Depth of Excavation Below Bottom of Pipe (Inches)
Less than 4	6
4 to 6	8
Over 8	12

Space below grade for pipe shall then be backfilled with minus 3/4-inch crushed rock or gravel or other approved materials and tamped to proper grade.

3.02 ROCK REMOVAL - MECHANICAL METHOD

- A. Excavate for and remove rock by the mechanical method.
- B. Where pipes are constructed on concrete cradles, rock shall be excavated to bottom of cradle as shown on plans.
- C. Rock excavation near existing pipelines or other structures shall be conducted with utmost care to avoid damage. Injury or damage to other structures and properties shall be promptly repaired to the satisfaction of OWNER and by CONTRACTOR at his own expense.
- D. Rock excavation for all structures and adjacent trenches under this Contract and any other rock excavation directed by OWNER shall be completed before construction of any structure is started in the vicinity.
- E. Remove excavated material from site.
- F. CONTRACTOR shall correct unauthorized rock removal by backfill to grade with #57 Stone at his own expense.

3.03 ROCK REMOVAL - EXPLOSIVES METHODS

- A. If rock is uncovered requiring the explosives method for rock disintegration and removal, the ENGINEER shall be notified immediately so that the surface can be examined. Blasting will not be permitted unless written authorization is given by ENGINEER. (All materials removed shall be considered common excavation).
- B. The CONTRACTOR shall notify any owners of adjacent buildings or structures, and any public utility owners having structures or other installations above or below ground, in writing prior to use of explosives. Such notice shall be given sufficiently in advance so that they may take such steps as they may deem necessary to protect their property from injury and/or damage.
- C. Rock excavation by use of explosives shall be conducted with due regard for safety of persons and property in the vicinity and in strict conformance with requirements of local, State and Federal ordinance, laws and regulations governing the use of explosives.
- D. Blasting shall be conducted so as not to endanger persons or property, and whenever required, the blast shall be covered with mats or otherwise satisfactorily confined. The CONTRACTOR shall be held responsible for and shall make good any damage caused by blasting or accidental explosions.
- E. The CONTRACTOR shall permit only authorized and qualified persons to handle and use explosives.
- F. Smoking, firearms, matches, open flame lamps, and other fires, flame or heat producing devices and sparks shall be prohibited in or near explosive magazines or while explosives are being handled, transported or used.
- G. No person shall be allowed to handle or use explosives while under the influence of intoxicating liquors, narcotics, or other dangerous drugs.
- H. All explosives shall be accounted for at all times. Explosives not being used shall be kept in a locked magazine, unavailable to persons not authorized to handle them. The CONTRACTOR shall maintain an inventory and use record of all explosives. Appropriate authorities shall be notified of any loss, theft, or unauthorized entry into a magazine.
- I. No explosives or blasting agents shall be abandoned.
- J. CONTRACTOR's employees authorized to prepare explosive charges or conduct blasting operations shall use every reasonable precaution including, but not limited to, visual and audible warning signals, flags, or barricades, to ensure safety.
- K. It shall be CONTRACTOR's responsibility to incorporate the use of seismic monitoring should rock excavation, by use of explosives, occur within 300 feet of any residential, commercial, or of any miscellaneous structure. Blasting conducted near dams or bridge foundations shall incorporate the use of a seismic monitor should such blasting occur within 500 feet of said dam and/or bridge foundation. CONTRACTOR shall maintain all seismic records and blasting logs to be furnished to ENGINEER as specified.
- L. Disintegrate rock and remove from excavation.
- M. Cut away rock at excavation bottom to form level bearing.
- N. Remove shaled layers to provide sound and unshattered base for pipe foundations.
- O. Remove excavated material from site.
- P. Correct unauthorized rock removal or overbreak in accordance with backfilling and compaction requirements at his own expense.

3.04 FIELD QUALITY CONTROL

Provide for visual inspection of bearing surfaces and cavities formed by removed rock for inspection by ENGINEER or his representative prior to laying of pipe.

END OF SECTION 31 23 16.26

SECTION 31 25 00

EROSION AND SEDIMENTATION CONTROLS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Erosion control shall be employed during the construction period and shall include all measures required to prevent soil erosion from the site until permanent erosion control measures are installed. WORK shall be accomplished through, but not limited to, the use of berms, dikes, sediment barriers, sediment traps, sediment basins, silt fences, temporary grasses, check dams, mulching, construction exits and slope drains.
- B. Erosion control measures described herein shall be continued until such time as permanent planting and restoration of natural areas is effectively in control of erosion from project site.
- C. Failure to install and maintain temporary erosion control measures throughout the construction period may be cause to halt construction by governing authorities until such measures are correctly installed and operational.
- D. CONTRACTOR shall comply with applicable codes, rules, ordinances, regulations, and laws of local, municipal, state or federal authorities having jurisdiction over project.
- E. CONTRACTOR shall comply with the State of Georgia Erosion and Sedimentation Control Act (latest revision) and State of Georgia Department of Natural Resources, Environmental Protection Division, General Permit No. GAR 100002.
- F. All work under this Contract shall be done in conformance with and subject to the limitations of the Manual for Erosion and Sediment Control in Georgia (the "Green Book"), 2016 Edition or latest update, as adopted by the Georgia Soil and Water Conservation Commission (GSWCC).

1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO), M 288, Standard Specification for Geotextile Specification for Highway Applications.
- B. "Manual for Erosion and Sediment Control in Georgia" published by the State Soil and Water Conservation Committee of Georgia.
- C. Georgia Department of Transportation (GDOT) Standard Specifications Construction of Transportation Systems, Latest Edition.

1.03 PROJECT/SITE CONDITIONS

- A. Coordinate temporary pollution control provisions with permanent erosion control features to assure economical, effective, and continuous erosion control throughout construction and post-construction periods.
- B. It is anticipated that the location and nature of the erosion and sediment control devices may need to be adjusted from time to time depending ongoing WORK. The construction schedule may impact the placement and need for specific devices required for the control of erosion. The Contractor shall develop and implement techniques as may be required to minimize erosion and off-site sedimentation. The location and extent of erosion and sedimentation control devices shall be revised as necessary during construction. All deviations from the erosion and sedimentation control provisions shown on the Contract Drawings shall have the prior acceptance of the Engineer and shall be completed at no additional cost to the Owner.

PART 2 – PRODUCTS

2.01 FILTER FABRIC

- A. Geotextile filter cloth material shall be pervious sheets of strong, rot-proof plastic fabric meeting the requirements of AASHTO M 288 for Sediment Control Fabrics.
- B. Silt fence shall be constructed in accordance with details shown on Drawings or may be a prefabricated proprietary type subject to approval by ENGINEER.

2.02 HAY BALE BARRIERS

Hay bales shall be well compacted straw, standard size, wire bound. Hay bales may be used as an alternate to silt fence as approved by ENGINEER.

2.03 GRASS

- A. Grass seed for temporary erosion control shall be applied at the rates and dates indicated on the Drawings.
- B. For additional information regarding temporary grassing and mulching, see the "Manual for Erosion and Sediment Control in Georgia".

2.04 FERTILIZER

- A. Commercial grass fertilizer with a 10N-10P-10K proportion.
- B. Agricultural lime to be applied at a rate of one (1) ton per acre.

2.05 MULCH

- A. Dry straw or hay of good quality, free of weed seed - spread at a rate of 2 ½ tons per acre.
- B. Wood waste, chips, sawdust or bark - spread 2 to 3 inches deep (about 6 to 9 tons per acre).
- C. Erosion control matting or netting, such as excelsior, jute, textile and plastic matting, and netting applied in accordance with manufacturer's recommendations.

2.06 EROSION CONTROL MATTING & BLANKETS

blanket matting in accordance with GDOT Standard Specification Section 713. Staples shall be used to anchor the matting. U-shaped wire (11-gauge or greater) staples with legs at least 6-inches in length shall be used.

PART 3 – EXECUTION

3.01 GENERAL

- A. Temporary erosion control shall be directed toward and have the purpose of controlling soil erosion at its potential source. Downstream sediment entrapment measures shall be employed, but only as a backup to primary control at the source.
- B. A continuing program of installation and maintenance of sediment control measures shall be employed during the construction period.

- C. Erosion Control Schedule
 - 1. Prior to the pre-construction conference, CONTRACTOR shall submit to the ENGINEER his proposed erosion control plan for the project in accordance with requirements of this section. The schedule shall be based on an analysis of the project conditions and shall be in written form. This schedule shall specifically indicate the sequence of clearing and grubbing, earthwork operations, including trenching and backfilling, construction of permanent erosion control features and the proposed uses of temporary erosion control features. Schedule shall also include proposed methods to prevent pollution of streams, lakes and rivers and other water resources.
 - 2. CONTRACTOR shall outline his proposed methods of controlling erosion and preventing pollution on public and construction access roads, staging areas and waste disposal areas.
 - 3. No work shall be started until the aforementioned plans and schedules have been accepted by ENGINEER. CONTRACTOR will be responsible for accomplishment of work in accordance with accepted plans and schedules. ENGINEER may approve changes made necessary by unforeseen circumstances which are beyond the control of CONTRACTOR.
- D. ENGINEER has the authority to limit the surface area of erodible earth materials exposed by clearing and grubbing, the surface area of erodible earth exposed by excavation and backfill operations and to direct CONTRACTOR to provide immediate permanent or temporary erosion and pollution control measures to prevent contamination of adjacent streams or other water courses.
- E. Clearing and grubbing operations shall be so scheduled and performed that grading operations and permanent erosion control features can immediately follow thereafter, if the project conditions permit, otherwise temporary erosion control measures will be required between successive construction stages.
- F. CONTRACTOR shall limit area of excavation, trenching and pipe laying operations in progress commensurate with CONTRACTOR's capability and progress in keeping finish grading, mulching, seeding and other permanent and/or temporary measures current with accepted schedule.
- G. Prevent dust at all times from leaving area of work by utilizing water or other dust inhibitors.

3.02. TEMPORARY GRASSING AND MULCHING

- A. Where staged construction or other conditions not controlled by CONTRACTOR prohibit the completion of work in a continuous manner, ENGINEER may order CONTRACTOR to apply temporary seeding or temporary mulch to an erodible area.
- B. Temporary grass shall consist of sowing a quick growing species of grass suitable to the area and season. Seeding rates shall be as shown on the Drawings. Ground preparation will be limited to blading the area to the amount deemed practical by the ENGINEER for a seed bed and the elimination of water pockets. Fertilizer shall be applied at a rate of 14 pounds per 1,000 square feet.
- C. Areas to be mulched need not be to finished grade. The mulched areas may be placed on slopes as steep as 2:1 using a tractor to imbed the mulch into the slope.
- D. Commercial matting and netting. Follow manufacturer's specifications included with the material.

3.03 SILT FENCES

- A. Temporary silt fences shall be located at all points where surface water can leave the construction area.
- B. Silt fences shall be constructed to remove sediments from flowing water through filtration and sedimentation. Silt fences shall be constructed in accordance with the details shown on Drawings.

- C. Silt fences shall be arranged to create ponding behind them. Provision shall be made for removing accumulated sediments and maintaining ponding capacity. As a minimum, remove sediment when deposits reach approximately one-third the height of barrier.
- D. Silt fences shall be removed and the area restored when permanent erosion control is effective.

3.04 MATTING AND BLANKETS

- A. Install matting where indicated on the Drawings.
- B. Shape area to be protected to required shape and grade and thoroughly compact after seedbed preparation. Remove rocks or clods over 1½ in. in diameter and sticks and other material that will prevent contact of excelsior matting with the soil surface. Complete seeding and fertilizing activities in accordance with Specifications prior to installing the excelsior matting.
- C. Unroll matting in the direction of the flow of water with edges and ends butted snugly against each other. When unrolled, the netting shall be on top and the fibers in contact with the soil. The mats shall be anchored firmly to the soil with staples driven vertically into the ground and flush with the surface of the mats. On slopes flatter than 4H:1V, staples shall be spaced no more than 5 ft. apart on all edges and 1 ft. apart at all joints and ends. On all slopes 4H:1V or steeper or in depressions defined by the grading plans, staples shall be spaced 2½ to 3 ft. apart. At all joints and ends, staples shall be spaced no more than 6 in. apart. The spacing of staples may be modified to fit conditions as directed by the ENGINEER.

3.05 GRADING OPERATIONS

- A. Grading operations shall be scheduled so that ground surface will be disturbed for the shortest possible time before permanent construction is installed. Large areas shall be maintained as flat as possible to minimize soil transport through surface flow.
- B. Wherever steeper slopes or abrupt changes in grade are required, a diversion or berm shall be constructed at the top of slope to cause surface water to flow along the diversion to a control point to be transported downslope in a slope drain. In no case shall surface water be allowed to flow uncontrolled down slopes.

3.06 CONSTRUCTION IN STREAM BEDS

Unless otherwise approved in writing by ENGINEER, construction operations in rivers, streams and impoundments shall be restricted to those areas which must be entered for the construction of temporary or permanent structures. As soon as conditions permit, rivers, streams and impoundments shall be promptly cleared of all false-work, sheeting or piling which are to be removed, debris and other obstructions. Frequent fording of live streams with construction equipment will not be permitted; therefore, temporary bridges or other structures shall be used whenever an appreciable number of stream crossings are necessary. Unless otherwise approved in writing by ENGINEER, mechanized equipment shall not be operated in live streams except as may be required to construct channel changes and temporary or permanent structures, and to remove temporary structures.

3.08 RUN-OFF EROSION AND SEDIMENTATION CONTROLS

- A. During construction, route run-off through sedimentation barriers and check dams as practical.
- B. CONTRACTOR shall maintain sedimentation devices in functional condition. Sedimentation barriers and check dams shall be cleaned out when these devices are at least 60 percent of their capacity. Defective materials in barriers and check dams shall be replaced.

- C. CONTRACTOR shall establish sedimentation barriers at the toe of slopes under construction. These barriers may be relocated and reused after permanent slope stabilization becomes established. As they are relocated, any defective materials shall be replaced. In addition, all debris and silt at previous location will be removed.
- D. All construction vehicles leaving construction site shall have mud cleaned from their tires at these points to protect public streets from the transportation of sediment from site.

3.09 CLEANUP AND REMOVAL

- A. At the time that permanent erosion control is effective, temporary devices and their accumulated sediments shall be removed.
- B. Silts and deposits removed from control barriers shall be placed in eroded areas and shall be replanted.

END OF SECTION 31 25 00

SECTION 31 37 00

RIPRAP

PART 1 GENERAL

1.01 SCOPE OF WORK

This section pertains to the use of riprap for the protection of rivers, creeks and ditches from the effects of erosion and scouring. The work required consists of all materials, accessories, equipment, tools and labor required to install riprap.

1.02 REFERENCES

Georgia Department of Transportation (GDOT) Standard Specifications Construction of Transportation System, most current edition.

PART 2 PRODUCTS

2.01 RIP RAP

All stone for rip rap shall be either Type 1 or Type 3 conforming to the requirements within Section 805 of GDOT Standard Specifications. Type of rip rap used shall be indicated on the Construction Drawings for each location used.

2.02 GEOTEXTILE FILTER FABRIC

- A. As an alternate to filter bedding stone, the contractor may use geotextile filter fabric.
- B. Filter fabric shall have strength and engineering properties that meet or exceed those of non-woven NW10 manufactured by GSE or approved equivalent.

PART 3 EXECUTION

3.01 INSTALLATION/APPLICATION

- A. Preparation of Foundation: Immediately prior to the placement of rip rap, trim slopes or ground surface within reasonably close conformity to existing lines and grades. Overexcavate ground surface by a depth equal to specified thickness of stone layer. Thoroughly compact surface by use of hand or mechanical tamps.
- B. Place geotextile fabric on smooth, uniform surface or slope. Place the fabric loosely enough to conform to minor irregularities.
- C. Place machined rip rap by use of appropriate power equipment in a manner that will produce a surface that is uniform in appearance without concentration of fines or small pieces of stone at any location. Hand work may be required to correct irregularities. Place rip rap so that the top surface matches the required invert of ditches and culverts. Minimize drop height when placing rip rap. Place rip rap carefully to avoid puncturing or displacing geotextile fabric.

3.02 CLEAN-UP

- A. After installation is complete, the area surrounding the rip rap shall be cleared of all debris.
- B. Grassing or mulch stabilization is to be installed on all disturbed areas after clean-up is complete.

END OF SECTION 31 37 00

SECTION 32 02 00

SITE RESTORATION

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. Work included in this section consists of, but is not limited to: the restoration of pavement (asphalt, concrete and granular), driveway, concrete curbs and gutters, sidewalks, fences, walls, underground and above ground utilities, repair, replacement and/or relocation. Restoration of the landscaping, i.e., shrubs, trees and grassing, is also part of this work.
- B. The CONTRACTOR shall visit the site prior to submitting a bid and become familiar with the existing conditions. No additional compensation or time extensions will be given due to the contractor's execution of the work described above.
- C. No separate payment will be made for work covered under this section. Costs should be included with the price bid for other items.

1.02 QUALITY ASSURANCE

- A. The CONTRACTOR shall notify the Utility Protection Center at least 72 hours prior to beginning any construction. Call TOLL FREE 811.
- B. Any existing site improvements damaged during construction will be repaired at the CONTRACTOR's expense, to its existing condition or as directed by the ENGINEER.

PART 2 – PRODUCTS

2.01 MATERIALS

Existing materials may be reused when restoring the construction site to original condition unless those materials have been damaged or deteriorated in any way. If material cannot be reused as determined by the ENGINEER, it shall be replaced with new material of like type.

PART 3 – EXECUTION

3.01 GENERAL

Particular care shall be taken to minimize disturbance to existing site improvements within the limits of construction. The CONTRACTOR will take whatever measures are necessary to prevent damage which may include, but is not limited to, erection of barriers, tree protective fencing, shoring and bracing of excavations and staging of the construction.

3.02 CONSTRUCTION

All work will proceed in an orderly sequence and the construction will be done in a workmanlike manner. No excavations will be allowed to remain open overnight and they will either be properly backfilled or covered with steel plates to allow safe crossing of trenches by vehicles and/or pedestrians.

3.03 MAINTENANCE

- A. The CONTRACTOR will notify the ENGINEER to review restored areas as soon as construction is complete and no further disturbances/damages would be likely to occur.

- B. The CONTRACTOR shall warrant the work free from defects of material and workmanship for a period of one year after acceptance.
- C. Clean up work areas by removing any scraps, rubbish or surplus material and dispose of them properly off the project site.
- D. Wash and hose down paved surfaces to remove all mud, debris, and other extraneous material, just prior to final review.

END OF SECTION 32 02 00

SECTION 32 16 13

CURBS, GUTTERS, SIDEWALKS AND DRIVEWAYS

PART 1 – GENERAL

1.01 SCOPE OF WORK

WORK included in this Section consists of repair or replacement of sidewalks, driveways, curbs and gutters, and storm drainage structures.

1.02 RELATED WORK

Division 31 - Earthwork

1.03 REFERENCES

- A. Georgia Department of Transportation (GDOT) Standard Specifications, Construction of Transportation System, most current edition.
- B. American Society for Testing and Materials (ASTM) Annual Book of Standards: ASTM C 150, Standard Specification for Portland Cement.

PART 2 – PRODUCTS

2.01 CRUSHED STONE BASE

Stone base shall be a Graded Aggregate Base conforming to Section 815 of GDOT Standard Specifications.

2.02 CONCRETE

Shall be ready-mixed concrete conforming to ASTM C 150, Type II Concrete.

2.03 HOT MIX ASPHALTIC CONCRETE

Mix Type as shown on drawings, conforming to Section 400 of GDOT Standard Specifications.

2.04 STORM DRAIN PIPE

In accordance with Section 550 of GDOT Standard Specifications.

2.05 TACK COAT

In accordance with Section 413 of GDOT Standard Specifications.

PART 3 – EXECUTION

3.01 GENERAL

- A. Restore all sidewalks, driveways, curbs and gutters, and storm drains to or better than the original, but not less thickness or quality than specified herein or shown on the Drawings.
- B. Carefully backfill any excavated area on which sidewalks, driveways or curbs and gutters are to be placed as specified in Section 31 23 00 of these Specifications as applicable.

- C. If, prior to the expiration of the warranty period, any sidewalk storm drain, driveway or curb and gutter which has been damaged, due to undermining, or for any other cause which may be attributed to the work of the CONTRACTOR, the CONTRACTOR shall remove such damaged work and all loose earth. He shall then backfill with crushed stone base, properly compacted and replace damaged material/structure.
- D. WORK which the CONTRACTOR may do in connection with the replacement and repair of damaged work during the period of maintenance, shall be done at his expense, in accordance with the rules and requirements of the authority within whose jurisdiction such pavement is located, and in accordance with the additional requirements of the specifications, and the CONTRACTOR shall furnish evidence to the ENGINEER that the work has been completed to the satisfaction of such authority.
- E. Before replacing any sidewalk, driveway or curb and gutter, remove the existing sidewalk, driveway and/or curb and gutter back from the edge of excavation at least 12 inches or to the nearest joint if the nearest joint is within two (2) feet.
- F. All cuts shall be made by channeling machine, pneumatic tools, or such other methods as will furnish a straight clean cut in the concrete without undue shattering.
- G. The CONTRACTOR shall provide crushed stone base over trenches after completion of backfill.
- H. Should settlement, cracks or other indications of failure appear in concrete, pavement, driveways, curbs, pipes, or other structures the defective material shall be removed to the extent necessary to secure firm, undisturbed bearing and shall be relaid in a satisfactory manner.

3.02 CURB AND GUTTER

- A. Portland Cement Concrete curbs and gutters shall conform to Section 441 of Georgia D.O.T. Standard Specifications. Match existing curb. Construct 1/2" wide expansion joints with premolded joints filler across curb at all tangent points and at fifty feet intervals and one inch wide expansion joint filler and 3/4" joint sealing between curbs and concrete paving. Finish curb surface with dense uniform texture equal to burlap drag, and cross-score with 1/4" deep cross joints at ten foot intervals.
- B. Concrete curbs and gutters shall be finished in accordance with GDOT Standard Specifications. Face forms shall be removed as soon as possible and the exposed surfaces finished with a wood float. Straightedging, done along the edge of the gutter and top of curb and median shall conform to those requirements for the adjacent pavement, but with no irregularities to exceed 1/4 inch in 10 feet.
- C. Machine methods of placing may be used, providing the end result is satisfactory.

3.03 CONCRETE SIDEWALK

- A. CONTRACTOR shall relay/restore all sidewalks disturbed by the CONTRACTOR during construction.
- B. Sidewalks shall conform to requirements of Section 441 of Georgia D.O.T. Standard Specifications. Minimum sidewalk thickness shall be 4 inches. Provide transverse contraction joints at 6' interval by cutting a groove in the fresh concrete 1" deep with a jointer having an approved radius and a cutting blade not over 1/8" thick.
- C. Construct 1/2" wide expansion joints with premolded joint filler across walks at a maximum of fifty feet intervals. Finish to a broom and burlap drag gritty surface. Tool all joints and all edges to provide smooth border between sections. Match existing sidewalks.

- D. Concrete sidewalks shall be given a finish made by stiff-bristle brooming. The surface shall be tested with a 10 foot straightedge laid parallel to the centerline. Any irregularities in excess of 1/4 inch in 10 feet shall be eliminated while the concrete is still plastic. Concrete sidewalk constructed as curb cut (wheelchair) ramps shall have a rough or textured finish.

3.04 RESTORING STORM DRAINAGE PIPE

- A. The CONTRACTOR shall restore and replace storm drainage pipe and appurtenances when they are disturbed during execution of the work under this Contract at no additional cost to the OWNER.
- B. The storm drainage structures shall be replaced to the same horizontal and vertical location prior to their removal or disturbance.
- C. Materials used in the replacement of storm drainage structures shall be of the same size, type, and length of that removed.
- D. Storm drainage pipe damaged due to the negligence on the part of the CONTRACTOR shall be replaced at the CONTRACTOR'S expense.

3.05 CONCRETE AND ASPHALT DRIVEWAYS

- A. CONTRACTOR shall restore all driveways disturbed by the CONTRACTOR during construction.
- B. Driveway sections shall be removed by saw cutting pavement.
- C. Construct driveways in accordance with the Drawings, and GDOT Standard Specification Section 400 for asphalt, and GDOT Section 430 for concrete. Finished elevations shall match existing elevations.

3.06 GRAVEL DRIVEWAYS

- A. CONTRACTOR shall restore all driveways disturbed by the CONTRACTOR during construction.
- B. Construct driveways in accordance with the Drawings, and GDOT Standard Specification Section 310. Finished elevations shall match existing elevations.

3.07 CLEAN UP

- A. Before work shall be considered complete, remove material not used and rubbish of every character from job site.
- B. Any subsequent settlement of pavement, exposed surfaces, or backfill shall be repaired and the surface shall be brought to grade.
- C. Any and all items disturbed by the construction shall in every case be restored to their original or better condition as closely as possible prior to completion of the construction.

END OF SECTION 32 16 13

SECTION 32 31 13

CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.01 SCOPE

The work covered in this section shall include all materials, labor, and equipment necessary for a complete installation of the chain link fencing and gates as shown on the Drawings.

1.02 REFERENCES

American Society for Testing and Materials (ASTM), Annual Book of Standards

- A. ASTM A121 Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.
- B. ASTM A153 Standard Specification for Zinc-Coating (Hot-Dipped) on Iron and Steel Hardware.
- C. ASTM A392 Zinc-Coated Steel Chain-Link Fence Fabric.
- D. ASTM A817 Standard Specification for Metallic-Coated Steel Wire for Chain-Link Fence Fabric.
- E. ASTM F1083 Pipe, Steel, Hot-Dipped, Zinc-Coated (Galvanized) Welded, for Fence Structures.

1.03 SYSTEM DESCRIPTION

Design Requirements

- A. Overall Fence Height: 7 feet including 6-foot high fabric plus three strands of barbed wire supported by 45-degree extension arms.
- B. Line Post Spacing: 10 feet maximum.
- C. Gates: Swing gate with frames of steel tubing with welded connections and internal bracing.

PART 2 PRODUCTS

2.01 POSTS AND RAILS

- A. Posts and fabric shall be as specified:

Fabric:	2" Mesh 9 Gage
Corner Post:	3"
Line Post:	1-1/2"
Gate Post:	4"
Top Rail & Brace:	1-1/4"
- B. Posts, rails, frames, and braces shall be seamless steel round pipe, standard weight Schedule 40, in accordance with ASTM F1083.
- C. Top rail shall be continuous with coupling spaced at intervals not to exceed 20 feet.

- D. Post Top
1. All posts shall be provided with post tops which will fit over the outside of posts to exclude moisture and shall be combination tops with barbed wire supporting arms. Post tops shall be provided with a hole suitable for the through passage of the top rail. Posts without barb arms shall be fitted with a cap.
 2. Barbed wire supporting arms shall be at an angle of 45°, and shall be fitted with clips or other means for securing three lines of barbed wire, the top line approximately 12" horizontally from the fence line and 12" above the top of the fabric and the other lines spaced uniformly between the top line and the top of the fabric. Arm shall withstand a 250-pound vertical load at outer wire connection.
- E. Finish shall be hot-dipped galvanized, minimum 1.8 oz/ft², in accordance with ASTM F1083.

2.02 CHAIN LINK FABRIC

- A. Fabric shall be steel wire, two-inch diamond mesh, 9 gage, top and bottom selvage to be twisted. Wire break strength minimum 1,290 pounds.
- B. Finish shall be galvanized or aluminum coated; galvanized after weaving per ASTM A392, Class 2, to provide a zinc coating of no less than 2.0 oz/ft² of uncoated wire surface; or aluminum coated per ASTM A 817, Class 2, to provide a coating of no less than 0.040 oz/ft² of uncoated wire surface. Aluminum coating shall have adequate adherence to withstand wrapping the coated wire on its own diameter without cracking or flaking of the coating.

2.03 POST BRACES

A horizontal, galvanized post brace shall extend to each adjacent line post at mid-height of the fabric for each gate, corner, pull and end post. A diagonal 2" diameter truss rod shall also be provided from the line post to the gate, corner, pull, or end post, with a turnbuckle or other equivalent device for tension adjustment. Two diagonal tension truss rods shall be provided for each fence panel adjacent to a gate, end, corner or pull post.

2.04 TENSION (STRETCHER) BAR

Stretcher bars 1/4" x 3/4" inch in size, with length 1" less than fabric height, shall be provided for stretching and securing the fabric at each gate, end, corner and pull post, one for each gate and end post and two for each corner and pull post.

2.05 TENSION WIRE

Wire shall be provided along the bottom edge. It shall be not less than No. 7 gauge coiled spring wire. Galvanized ties or clips shall be provided for attaching tension wires to fabric.

2.06 WIRE TIES

Shall be 9-gage.

2.07 BARBED WIRE

- A. Barbed Wire: ASTM A121 galvanized steel, double strand, 12-1/2 gage wire with 14 gage, 4-point round barbs with 4 inch maximum spacing.
- B. Finish: Galvanized, Class 3, zinc coating minimum 0.80 oz/ft² or aluminum coating minimum 0.30 oz/ft².

2.08 GATE

- A. Frame
 - 1. Fabricate gate frames from steel pipe to match fence framework, a minimum of 1-7/8" outside diameter. Assemble gate frames by welding or with special fittings and rivets for rigid connections, that provides security against removal or breakage connections.
 - 2. Extend end members of gate frames 1'-0" above to member and prepare to receive 3 strands of wire. Provide clips for securing wire to extensions.
 - 3. Install diagonal cross-bracing consisting of 3/8" diameter adjustable length truss rods on gates to ensure frame rigidity without sag or twist.
- B. Fabric - Provide same fabric as for fence. Install fabric with stretcher bars at vertical edges and at top and bottom edges. Attach stretcher bars to gate frame at not more than 15" o.c.
- C. Gate Hardware: Provide hardware and accessories for each gate, in accordance with the following:
 - 1. Hinges: Size and material to suit gate size, non-lift-off type, offset to permit 180 degree gate opening. Provide 1-1/2 pair of hinges for each leaf.
 - 2. Latch: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch. Center plunger rod catches to be provided on double gates.
 - 3. Padlock: Bronze cylinder type lock with three (3) keys is to be provided for each set of gates. Locks are to be keyed per OWNER's direction.
 - 4. Keeper: Provide keeper for vehicle gates, which automatically engages gate leaf and holds it in open position until manually released.

2.09 FINISHES

- A. Components: Hot-dipped, zinc-coated, minimum 2.0 oz/ft².
- B. Accessories and Hardware: Ferrous materials hot-dip, zinc-coated, ASTM A153, match framing and components finish.

PART 3 EXECUTION

3.01 PREPARATION

Do not begin installation and erection before final grading is completed.

3.02 POST INSTALLATION

- A. Excavation: Drill or hand excavate (using post hole digger) holes for posts to diameters and spacings indicated, in firm, undisturbed or compacted soil.
 - 1. Excavate holes for each post to minimum hole diameter four times post outside diameter.
 - 2. Excavate hole depths minimum 3" lower than post bottom, with bottom of posts set not less than 36" below finish grade surface. Excavate deeper for adequate support in soft and/or loose soils.
- B. Fence Post Setting
 - 1. Line posts shall be placed equidistant at intervals not to exceed 10 ft. o.c. The intervals to be measured parallel to the grade of proposed fence and in the line of the fence.
 - 2. Posts shall be set vertically, plumb, and in line, encased in cylindrical concrete footings. Place concrete around posts in a continuous pour and tamp for consolidation. Slope and trowel smooth at least 1" above grade and crown to shed water.

3.03 RAIL INSTALLATION

Top Rail: Connect securely to the posts using boulevard clamps or other suitable means, so that a continuous brace is formed.

3.04 CHAIN LINK FABRIC

Chain link fence fabric shall be installed over the outside face of the fence framework. Fabric shall be tied to line posts and middle rails with 9-gage galvanized or aluminum wire spaced 24" maximum. Install bottom of fabric a maximum of 2 inches above finished grade.

3.05 TENSION WIRES

Install tension wires along bottom of fence before stretching fabric and tie to each post. Fasten fabric to tension wire using 9-gage, wire ties or galvanized wire hog rings spaced 24" o.c.

3.06 BARBED WIRE

Pull wire taut and install to extension arms and secure to end post or terminal arms in accordance with manufacturer's instructions.

3.07 GATES

Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate.

3.08 TENSION (STRETCHER) BARS

Thread through or clamp to fabric 4" o.c. and secure to posts with metal bands spaced 15" o.c.

3.09 BRACE ASSEMBLIES

Install braces so posts are plumb when diagonal rod is under proper tension.

3.10 SITE RESTORATION/CLEAN-UP

- A. Remove all construction refuse and restore area to original condition.
- B. Coat areas where the galvanized or aluminum finish has been removed or damaged during installation with zinc-enriched paint.

END OF SECTION 32 31 13

SECTION 32 92 00

GRASSING

PART 1 – GENERAL

1.01 SCOPE

- A. Work under this section includes preparation of subsoil, placement of topsoil and seeding or sodding all areas disturbed during construction activities or large grass fields as defined on the drawings.
- B. This section also includes maintenance of all grassed areas. Maintenance consists of regular mowing, fertilizing, and regular watering until owner acceptance of project.

1.03 REFERENCES

- A. "Manual for Erosion and Sediment Control in Georgia" - latest edition, prepared by the Georgia Soil and Water Conservation Commission.
- B. ASPA (American Sod Producers Association) - Guide Line Specifications to Sodding.
- C. Standard specifications, Construction of Roads and Bridges - latest edition, State of Georgia Department of Transportation.

1.04 DEFINITIONS

Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.05 QUALITY ASSURANCE AND SUBMITTALS

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
- B. Ensure strict compliance with "Manual for Erosion and Sediment Control in Georgia" - latest edition, prepared by the Georgia Soil and Water Conservation Commission.
- C. Sod: Minimum age of 18 months with root development that will support its own weight without tearing when suspended vertically by holding the upper two corners.
- D. Submit sod certification for grass species and location of sod source.
- E. Submit certification of type and quantity of fertilizer and pH control material applied.
- F. Submit seed, fertilizer, and mulch mixture proposed for hydraulic seeding, if used.

1.06 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for fertilizer and herbicide composition.
- B. Provide certificate of compliance from authority having jurisdiction indicating approval of seed mixture.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- C. Deliver sod on pallets. Protect exposed roots from dehydration.
- D. Do not deliver more sod than can be laid within 36 hours.

1.10 MAINTENANCE SERVICE PERIOD

Furnish maintenance of grassed areas for three (3) months from Date of Substantial Completion

PART 2 – PRODUCTS

2.01 SEED MIXTURE

- A. Seed Mixture: To be based on the properly proportioned mix specified for the planting dates listed on the Drawings.
- B. Sod: ASPA Nursery grown cultivated grass sod; type indicated with strong fibrous root system, free of stones, burned or bare spots; containing no more than 5 weeds per 1000 sq. ft. Type of sod is to match existing. CONTRACTOR to determine type required.

2.02 SOIL MATERIALS

Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0.

2.03 ACCESSORIES

- A. Mulching Material: Oat straw, wheat straw, or wood cellulose fiber, free from weeds, foreign matter detrimental to plant life, and dry. Hay is acceptable.
- B. Fertilizer: Commercial fertilizer recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil to the following proportions: Nitrogen - 5 percent, Phosphoric Acid - 10 percent, Soluble Potash - 15 percent.
- C. Lime: Natural limestone containing not less than 85% of total carbonates, ground so that not less than 90% passed a 10-mesh sieve and not less than 50% passes a 100-mesh sieve. Provide lime in the form of dolomitic limestone meeting the specified requirements.
- D. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.
- E. Herbicide: "Round-up" by Monsanto, or approved equivalent.
- F. Stakes: Softwood or oak lumber, chisel pointed, or steel posts.
- G. Wood Pegs: Softwood, sufficient size and length to ensure anchorage of sod.
- H. Wire Mesh: Interwoven Hexagonal plastic mesh - 2 inches.

PART 3 EXECUTION

3.01 EXAMINATION

Verify that prepared soil base is ready to receive the work of this Section.

3.02 PREPARATION OF SUBSOIL

- A. Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated subsoil.
- C. Scarify subsoil to a depth of 3 inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

3.03 PLACING TOPSOIL

- A. Spread topsoil to a minimum depth of 4 inches over area to be seeded or 2 inches over area to be sodded. Rake until smooth.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.
- D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.

3.04 FERTILIZING

- A. Apply fertilizer at a rate of 1500 lbs/ac.
- B. Apply lime at a rate of 2000 lbs./ac.
- C. Apply after smooth raking of topsoil.
- D. Do not apply fertilizer at same time or with same machine as will be used to apply seed. Do not apply fertilizer more than 48 hours before laying sod.
- E. Mix thoroughly into upper 2 inches of topsoil.
- F. Lightly water to aid the dissipation of fertilizer.

3.05 SEEDING

- A. Grass Seed: See permanent grassing requirements on the Drawings. Grass species to match existing species when replacing grass lawns of property owners.
- B. Apply seed at a rate shown on drawings, evenly in two intersection directions. Rake in lightly.
- C. Do not seed areas in excess of that which can be mulched on same day.
- D. Planting Season: As shown on Drawings.
- E. Do not sow immediately following rain, when ground is too dry, or during windy periods.

- F. Immediately following seeding, apply mulch at a rate of 2 tons per acre. Maintain clear of shrubs and trees.
- G. Apply water with a fine spray immediately after each area has been mulched. Saturate top 4 inches of soil.

3.06 HYDROSEEDING

- A. Products
 - 1. Grass seed: See Permanent Grassing requirement as indicated on the drawings. Grass species to match existing species when replacing grass lawns of property owners.
 - 2. Lime shall be finely ground so that 98 percent will pass through a 20-mesh sieve and not less than 70 percent will pass through a 100-mesh sieve. Rate of lime shall be 2000 pounds (1 ton) to 4000 pounds (2 tons) per sieve.
 - 3. Fertilizer shall be either 6-12-12 or 10-10-10 P-K-N at a rate of 1500 pounds per acre.
 - 4. Fiber mulch shall be wood cellulose mulch or wood pulp fiber at the rate of 500 pounds per acre.
 - 5. Where slopes of 3/4:1 or steeper are to be hydroseeded, the fiber mulch shall be 1000 pounds per acre.
- B. Mixing
 - 1. Thoroughly mix specified materials with water until uniformly blended into a homogeneous slurry suitable for application.
 - 2. Where inoculants are to be used, four (4) times the amount of inoculant recommended by the manufacturer shall be used.
- C. Application
 - 1. Using equipment specifically designed for hydroseeding, apply the slurry at a minimum rate of 1500 pounds per acre, or at the specified seed-sowing rate as shown on the drawings. Apply seed slurry evenly in two intersecting directions with a hydraulic seeder.
 - 2. Do not sow immediately following rain, when ground is too dry, or during windy periods.
 - 3. Apply water with a fine spray immediately after each area has been mulched. Saturate top 2 inches of soil.

3.07 SEED PROTECTION

- A. Cover seeded slopes where grade is greater than 2:1 with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- B. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12 inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- C. Secure outside edges and overlaps at 36 inch intervals with stakes.
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.08 LAYING SOD

- A. Moisten prepared surface immediately prior to laying sod.
- B. Lay sod within 36 hours after harvesting to prevent deterioration.
- C. Lay sod tight with no open joints visible, and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap sod pieces.

- D. Lay smooth. Align with adjoining grass areas.
- E. Place top elevation of sod to be flush with adjoining paving or curbs.
- F. On slopes greater than 2:1, lay sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet on center. Drive pegs flush with soil portion of sod.
- G. Prior to placing sod on slopes exceeding 8 inches per foot or where indicated, place plastic mesh over topsoil. Securely anchor in place with wood pegs sunk firmly into the ground.
- H. Water sodded areas immediately after installation. Saturate sod to 4 inches of soil.

PART 4 – ACCEPTANCE

4.01 GENERAL REQUIREMENTS

- A. CONTRACTOR shall provide plant establishment of the specified permanent vegetation prior to final acceptance of the Project. Plant Establishment shall consist of preserving, protecting, watering, reseeding, or replanting and other such work and at such time as may be necessary to keep the grassed areas in a satisfactory condition. CONTRACTOR shall water the grassed areas during such period as frequently as necessary to promote maximum practicable growth. Water shall be provided by the CONTRACTOR at his expense.
- B. ENGINEER may require replanting at any time if an area or a portion of such area shows unsatisfactory growth. Except as otherwise specified or permitted by the ENGINEER, areas to be replanted shall be prepared in accordance with the requirements of the Specifications as if such replanting was the initial planting. However, the type of fertilizer and the application rate of fertilizer to be furnished and applied by CONTRACTOR as a part of acceptance, occasioned by replanting, shall be determined by soils tests or otherwise established.

4.02 GROWTH AND COVERAGE

- A. Maintain newly graded, topsoiled, and seeded areas until final acceptance. Restore areas showing settlement or washes to specified grades at CONTRACTOR's expense. Newly seeded areas shall be watered as necessary or reseeded at the CONTRACTOR's expense until final acceptance.
- B. It shall be the CONTRACTOR's responsibility to provide satisfactory growth and coverage. Growth and coverage on areas grassed as specified shall be considered to be in reasonably close conformity with the intent of the Contract with the vegetation, exclusive of that from seed not expected to have germinated and shown growth at that time, has reached a point of maturity such that each area shows a satisfactory visible growth with no bare spots larger than one square foot. Bare spots shall be scattered and the total bare areas should not comprise more than 1/100 of any given area.

END OF SECTION 32 92 00

SECTION 33 12 13.13

DUCTILE IRON WATER PIPING

PART 1 – GENERAL

1.01 SUMMARY

WORK covered by this Section consists of furnishing and installing ductile iron water distribution pipes and appurtenances, including, but not limited to, reaction blocking, testing, and disinfection.

1.02 RELATED WORK

- A. Section 312300 – Excavation and Fill

1.03 REFERENCES

- A. Cement Mortar Lining for Ductile Iron and Gray Iron Pipe and Fittings for Water (AWWA C104).
- B. Gray Iron and Ductile Iron Fittings, 3 inches through 48 inches, for Water and Other Liquids (AWWA C110).
- C. Ductile Iron Compact Fittings, 3 inches through 16 inches, for water and other liquids (AWWA C153).
- D. Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings (AWWA C111).
- E. Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand Molds, for Water of Other Liquids (AWWA C151).
- F. Gate Valves, 3 through 48 in. NPS, for Water and Sewage Systems (AWWA C500).
- G. Resilient-Seated Gate Valves, 3 through 12 NPS, for Water and Sewage Systems (AWWA C509).
- H. Installation of Gray and Ductile Cast Iron Water Mains and Appurtenances (AWWA C600).
- I. Disinfecting Water Mains (AWWA C651).

1.04 SUBMITTALS

Submit manufacturer's certifications for all pipe, valves, and fittings shipped to the job site. The certifications shall state that all specified tests have been made and the results thereof comply with the requirements of this Specification. Each certificate shall be signed for the manufacturer by a person having legal authority to bind the manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. CONTRACTOR shall be responsible for safe unloading, storage and care of material furnished by or to him until it has been incorporated into work.
- B. Unload pipe, fittings, or valves by lifting with hoists or skidding to avoid damage.
 - 1. Pipe shall not be unloaded by rolling or dropping off trucks.
 - 2. Pipe handled on skidways shall not be skidded or rolled against pipe already on ground.

- C. Unload material at site of work, near place where it will be placed in trench.
 - 1. Materials shall be placed so as to least interfere with traffic.
 - 2. Provide signs, lights, and barricades as necessary to protect public.
- D. Handle material carefully to prevent breakage and to avoid damage to coatings and linings.
 - 1. Keep interior of pipe, fittings, and valves, free of dirt or foreign matter at all times.
 - 2. Do not place materials in drainage ways or ditches.
- E. Materials that cannot be placed along site of the work shall be stored at CONTRACTOR's expense. OWNER's storage yards may be utilized if available.

1.06 SITE CONDITIONS

Water used for construction, testing, or disinfection will be furnished by OWNER through connections to OWNER's water system made by CONTRACTOR upon approval by OWNER. **CONTRACTOR WILL PAY OWNER FOR WATER AT CURRENT RATES.**

PART 2 – PRODUCTS

2.01 DUCTILE IRON PIPE

- A. Shall conform to latest requirements of AWWA C151.
- B. Shall be cement mortar lined in accordance with AWWA C104 standard thickness.
- C. Unless otherwise specified, pipe shall have push-on compression type joints conforming to AWWA C111 or AWWA C153 (Latest Editions).
- D. Unless otherwise specified, pressure class shall be 350 psi.
- E. Shall be manufactured by U.S. Pipe, American Cast Iron Pipe Company, or pre-approved equal.

2.02 DUCTILE IRON FITTINGS

- A. Fittings for ductile iron pipe shall be cast or ductile iron and shall conform to requirements of AWWA C110 or AWWA C153 and shall be cement mortar lined in accordance with AWWA C104 standard thickness.
- B. Gaskets shall conform to AWWA C111.
- C. Fittings shall be mechanical joint unless otherwise specified on Drawings.
- D. All fittings shall have a minimum working pressure of 250 psi plus 100 psi surge allowance.
- E. Fittings shall be manufactured by ACIPCO, Sigma, Tyler Union, or US Pipe.

2.03 JOINTS

- A. Push-On Joints – Unrestrained push-on joints shall be the rubber ring compression, push-on type joint suitable for buried service, and shall be Fastite as manufactured by U.S. Pipe or approved equal. This joint is not permitted on fittings or specials. Joints assembly and field cut joints shall be made in strict conformance with AWWA C600 and manufacturer recommendations.
- B. Mechanical Joints – Unrestrained mechanical joints shall meet the requirements of AWWA C110.

C. Restrained Joints

1. General: Restrained joints are required for exposed piping, all piping installed under pavement and all buried fittings and specials. Restrained joints for buried pipe sections shall be provided as required for thrust restraint or where specified. Unless otherwise specified, restrained joints shall be flanged-end for exposed service and push-on for buried service.
2. Push-On Joints: Restrained push-on joints shall be Flex-Ring or Lok-Ring Joint as manufactured by American Cast Iron Pipe Company, HDSS Joint as manufactured by U.S. Pipe, or approved equal. Restrained joints shall be capable of being deflected after full assembly. Joint assembly shall be in strict conformance with AWWA C600 and manufacturer's recommendations. Restraining gasket joints shall be assembled with American Cast Iron Pipe Company Fast-Grip, or U.S. Pipe Field-Lok gasket.
3. Flange Assemblies: Unless otherwise specified, flanges shall be ductile iron and shall be threaded-on flanges conforming to ANSI/AWWA C115/A21.15 or cast-on flanges conforming to ANSI/AWWA C110/A21.10. Flanges shall be adequate for 250 psi working pressure plus water hammer allowance of 100 psi. Bolt circle and bolt holes shall match those of ANSI B.16.1, Class 125 flanges.
4. Mechanical Joints: Where specified, restrained mechanical joints shall be the positive restraint type. The CONTRACTOR shall install retainer glands on each joint of ductile iron pipe where shown on the plans or otherwise specified.

2.04 BOLTS AND NUTS

Corrosion-resistant bolts and nuts for use with ductile iron joints shall be high-strength, low-alloy steel as specified in ANSI/AWWA C111/A21.11.

2.05 DETECTION TAPE

- A. Detection tape shall be a minimum of 2" wide, consisting of an inert, bonded layer of plastic or mylar with a metallized foil core and be highly resistant to alkalis, acids and other chemical components encountered in soils. The tape shall be colored blue and bear the imprint "CAUTION: WATER LINE BURIED BELOW".
- B. Detection shall be buried with the printed side up 4 to 10 inches deep. If conditions require, a 3" wide detection tape may be installed up to 20 inches deep. The Contractor shall take all necessary precautions to ensure the tape is not pulled, distorted, damaged or otherwise misplaced in completing trench backfill.

PART 3 – EXECUTION

3.01 ALIGNMENT AND GRADES

- A. Pipe and appurtenances shall be installed at locations shown on the CONTRACT DRAWINGS and to position, alignment, and grade shown thereon, or in event of conflict, as directed by ENGINEER.
- B. Depth of Pipes
 1. Shall be 48 inches measured from finished grade to top of pipe unless otherwise specified.
 2. Where obstructions are encountered, depth may be greater than 48 inches.
 3. Depths less than 48 inches may be used only when approved by ENGINEER in writing.
- C. Pipe Curvatures shall be within horizontal or vertical permissible deflection at joint, as specified by manufacturer or AWWA Specification C600 (Latest Edition).

3.02 INSTALLING PIPE

A. General

1. Pipe and appurtenances shall be installed only when trench conditions are suitable.
2. Trenches must be dry.
3. Proper implements, tools, and facilities shall be provided by CONTRACTOR for safe and convenient performance of the work.

B. Installation

1. Lower pipe, fittings, valves, and hydrants carefully into trench piece by piece by means of derrick, ropes, or other suitable tools or equipment.
2. Prevent damage to water main materials and protective coatings and linings.
3. Do not drop or dump water line materials into trench.
4. Carefully examine pipe and fittings for cracks and other defects while suspended above trench immediately before installation in final position. Defective pipe or fittings shall be clearly marked and shall be removed from site.
5. Clean bell and spigot ends of each piece of pipe thoroughly before pipe is laid.
6. Prevent foreign material from entering pipe while it is being placed in line.
 - a. Provide protective covering for ends of pipe until connection is made to adjacent pipe, if necessary.
 - b. No debris, tools, clothing, or other materials shall be placed in pipe during laying operations.
7. As each length of pipe is placed in trench, spigot end shall be centered in bell and pipe forced home and brought to correct line and grade.
 - a. Pipe shall be secured in place with approved backfill material tamped around it.
 - b. Precautions shall be taken to prevent dirt from entering joint space.
8. Open ends of pipe shall be closed by watertight plug, or other means approved by Engineer, at times when pipe laying is not in progress. If water is in trench, plug shall remain in place until trench is pumped completely dry. Water shall not be allowed to run into pipe at any time during construction.
9. Lay pipe with bell ends facing in direction of laying, unless directed otherwise by Engineer. Where pipe is laid on grade of 10 percent or greater, laying shall start at bottom and shall proceed upward with bell ends of pipe upgrade.

3.03 CUTTING PIPE

Cut pipe for inserting valves, fittings, or closure pieces in neat and workmanlike manner without damage to pipe or lining and so as to leave smooth end at right angles to axis of pipe.

3.04 DETECTION OF PIPE

- A. Detection tape shall be placed above the water line, as shown on Drawings. Detection tape shall be used for all pipes.
- B. Place tape in trench with printed side up and parallel to the finished surface.
- C. Take necessary precautions to ensure tape is not pulled, distorted, damaged, or otherwise misplaced in completing trench backfill.

3.05 JOINTING

- A. Jointing of pipe, fittings, and valves shall be made in strict compliance with manufacturer's printed instructions.

- B. Mechanical Joints
 1. Thoroughly clean outside of spigot and inside of bell.
 2. Clean gasket.
 3. Tighten nuts with torque limiting wrench.
 4. Nuts spaced 180 degrees apart shall be tightened alternately in order to produce equal pressure.
- C. Push-On Joints
 1. Furnish and install adaptors if required to join bells and spigots of different sizes.
 2. Thoroughly clean inside of bell and outside of spigot end.
 3. Insert and lubricate gasket using lubricant furnished or recommended by pipe manufacturer.
 4. Spigot end of pipe shall be entered into socket with care used to keep joint from contacting ground.
 5. Complete joint by forcing plain end to bottom of socket with forked tool or jack-type tool.

3.06 ANCHORAGE

- A. Plugs, caps, tees, bends, and valves, unless otherwise specified, shall be provided with reaction blocking.
- B. Reaction blocking shall be concrete of a mix not leaner than 1 part cement to 2-1/2 parts sand and 5 part stone, and having a compressive strength of not less than 3,000 psi after 28 days.
- C. Blocking shall be placed between solid, unexcavated earth and fitting to be anchored; area of bearing on pipe and on ground in each instance shall be that shown on CONTRACT DRAWINGS or as directed by ENGINEER.
- D. Blocking shall, unless otherwise shown or directed, be so placed that pipe and fitting joints will be accessible for repair.
- E. Metal harness of tie rods or clamps of adequate strength to prevent movement may be used instead of concrete blocking if approved by ENGINEER in writing.
- F. Steel rods or clamps shall be galvanized or bituminous coated.

3.08 CONNECTION TO EXISTING MAINS

- A. Where Ductile Iron Pipe is joined to SDR rated PVC pipe, a ductile iron mechanical joint solid sleeve shall be used. The sleeve shall be the long pattern type with the required transition gaskets.
- B. Connection to existing mains shall be made at such time as to minimize disruption of water service to public.
- C. Approximate locations of required connections to existing mains are shown on CONTRACT DRAWINGS, but it is CONTRACTOR's responsibility to ascertain exact locations of these mains.
- D. Connections to existing mains shall be made in a complete and workmanlike manner using proper fittings and specials to suit actual conditions.
- E. Existing pipes which are cut or damaged by CONTRACTOR shall be repaired, reconnected, and returned to service in equal or better condition.

3.09 STREAM AND UTILITY CROSSINGS

- A. Where indicated on CONTRACT DRAWINGS, or required by conditions encountered, pipe shall be placed beneath stream beds or ditches, around, over, or under sewers, culverts, gas mains, telephone ducts, water mains, or other structures.
 - 1. Do not pass pipe through any drainage pipe, culvert, sewer, or manhole.
 - 2. Provide minimum of 48 inches under stream beds or ditches, unless approved by Engineer in writing.
 - 3. Provide minimum of 6 inch earth or sand cushion between proposed water line and any other utility or structure, or as indicated on drawings.

3.10 HYDROSTATIC TESTS

- A. Pressure and leakage tests will be required individually **on each section of line between valves** and shall be conducted in accordance with AWWA C600.
- B. Pressurization – After the pipe has been laid, all newly laid pipe or each and every valved section thereof shall be subjected to a hydrostatic pressure of 150 psi. Each valved section of pipe shall be slowly filled with water, and the specified test pressure (based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge) shall be applied using a pump connected to the pipe. Valves shall not be operated in either the opened or closed direction at differential pressures above the rated pressure. The system should be allowed to stabilize at the test pressure before conducting the hydrostatic test.
- C. Air removal – Before applying the specified test pressure, air shall be expelled completely from the section of piping under test. If permanent air vents are not located at all high points, corporation cocks shall be installed at these points to expel the air as the line is filled with water. After the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and the pipe plugged or left in place as required by the ENGINEER.
- D. Examination – Any exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damage or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure test shall be repaired or replaced with reliable material, and the test shall be repeated until satisfactory results are obtained.
- E. Testing allowance defined – Testing allowance shall be defined as the quantity of makeup water that must be supplied into the newly laid pipe or any valved section thereof to maintain pressure within 5 psi of the specified test pressure after the pipe has been filled with water and the air has been expelled. Testing allowance shall not be measured by a drop in pressure in a test section over a period of time.
- F. Testing allowance – No pipe installation will be accepted if the amount of makeup water is greater than that determined by the following formula:

$$L = \frac{SD \sqrt{P}}{148,000}$$

where L is the allowable leakage in gallons per hour; S is the test length in feet; D is the pipe diameter in inches and P is the average test pressure in pounds per square inch.

- G. Locate, remove, and replace any defective pipe, valves, fittings, or hydrants.
- H. Repeat tests until results are satisfactory to ENGINEER. CONTRACTOR shall submit to the ENGINEER written pressure test results, which shall be signed at the time of inspection by the Town's representative.

3.11 DISINFECTION

- A. Pipe, fittings, valves, and appurtenances which have been exposed to contamination by construction shall be thoroughly cleaned, chlorinated, drained, and flushed in accordance with AWWA C651.
- B. Procedure
 - 1. Flush line prior to disinfection. Flushing shall produce minimum velocity of 2.5 feet per second in pipe.
 - 2. Disinfect pipe in strict accordance with procedures given in AWWA C651.
 - 3. Disposal of the heavily chlorinated water shall be in accordance with AWWA C651. The environment to which this water will be discharged shall be inspected. If there is any question that the water will damage the environment, a reducing agent shall be used to neutralize the chlorine.
 - 4. CONTRACTOR shall have sample analyzed for bacteriological quality by a certified laboratory.
- C. **Repeat disinfection procedure until bacteriological analysis results are acceptable to OWNER and Health Department.**
- D. Water mains and appurtenances must be completely installed, flushed, disinfected, and satisfactory bacteriological sample results received prior to permanent connections being made to the existing water system, or service connections activated to individual water customers. Sanitary construction practices must be followed during installation of the final connection, so that there is no contamination of the new or existing water main with foreign matter or groundwater.

3.12 CLEAN-UP AND RESTORATION

- A. Before work shall be considered complete, material not used and rubbish of every character must be removed from job site.
- B. Fences and other private or public facilities and structures disturbed must be in essentially a good condition as existed before work was done.
- C. Subsequent settlement of pavement or backfill, or erosion over or in trenches shall be replaced or repaired by CONTRACTOR and surface brought to grade.
- D. Special precautions shall be taken to prevent storm water erosion of trenching.
- E. Storm water culverts and structures shall be kept cleaned of mud, debris, and silt caused by construction.
- F. Any and all items disturbed by construction shall in every case be restored to their original conditions, as closely as possible, after completion of construction.

END OF SECTION 33 12 13.13

SECTION 33 12 16

WATER UTILITY DISTRIBUTION VALVES

PART 1 – GENERAL

1.01 SUMMARY

WORK covered by this Section consists of furnishing and installing water distribution valves, properly set in place, at the locations indicated on the Drawings, or as directed by the ENGINEER, all gate valves and butterfly valves, tapping sleeves and valves, and other valve-type assemblies of the size and types specified, which are necessary for the proper completion of the Work; including all excavation required for their installation.

1.02 RELATED WORK

- A. Section 31 23 00 – Excavation and Fill
- B. Section 33 11 13.13 – Ductile Iron Water Utility Distribution Piping

1.03 REFERENCES

- A. Gate Valves, 3 through 48 in. NPS, for Water and Sewage Systems (AWWA C500).
- B. Resilient-Seated Gate Valves, 3 through 12 NPS, for Water and Sewage Systems (AWWA C509).
- C. Installation of Gray and Ductile Cast Iron Water Mains and Appurtenances (AWWA C600).
- D. Disinfecting Water Mains (AWWA C651).

1.04 SUBMITTALS

Submit detailed drawings and product data for each size and type of valve to be provided, including detail of the size and location of all valves and accessories, as specified, as indicated on the DRAWINGS, or as directed by the ENGINEER.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. CONTRACTOR shall be responsible for safe unloading, storage and care of material furnished by or to him until it has been incorporated into work.
- B. Unload material at site of work, near place where it will be placed in trench.
 - 1. Materials shall be placed so as to least interfere with traffic.
 - 2. Provide signs, lights, and barricades as necessary to protect public.
- C. Handle material carefully to prevent breakage and to avoid damage to coatings and linings.
 - 1. Keep interior of pipe, fittings, and valves, free of dirt or foreign matter at all times.
 - 2. Do not place materials in drainage ways or ditches.
- D. Materials that cannot be placed along site of the work shall be stored at CONTRACTOR's expense. OWNER's storage yards may be utilized if available.

PART 2 – PRODUCTS

2.01 ACCESSORIES

CONTRACTOR shall provide one (1) adjustable (4'6" to 7'0") gate valve operating key for 2" square operating nuts to the OWNER for each 10 valves (or fraction thereof) installed on each project. Key shall be Pollard No. 54801, or equal. Where the depth of cover is more than five feet (5'), Contractor shall provide suitable, permanently installed valve stem extension and guide at no extra cost to OWNER. In no case shall depth of cover exceed twelve feet (12') without written authorization from the OWNER.

2.02 BUTTERFLY VALVES

- A. Provide butterfly valves meeting the latest requirements of AWWA C504, and shall be as manufactured by Mueller, Kennedy, Pratt, or approved equal.
- B. Provide butterfly valves that shall be hand-operated, with bodies of cast or ductile iron with integrally cast hubs for shaft bearing housing, and adapted for joints as indicated on the Drawings, or as directed by the Engineer. Except as modified herein, furnish valves of the short body laying length with operators sized on the basis of actual line pressure and velocity. Butterfly valves shall be a minimum Class 150 or as indicated on the Drawings, or directed by the Engineer.
- C. Furnish valves having Type 304 stainless steel valve shaft, keyed for operator connection and connected to the disc with Type 304 stainless steel pins secured in place. Orient shaft as indicated. Furnish two-way thrust bearings, preset at the factory and permanently grease lubricated. Provide resilient valve seat of natural rubber per ASTM D2000, or Buna N type per ASTM D2000 providing uninterrupted 360 degree seating completely adjustable around circumference. Furnish mating seat of Type 304 or 316 Stainless Steel. Apply the resilient seat to the body, recessed in a groove, or to the disc per ANSI/AWWA C504, Sec. 9.5.
- D. Furnish valve discs, seating at 90 degrees to the pipe axis, of ductile iron per ASTM Des. A536, Grade 65-45-12, cast iron per ASTM Des. A48, Class 40, or fabricated steel per ASTM Des. A36.
- E. All butterfly valves shall open by turning the operating nut to the left (counter-clockwise).

2.03 GATE VALVES

- A. Gate valves three-inch diameter and larger shall be of the resilient seat type conforming to the requirements of AWWA C509 or AWWA C515, with bonded epoxy coating conforming to AWWA C550.
- B. Shall be designed for 200 psi working pressure and 400 psi hydrostatic test pressure.
- C. Shall be of iron body, bonded epoxy, and shall have non-rising bronze stem, and shall be wrench operated.
- D. Valves shall open by turning counter-clockwise (to the left).
- E. Operating nuts shall be standard two inches square.
- F. Suitable stem guides shall be provided, where required.
- G. Shall be furnished with mechanical joint suitable for connection to pipe into which it will be installed for buried service.
- H. Shall have rubber coated gates.

- I. Valves shall be manufactured by American Flow Control, US Pipe Valve & Hydrant, Mueller Co, or approved equal.

2.04 TAPPING VALVES AND SLEEVES

- A. Standard: MSS SP-60.
- B. Tapping Sleeve: Mechanical joint split sleeve and gate valve assembly suitable for working pressures up to 200 psig. Cast- or ductile-iron, two-piece bolted sleeve with recessed flanged outlet for new branch connection. Sleeve shall be manufactured by American Flow Control, Mueller Company, or approved equal.
- C. CONTRACTOR is to submit the manufacturer, size, and type of mechanical joint tapping sleeve and valve to the ENGINEER for review and approval prior to installation.
- D. Valves and tapping sleeves shall be furnished at locations indicated on CONTRACT DRAWINGS, together with necessary appurtenances.
- E. Tapping machines and competent supervision shall be provided for making of taps in presence of ENGINEER or OWNER.
- F. Tapping sleeves shall be properly sized to fit existing pipe and shall be of split sleeve type with ends suitable for connection into pipe line into which it will be installed.
- G. Valves furnished with sleeves shall conform to requirements herein above for gate valves, except for modifications required to permit use of full size cutter through valves.
- H. Outlet of valves shall be mechanical joint for joining with water mains.
- I. Back taps shall not be made without prior approval of the OWNER.
- J. Valves shall be manufactured by American Flow Control, Mueller Co, or approved equal.

2.05 VALVE MARKERS

- A. Shall be furnished with each valve installed as indicated on the drawings, with exception of fire hydrant valves.
- B. Shall be four inches by five feet (4" x 5') long, same construction as that of highway right-of-way marker, with letters "WATER VALVE" firmly made into marker two inches below top with 1¼ inch brass plug, one inch below letter "E" which shall be imprinted with distance between valve and marker. Concrete is to conform to ASTM C94 having a minimum compressive strength of 3,000 psi at twenty-eight (28) days.

2.06 VALVE BOXES AND COVERS

- A. Shall be provided with valves and shall comply with AWWA M44 for cast-iron valve boxes.
- B. Shall be of adjustable screw type, of length required with a minimum 6" of adjustment allowed, and installed as shown on standard details of CONTRACT DRAWINGS.
- C. Shaft shall be 5¼ inch diameter with base to be minimum of 8 inch diameter by 6-inch height inside.
- D. Base size and extension piece shall be as required for each individual size of valve and depth.

2.07 PRESSURE AIR RELEASE VALVE

- A. The valve shall be constructed to allow air to be continually exhausted in small amounts during the pumping cycle.
- B. The valves shall have pressure rating of 20 – 150 psi.
- C. A vacuum check valve shall be supplied on the outlet to eliminate the possibility of air entering the system where the pressure decreases or a vacuum is drawn.
- D. The valve shall be Crispin Model PL10 Pressure Air Valve, Type P (stainless steel seat and Buna-N rubber valve as manufactured by Crispin-Multiplex Manufacturing Co., Berwick, PA).

2.08 PRESSURE RELIEF AND SURGE ANTICIPATOR VALVE

- A. The valve shall control high pressures and power failure surges by bypassing system pressure that exceeds the high pressure control setting and also by opening a preset amount when sensed pressure decreases below a preset minimum in anticipation of a surge.
- B. The valve shall be hydraulically operated, single diaphragm-actuated and globe pattern. The valve shall consist of three major components: the body with seat installed, the cover with bearings installed and the diaphragm assembly. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve separating operating pressure from line pressure. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the main valve or pilot controls. Main valve body & cover shall be cast and manufactured in North America. No separate chambers shall be allowed between the main valve cover and body. No fabrication or welding shall be used in the manufacturing process. Valve shall meet NSF approval standards for drinking water service.
- C. The valve shall contain a resilient, synthetic rubber disc, with a rectangular cross-section contained on three and one-half sides by a disc retainer, forming a tight seal against a single removable seat insert. No O-ring type disc (circular, square, or quad type) shall be permitted as the seating surface. The disc guide shall be of the contoured type to permit smooth transition of flow and shall hold the disc firmly in place. The disc retainer shall be of a sturdy one-piece design capable of withstanding opening and closing shocks. No hourglass-shaped disc retainers shall be permitted and no V-type or slotted type disc guides shall be used.
- D. The diaphragm assembly containing a non-magnetic 303 stainless steel stem of sufficient diameter to withstand high hydraulic pressures, shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. The seat shall be a solid, one-piece design and shall have a minimum of a five-degree taper on the seating surface for a positive, drip-tight shut off. No center guides shall be permitted. The stem shall be drilled and tapped in the cover end to receive and affix such accessories as may be deemed necessary.
- E. The diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid. The center hole for the main valve stem must be sealed by the vulcanized process or a rubber grommet sealing the center stem hole from the operating pressure. The diaphragm shall not be used as the seating surface.
- F. The main valve seat and the stem bearing in the valve cover shall be removable. Cover bearing, disc retainer, and seat shall be made of the same material. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline.

G. Material Specification

Valve Size: 4"

Main Valve Body and Cover: Ductile Iron ASTM A-536

Main Valve Trim: Brass QQ-B-626 & Bronze ASTM B-61

End Detail: 150 # Flg.

Pressure Rating: 250 psi

Temperature Range: -40 to +180 degrees F

Rubber Material: Buna "N"

Coating: Fusion Bonded Epoxy Resin Process Applied 5-7 Mils thick

- H. Pilot Control System: The pressure relief pilot shall be an adjustable, spring-loaded, normally closed diaphragm control designed to permit flow when upstream pressure exceeds the control setting. The low pressure pilot shall be an adjustable, spring loaded, normally open diaphragm control designed to open when the sensed pressure falls below the control setting and close when pressures are normal. The pilot system shall contain an adjustable hydraulic limiter to limit valve travel during low pressure opening without affecting high pressure relief valve travel. The contractor shall connect the sensing/pilot supply connection to the main header with minimum 3/4" pipe or tubing.

I. Material Specification for Pilot Control:

Pressure Rating: 300 psi

Body: Bronze ASTM B-61

Trim: 303 Stainless Steel

Rubber Material: Buna "N"

High Pressure Adjustment Range: 20-200 psi

Low Wave Adjustment Range: 30-300 psi

- J. The valve shall be a Cla-Val Co. Model No. 52G-03BKCTAES Pressure Relief & Surge Anticipator Valve as manufactured by Cla-Val Co., Newport Beach, CA 92659-0325.

PART 3 – EXECUTION

3.01 INSTALLING VALVES

- A. All equipment shall be installed in strict accordance with written instructions of manufacturer.
- B. Valves, fittings, plugs, and caps shall be set and joined to pipe in manner specified above for cleaning, laying and joining pipe.
- C. Valves shall be set plumb and a valve box shall be provided for every valve.
1. Valve box shall not transmit shock or stress to valves and shall be centered and plumb over wrench nut of valve, with box cover flush with surface of finished pavement or such other level as may be directed.
 2. For installation where there are roadside ditches, valves and valve boxes shall not be in the normal water flow line of the ditch for a typical storm.
- D. Backfill around valves shall be carefully tamped in 6 inch layers for full depth of trench with valve box in place.
- E. Provide concrete pad at surface as indicated on CONTRACT DRAWINGS.
- F. Tapping Valves and Sleeves
1. The Contractor shall furnish and install tapping sleeves and valves suitable for connection to the existing water mains at locations indicated on the drawings, or required by the OENRT and shall furnish the tapping machine and competent supervision for the making of taps.

2. After installing the sleeve and prior to making the tap, the CONTRACTOR shall hydrostatically pressure test the complete tapping sleeve and valve at 200 psi. The tapping sleeve and valve shall be properly supported before mounting the tapping machine.

3.02 RECORDKEEPING

Valves, fittings, plugs CONTRACTOR shall locate each valve by measurements to two prominent terrain features or structures (i.e., center of road, fire hydrant, power pole). Each measurement should be taken as perpendicular to the other as possible, and a record of these location distances shall be submitted to the OWNER at the conclusion of the work. The sketch of each location shall be neatly drawn on a separate 5" x 7" card and shall be considered part of and referenced to the as-built drawings.

3.03 MANUFACTURER'S WARRANTY

- A. The pressure relief and surge anticipator valve manufacturer shall warranty the valve to be free of defects in material and workmanship for a period of three years from date of shipment provided the valve is installed and used in accordance with all applicable instructions.

3.04 FACTORY START-UP SERVICES

- A. A factory trained service representative for the pressure relief and surge anticipator valve manufacturer shall be made available for start-up service, inspection and necessary adjustments. Start-up service technician shall be a regular employee of the equipment provider normally tasked to perform such duties.
- B. Include one day at job site for start-up and training.
- C. Start-up service report attested to by start-up technician and representative of OWNER and ENGINEER shall be provided upon completion of the start-up.

END OF SECTION 33 12 16

SECTION 33 12 19

WATER UTILITY DISTRIBUTION FIRE HYDRANTS

PART 1 – GENERAL

1.01 SUMMARY

CONTRACTOR shall furnish all labor, equipment, and materials and install at location indicated on Drawings, or as directed, fire hydrants as necessary or required for proper completion of the work under this Contract.

1.02 REFERENCES

American Water Works Association (AWWA), C502, Standard for Dry-Barrel Fire Hydrants.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Hydrants shall be manufactured in full compliance with AWWA C502, minimum 250 psi. working pressure and as herein amended.
- B. Hydrants shall be M & H 129 or Mueller A-423 Super Centurion 250.
- C. Hydrants shall be three-way, post type, dry top traffic model with compression main valve opening against and closing in the direction of normal water flow. Hydrants shall have a 4-1/2" pumper nozzle and two 2-1/2" hose nozzles.
- D. Internal main valve diameter shall have a 5-1/4" opening.
- E. Hydrants shall have name of manufacturer, year manufactured, and nominal valve size in legible, raised letters cast on barrel of bonnet.
- F. Dry Top Bonnet
 - 1. Shall be constructed with moisture-proof lubrication chamber which provides automatic lubrication of threads and bearing surfaces each time hydrant is operated.
 - 2. Assembly shall be comprised of top "O" ring serving as dirt and moisture barrier and a lower "O" ring which shall serve as a pressure seal.
- G. Operating Nut
 - 1. Shall be of regular pentagon shape measuring 1½" point to flat; i.e. National Standard, and shall open by turning counter-clockwise (left).
 - 2. Nozzle caps shall have same cross-section as operating nut and shall come with heavy duty, non-kinking chains.
 - 3. Chains shall be securely affixed to hydrant upper barrel and permit free turning of caps.
- H. Traffic Design
 - 1. Hydrant barrel sections shall be connected at groundline in a manner that will prevent damage to hydrant when struck by vehicle.
 - 2. Main valve rod sections shall be connected at groundline by frangible coupling.
 - 3. Standpipe and groundline safety construction shall be such that the hydrant nozzles can be rotated to any desired position without disassembling or removing top operating components and top section of hydrant standpipe.

- I. Main valve shall be made of synthetic rubber and formed to fit the valve seat accurately.
- J. Main Valve Seat
 - 1. Shall be of bronze and assembly into hydrant shall involve bronze to bronze thread engagement.
 - 2. Two (2) "O" ring seals shall be provided as positive pressure seal between the bronze seat ring and shoe.
 - 3. Valve assembly pressure seals shall be obtained without employment of torque compressed gaskets.
 - 4. Hydrants shall be designed to allow removal of all operating parts through hydrant barrel by means of single, light weight disassembly wrench without excavation.
- K. Drain
 - 1. Mechanism shall be designed to operate automatically with the operation of main valve and shall allow a momentary flushing of drain ports.
 - 2. Minimum of two (2) internal and two (2) external bronze lined drain ports shall be required in main valve assembly to drain hydrant barrel.
 - 3. Inlet connection shall be cast iron inlet elbow and shall have 6" mechanical joint connection.
 - 4. Barrel extension sections shall be available in 6" increments complete with rod, extension coupling and necessary flanges, gaskets and bolts so that extending hydrant can be accomplished without excavating.
 - 5. No lead will be allowed in nozzle installation.
 - 6. Hydrants shall be tested in strict accordance with AWWA C502 at supplier's expense. Certificate of compliance shall be furnished to OWNER upon request.

2.02 SPARE PARTS

- A. CONTRACTOR shall provide the OWNER with two breakaway traffic repair kits.
- B. CONTRACTOR shall provided the OWNER with one hydrant wrench, Combination Wrench and Spanner as manufacturerd by Pollard or approved equal.

PART 3 – EXECUTION

3.01 SETTING HYDRANTS

- A. Hydrants shall be placed at locations indicated on CONTRACT DRAWINGS in manner to provide complete accessibility and so that possibility of damage from vehicles and injury to pedestrians will be minimized.
- B. Hydrants to be installed so the finish grade is at the hydrant bury line.
- C. Extension required to bring hydrant to proper grade shall be furnished and installed by CONTRACTOR at his expense.
- D. Fire hydrant assembly shall consist of the ductile iron tee, gate valve, ductile iron lead pipe, and hydrant.

3.02 PAINTING, COATING AND LUBRICATING

- A. Iron parts of hydrant shall be thoroughly cleaned inside and outside.
- B. Unless otherwise stipulated or directed, surface shall be coated or painted with, or dipped in, an asphalt or bituminous base paint or coating, except for the exterior portion above the groundline.

- C. Hydrants shall be covered with two (2) coats of paint, the first being allowed to dry thoroughly before applying second coat.
- D. Exterior of hydrant valve above finished groundline shall be thoroughly cleaned and painted in shop with two (2) coats of Koppers Primer 621, or approved equivalent.
- E. Following installation, hydrants shall be painted with two (2) field coats of color silver, Koppers Glamortex 501, or approved equivalent.
- F. Bronze, threaded and contact moving parts shall, during shop assembly, be lubricated and protected by coating of rust proof compound to prevent damage in shipment.
- G. Hydrants must be marked on the road with a Blue Road Reflector.

END OF SECTION 33 12 19

SECTION 33 16 19

ELEVATED WATER STORAGE TANK

PART 1 GENERAL

1.01 WORK INCLUDED

WORK included in this Section consists of furnishing of all materials, tools, equipment, and labor for the design, fabrication, construction, erection, and painting of a steel elevated water storage tank, the foundation, piping, fittings and accessories as shown on the Drawings; and testing and disinfection of the tank.

1.02 RELATED WORK

Section 09 87 00 - Tank Coatings and Finishes

1.03 REFERENCES

All work on the water storage tank shall fully conform to the requirements of the latest published editions of the following Standards:

- A. Standard for Welded Carbon Steel Tanks for Water Storage (AWWA D100).
- B. Standard for Coating Steel-Water Storage Tanks (AWWA D102).
- C. Standard for Disinfection of Water-Storage Facilities (AWWA C652).
- D. Structural Welding Code, Steel (AWS D1.1).
- E. Drinking Water System Components – Health Effects (NSF 61).
- F. Steel Structures Painting Council (SSPC) Manual – Volume 1 – Good Painting Practice.
- G. Steel Structures Painting Council (SSPC) Manual – Volume 2 – Systems and Specifications.
- H. Building Code Requirements for Structural Concrete and Commentary (ACI 318).
- I. Specifications for Structural Concrete (ACI 301).

1.04 SUBMITTALS

- A. Each Bidder shall submit, with his bid, design drawings of the structure he proposes to furnish. Drawings must show all major dimensions and plate thicknesses upon which the bid is based, the high and low water levels and the dimensions of the supporting tower, and a foundation design drawing showing preliminary dimensions and approximate quantities of concrete and reinforcing steel. If designs shown by such drawings do not comply with this Specification and applicable Reference Standards, the Bid may be rejected.
- B. Qualifications of Manufacturer & Experience
 - 1. The design and construction of the “Multi-Column” elevated water storage tank shall only be undertaken by a CONTRACTOR with a minimum of five years experience with elevated tank construction. The CONTRACTOR must be able to demonstrate experience through the design and construction of at least five “Multi-Column” elevated water tanks of similar size and nature. The CONTRACTOR shall not subcontract the design or erection of the steel tank and supporting tower.

2. Each Bidder shall submit, with his bid, evidence of satisfactory experience in the fabrication and erection of similar structures. Submit a list of five "Multi-Column" elevated tanks constructed by the Bidder within the last ten years, including the name of the OWNER, tank capacity and the Consulting Engineer. Failure to include this information with the bid shall be sufficient cause for rejection of such bid.

- C. Upon award of Contract, CONTRACTOR shall prepare detailed foundation and tank design drawings and calculations for approval before proceeding with fabrication. Drawings shall show the size and location of all structural components and the foundations along with reinforcement details, the required strength and grade of all materials, and the size and arrangement of principle piping and equipment. Drawings and calculations shall be stamped by a Georgia Registered Professional Engineer. The design coefficients and resultant loads for wind and seismic forces, and the methods of analysis shall be documented.
- D. Prior to shipment of any materials, detailed information on the coating system to be used shall be submitted to ENGINEER for approval. Such information shall include: coating specifications, handling procedures, surface preparation, coating application, and methods of application.
- E. CONTRACTOR shall provide geotechnical field records and testing results as they become available during construction.
- F. Prior to erection of the water tank, CONTRACTOR shall provide finished foundation survey locations/elevations on Georgia West State Plane coordinates (NAD 83 and NAVD 88) certified by a Georgia Registered Land Surveyor.
- G. CONTRACTOR shall provide weld inspection report in accordance with AWWA D100.
- H. At the conclusion of the work, CONTRACTOR shall submit a written report to OWNER certifying that the work conforms to all applicable conditions of this Specification.

1.05 DELIVERY, STORAGE AND HANDLING

All materials shall be unloaded and stored in a manner to avoid physical damage to detrimental effects of exposure to weather. Where applicable, materials shall be stored in accordance with recommendations of the manufacturer.

1.06 SITE CONDITIONS

CONTRACTOR shall provide all utilities necessary for construction of the tank. OWNER will provide water for initial cleaning, filling, testing and disinfection, in accordance with Section 09 87 00, Tank Coatings and Finishes.

PART 2 PRODUCTS

2.01 TANK CHARACTERISTICS

- A. The elevated tank shall be all-welded steel construction of the most economical design. All members of structural steel or of reinforced concrete shall be designed to safely withstand the maximum stresses to which they may be subjected during erection and operation.
- B. The tank shall meet the following criteria:
 - 1. Minimum operating capacity..... 750,000 Gallons
 - 2. Height to High Water Level (HWL) w/ top foundation elev. = 965'..... 157'-5"
 - 3. The capacity of the tank, low water level to high water level, shall be contained within a maximum operating head range (+/- 2.5 feet) of 34'- 0"
 - 4. Minimum Riser Diameter 60"

2.02 TANK ACCESSORIES

- A. The tank vent shall be centrally located on the tank roof above the maximum weir crest elevation. The tank vent shall have an intake and relief capacity sufficiently large that excessive pressure or vacuum will not develop during maximum flow rate. The vent shall be designed, constructed, and screened so as to prevent the ingress of wind driven debris, insects, birds and animals. The vent shall be designed to operate when frosted over or otherwise clogged. The screens or relief material shall not be damaged by the occurrence and shall return automatically to operating position after the pressure or vacuum is relieved.
- B. Provide two access hatches on the roof of the tank. One hatch shall be 30 inch diameter and allow access from the roof to the interior of the tank. The hatch will be hinged and equipped with a hasp for locking. The hatch cover shall have a 2 inch downward edge. The second hatch will be 24 inch diameter and flanged with a removable cover so constructed that an exhaust fan may be connected for ventilation during painting operations. The openings shall have a minimum 4 inch curb.
- C. Safety Grating at Top of Riser.
- D. Minimum 14" x 18" Riser Manhole located three feet above the base of the wet riser.
- E. 36" Wide Balcony with perforated floor & 42" Handrail.
- F. The vertical combined inlet/outlet pipe connection to the bottom of the riser shall be a 12" standard weight carbon steel pipe with appropriate transition to a ductile iron base elbow of the same diameter. The vertical pipe shall extend up into the riser and connect to mixing system piping.
- G. The 8" steel overflow pipe shall have a minimum wall thickness of 1/4". A suitable weir shall be provided inside the tank with the crest at High Water Level. The overflow shall be routed from the weir to closely match the roof contour and extend down the ladder column and terminate into the tank drain line. The point of discharge shall include a flanged flap valve, stainless steel screen, and splash block.
- H. Level indicator with float.
- I. Ladders
 1. From 10' above ground up on tower leg to balcony with safety device, with access at the top through the balcony floor.
 2. An outside tank ladder from the balcony to the roof hatch.
 3. Inside tank ladder from roof hatch to bottom of tank.
 4. Ladder inside riser from the base of the riser to the bottom of the tank..

Ladder side rails shall be minimum 3/8 inch by 2 inches with a 16" clear spacing. Rungs shall be not less than 3/4 inch, round or square, spaced at 12" centers. The surface rungs shall be knurled, dimpled or otherwise treated to minimize slipping. Ladders shall be secured to adjacent structures by brackets located at intervals not exceeding 10 feet. Brackets shall be of sufficient length to provide a minimum distance of 7 inches from the center of the rung to the nearest permanent object behind the ladder.
- J. Drain – drain piping as shown on the Drawings.
- K. Pressure Gauge Tap - Provide a 3/4" tap and nipple with 3/4" Ball Valve at bottom of riser.
- L. Sample Tap - Provide a 3/4" tap and nipple with 3/4" hose bibb at bottom of riser.
- M. Steady burning obstruction lighting shall consist of Crouse Hinds Catalog no. FCB 41257G, or approved equal, red beacon for the top of the tank and four Crouse Hinds Catalog No. EOL 40940, or approved equal, red obstruction lights for perimeter of tank balcony. Obstruction lighting equipment

and installation shall comply with standards stated in US department of transportation Federal Aviation Administration Advisory Circular "Obstruction Marking and Lighting".

2.03 FOUNDATIONS

- A. Foundations and foundation design will be provided by tank CONTRACTOR conforming to the recommendations outlined in the *Report of Geotechnical Exploration, Barrow County NW Water Tank, Hoschton, Georgia*, S&ME Project No. 24800066. Foundation design procedures shall be as outlined in AWWA D100, Section 12, and ACI 318.
- B. Contractor shall coordinate with the OWNER's geotechnical consultant for additional geotechnical work such as soils testing, field monitoring of pile installation, materials testing, etc. required for design and installation of the foundation.
- C. The center riser foundation shall be sized to provide a clearance of 4'-0" minimum from the top of inlet pipe to finished grade.

2.04 TANK DESIGN DATA

- A. Tank will be designed, fabricated and erected in full accordance with AWWA D100.
- B. Tank will be designed to safely withstand the following loads and forces:
 - 1. Weight of the structure.
 - 2. Weight of the water in tank.
 - 3. Basic Wind Speed of 90 mph.
 - 4. Seismic design loads in accordance with AWWA D100, Section 13.
- C. No plates used in the tank or tower will be less than 3/16" for parts not in contact with water and 1/4" thick for parts in contact with water. All portions of the tank including the roof shall be of watertight construction.

2.05 LADDER SAFETY SYSTEM

Ladders shall be equipped with a fall arrest system meeting OSHA regulations. The system shall be supplied complete with safety harnesses, locking mechanisms, and accessories for two persons.

PART 3 EXECUTION

3.01 CONCRETE FOUNDATION

The concrete foundation shall be constructed in accordance with ACI 301.

3.02 PREPARATION

- A. Provide leg foundation and anchor bolts in conformance with tank manufacturer's approved shop drawings.
- B. Shop Surface Preparation and Painting
 - 1. Clean all rust, mill scale, dust and other interference materials from all metal surfaces to Near White Metal Finish prior to shop priming. Cleaning shall be accomplished by blasting in accordance with SSPC Specification No. 10 or by pickling in accordance with SSPC Specification No. 8.
 - 2. Provide shop prime coat(s) per Specification 09 87 00 (Tank Coatings and Finishes).

3.03 STEEL TANK CONSTRUCTION

- A. The erection of the steel tank shall comply with the requirements of AWWA D100.
- B. All shop and field welding shall conform to AWS and AWWA D100. The CONTRACTOR shall ensure welders or welding operators are qualified in accordance with ASME Section IX or ANSI/AWS B2.1.
- C. Plates subjected to stress by weight or pressure of the contained liquid shall be assembled and welded in such a manner that the proper curvature of the plates in both directions is maintained. Plates shall be assembled and welded together by a procedure that will result in a minimum of distortion from weld shrinkage.
- D. All tank, walkway and handrail plates, bars and angles shall be seal welded. This includes all seams in the tank above the water line to the top of the tank.

3.04 INSPECTION

- A. CONTRACTOR shall provide minimum 24-hours notification to the OWNER's geotechnical consultant prior to an item requiring observation or testing. Foundation observation and testing may include but not be limited to the following.
 - 1. Observation of the load test pile and load test frame reaction piles set up and run by the CONTRACTOR.
 - 2. Observation of production auger cast pile installation.
 - 3. CONTRACTOR shall provide load test pile grout and production auger cast pile grout for casting of grout cubes for testing.
 - 4. Observation of steel reinforcement and concrete placement for each pile cap.
 - 5. CONTRACTOR shall provide pile cap concrete for mold sets of 5 (4 inch by 8 inch) cylinders for compressive strength testing.
 - 6. CONTRACTOR shall provide a curing environment for the grout cubes and concrete test cylinders such as an insulated wooden curing box.
- B. Weld inspection will be by radiography and a written report shall be furnished in accordance with AWWA D-100, Section 11. All inspection shall be performed prior to interior and exterior field painting. Radiographic inspection shall be performed by an independent testing agency with all costs included in the CONTRACTOR'S bid and paid by the CONTRACTOR.

3.05 IDENTIFICATION PLATE

A tank identification plate shall be mounted on the tank riser pipe above the access manhole. The identification plate shall be corrosion resistant and contain the following information.

- 1) Tank Contractor
- 2) Contractor's project or file number
- 3) Tank capacity
- 4) Height from top of foundation to High Water Level
- 5) Date erected

3.06 TESTING

- A. Water leakage tests may be conducted in conjunction with the disinfection procedure referenced below. No leakage is allowable.
- B. If leaks are detected, tank shall be dewatered, repaired and repainted as necessary.

- C. Tank must then be retested.

3.07 FINAL CLEAN-UP AND DISINFECTION

- A. After completion of testing and disinfection, tank site shall be cleaned and landscaped as required by Contract Documents.
- B. Disinfection shall be per Section 09 87 00 (Tank Coatings and Finishes).

3.08 GUARANTEE

- A. The CONTRACTOR shall guarantee its work for a period of one year from the completion date defined in the contract documents to the extent that it will repair any defects caused by faulty design, workmanship or material furnished under the specifications. If the CONTRACTOR is not advised of any defects within 30 days of the end of the guarantee period, guarantee shall be considered fulfilled and complete. Defects caused by damaging service conditions such as electrolytic, chemical, abrasive or other damaging service conditions are not covered by this guarantee.
- B. All guarantees obtained by the CONTRACTOR from the manufacturer or installer of paint, equipment or accessories not manufactured by the CONTRACTOR shall be obtained for the benefit of the OWNER.

END OF SECTION 33 16 19

SECTION 46 41 00

RESERVOIR HYDRODYNAMIC MIXING SYSTEM

PART 1 GENERAL

1.01 SCOPE

The specifications in this section include all components of the reservoir Hydrodynamic Mixing System (HMS) for the Elevated Storage Tank (EST) consisting of a bi-directional flow manifold equipped with variable orifice duckbill inlet nozzles and outlet flow check valves. The HMS manufacturer shall be responsible for designing the system in accordance with the hydrodynamic criteria defined within these specifications and submit design calculations verifying compliance in accordance with the submittal requirements.

1.02 HMS DESCRIPTION AND INFORMATION

- A. The Hydrodynamic Mixing System (HMS) is defined as a supplemental system installed within a potable water storage reservoir which passively utilizes the energy provided by the inlet water supply and generates a sufficient inlet momentum to achieve a complete homogeneous blending of the water volume within the reservoir with the inlet supply flow.
- B. The complete Hydrodynamic Mixing System shall be defined as all piping and appurtenances within the tank above the tank floor. Appurtenances include pipe, fittings, horizontal and vertical pipe supports, expansion joints, variable orifice duckbill check valves, and any other equipment specified within this section of the specifications.
- C. Representative Operating Scenario Data (Actual operation will vary)
 - 1. Normal Operating High Water Elevation – 1120'
 - 2. Normal Operating Low Water Elevation – 1115'
 - 3. Duration of Fill Periods (hours per day) – 8
 - 4. Average Fill Flow Rate during Fill Periods (gpm) – 250
 - 5. Minimum Fill Flow Rate (gpm) – 150
 - 6. Maximum Fill Flow Rate (gpm) – 600
 - 7. Normal Maximum Outlet Flow Rate (gpm) – 400
 - 8. Emergency Maximum Outlet Flow Rate (gpm) – 3500

1.03 REFERENCE STANDARDS

- A. American National Standards Institute (ANSI)
 - 1. B16.1 – Cast Iron Pipe Flanges and Flanged Fittings
 - 2. B16.5 – Pipe Flanges and Flanged Fittings
 - 3. B36.10 – American National Standard Weights and Dimensions of Welded and Seamless Wrought Steel Pipe
- B. American Society for Testing and Materials (ASTM)
 - 1. A53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
 - 2. A234 – Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service
 - 3. A240 – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
 - 4. A351 – Standard Specification for Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure-Containing Parts

7. A536 – Standard Specification for Ductile Iron Castings
 8. C110 – Ductile Iron and Gray-Iron Fittings, 3 In. through 48 In. for Water
 9. D1330 – Standard Specification for Rubber-Sheet Gaskets
 10. D1784 – PVC/CPVC Pipe Compounds
 11. D1785 – PVC Pipe, Schedules 40, 80 & 120
 12. D2466 – PVC Solvent Cement
 13. D2855 – PVC Solvent Joints
 14. D3261 – Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Fittings
 15. D3915 – PVC Pipe Fitting Compounds
- C. American Iron and Steel Institute (AISI)
1. AISI 304 – 304 Stainless Steel Plate
 2. AISI 316 – 316 Stainless Steel Plate
 3. AISI 1040 – Carbon Steel Plate
- D. American Water Works Association (AWWA)
1. C104 – Cement-Mortar Lining of Ductile Iron Pipe and fittings for Water
 2. C110 – Ductile-Iron and Gray-Iron Fittings, 3 In. through 48 In. for Water
 3. C115 – Flange Ductile Iron Pipe with Ductile Iron or Gray Iron Threaded Flanges
 4. C200 - AWWA Standard for Steel Water Pipe 6” and Larger
 5. C207 – Standard for Steel Pipe Flanges for Waterworks Service – Size 4 In. to 144 In.
 6. C220 – AWWA Standard for Stainless Steel Pipe, 4” and Larger
 7. C900 – AWWA Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4
 8. In. Through 12 In. for Water Distribution
 9. C905 – AWWA Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In Through 48 In. for Water Transmission and Distribution
 10. C906 – AWWA Standard for Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 63 In. for Water Distribution
- E. American Water Works Association Research Foundation (AwwaRF)
1. Project No. E20-J08 – Physical Modeling of Mixing in Water Storage Tanks (Forthcoming)
- F. National Sanitation Foundation (NSF)
1. NSF Standard 14 – Plastic Piping System Components and Related Materials
 2. NSF Standard 61 – Drinking Water System Components – Health Effects

1.04 QUALITY ASSURANCE

- A. Manufacturer shall have at least five (5) years experience in the design, manufacture and installation of Hydrodynamic Mixing Systems.
- B. The HMS manufacturer shall be responsible for providing engineering installation drawings of the complete manifold piping system. These drawings shall include plan view piping arrangement, sections and elevations are required, support bracket installation details, valve orientation details, and all dimensions required for locating the system within the specified dimensions of tank.
- C. Determination of sufficient mixing shall be determined by the modeling requirements and supporting hydraulic analysis as conducted by each individual manufacturer for their specific system configuration as defined within these specifications. System submittals not providing this validation shall not be considered as a viable Hydrodynamic Mixing System (HMS).
- D. Approved manufacturer is Tideflex Technologies, Carnegie, PA 15106. Other manufacturers may be considered as pre-bid submittals.

1.05 SUBMITTALS

- A. Hydrodynamic Mixing System Experience
 - 1. Provide completed contracts summary - minimum ten Hydrodynamic Mixing Systems designed, manufactured and installed.
 - 2. Show installation location, Owner contact with phone number and year completed.
- B. Analysis & Design
 - 1. Provide a summary of the analysis and design for the proposed Hydrodynamic Mixing System.
 - 2. Include tank geometry, operational data and Computational Fluid Dynamics model parameters and assumptions.
 - 3. Include calculated jet velocities, head loss for inlet flow, outlet flow and analysis results
 - 4. Provide required minimum drawdown resulting in full mixing during a fill cycle for a range of operational flows.
- C. Design Drawings
 - 1. Provide elevation, plan, sectional view and detail drawings of the installed Hydrodynamic Mixing System as well as all appurtenant equipment, attachments and accessories.
 - 2. Show location, orientation, dimensions, sizing and materials of construction for piping, inlet and outlet ports, valves and equipment.
 - 3. Show the material specification and finish requirements.
 - 4. Define locations of field welds and other connections.
 - 5. Submission shall be sealed by professional engineer registered in Georgia.
- D. Fabrication and Construction Procedures
 - 1. Provide procedures for all shop and field welds.
- E. Equipment Data
 - 1. Inlet Valve: Provide drawings and technical specifications including size, materials. Provide operational characteristics including head loss, jet velocity and back pressure rating. Installation, operation and maintenance data.
 - 2. Outlet Valve: Provide drawings and technical specifications including size, materials. Provide operational characteristics including head loss charts.
 - 3. Provide installation, operation and maintenance data.
- F. Reports / Certifications
 - 1. Provide copy of the NSF61 Certified listing for the valves used in the Hydrodynamic Mixing System.
 - 2. Provide a copy of a test report that confirms there is no degradation in the elastomer when exposed to chlorine and chloramine per ASTM D6284.
- G. Operation / Maintenance Manuals
 - 1. Design calculations, design drawings.
 - 2. Product specifications for pipe, valves, fittings, anchors, and other specialized items.
 - 3. Operation procedures.
 - 4. Maintenance procedures and schedule.
 - 5. Parts and equipment list with specification numbers for ordering of replacements.
 - 6. Repair guidelines.

PART 2 PRODUCTS

- A. Variable Orifice Duckbill Inlet Nozzles
 1. Provide variable orifice elastomeric check valve that allows water to enter the tank during fill cycles while preventing reverse flow (into the outlet pipe) during draw periods.
 2. Valve manufacturer shall have minimum ten years experience in the manufacturing of variable orifice style elastomeric valves.
 3. Valve manufacturer shall have conducted hydraulic testing to determine head loss, jet velocity and back pressure characteristics.
 4. Elastomer shall be one-piece internally reinforced EPDM or approved equal.
 5. Flange backing ring components shall be Type 304 stainless steel.
 6. Valves shall be NSF Standard 61 certified.
 7. The elastomer used in construction of valves shall be tested in accordance with ASTM D6284 to confirm there is no degradation in the elastomer when exposed to chlorine and chloramine.
 8. Tideflex or approved equal.
- B. Outlet Check Valves
 1. Wafer style type elastomeric membrane that allows water to enter the outlet pipe during draw cycles while preventing reverse flow (into the tank) during fill periods.
 2. Valve manufacturer shall have minimum ten years experience in the manufacturing of wafer style elastomeric valves.
 3. Valve manufacturer shall have conducted hydraulic testing to determine head loss characteristics.
 4. Elastomer shall be one-piece internally reinforced EPDM or approved equal.
 5. Flange disc plate and other metal components shall be Type 304 stainless steel.
 6. Valves shall be NSF Standard 61 certified.
 7. The elastomer used in construction of valves shall be tested in accordance with ASTM D6284 to confirm there is no degradation in the elastomer when exposed to chlorine and chloramine.
 8. Tideflex or approved equal.
- C. Stainless Steel Pipe and Fittings
 1. Stainless steel pipe shall be Type 304L fabricated from ASTM A-240 materials.
 2. Fabrication, inspection, testing, marking and certification of pipe and fittings shall be in accordance with ASTM A-778 and ASTM A-774.
 3. Flanges shall be Type 304L stainless steel. Flange design by Manufacturer with bolt pattern per ANSI B16.5.
- D. Flange Gaskets
 1. Flange gaskets shall be full-faced and shall be in accordance with ASTM D1330.
 2. Flange gasket drilling pattern shall conform to ANSI B16.1/B16.5.
 3. Flange gaskets shall be 1/16" thick. Gasket material shall be EPDM.
- E. Fasteners
 1. Hex head bolts and nuts shall be carbon steel conforming to ANSI/ASME B18.2.1 and ANSI/ASME B18.2.2.
 2. Plastic insulating sleeve/washers shall be utilized to isolate dissimilar bolt and flange metals where required.
- F. Pipe Supports
 1. All components shall be ASTM A36 steel or equal.
 2. Fabricate using flat bar or sealed tubular sections. Details that are difficult to maintain or paint in the field will not be accepted.
 3. Bracket or support material directly in contact with stainless steel pipe shall be Type 304L stainless steel.

4. Plastic insulating sleeve/washers shall be utilized to isolate dissimilar metals where required.
- G. Coatings
1. Following installation of the manifold system, all carbon steel and ductile iron pipe, fittings, bolted connections, pipe supports, and appurtenances shall be coated according to the interior tank paint specification.
 2. **The inlet nozzles and check valves shall not be coated.** They shall either be masked or be mounted after coating of the tank and piping. Contractor to ensure masking materials are removed after coating.

PART 3 EXECUTION

- A. Delivery, Storage, and Material Handling
1. Individual nozzles and outlet valves shall be packaged separately from the piping equipment.
 2. All flanges shall be protected by using plastic inserts or plank wood, pipe sections are to be fully supported to prevent pipe deflection or damage to fittings or connections.
 3. All equipment shall be shipped on pallets capable of fully supporting the pipe sections across their entire length. Pallets should be accessible for fork lift transport or strap and hoist means without causing any load to the pipe equipment.
 4. All stainless steel components shall be stored separately away from any carbon steel components or other materials that could stain or deface the stainless steel finish from run-off of oxidized ferrous materials.
 5. All pipe equipment should be covered and stored in areas free from contact with construction site sediment erosion to prevent accumulation of materials within the pipe and fittings.
 6. Duckbill nozzles should be protected from contact with rigid objects during handling and storage. The contractor shall be responsible for replacing any duckbill nozzles or elastomeric components that are damaged after arrival on the site through installation and start-up of the system.
- B. Installation
- Installation of the manifold system shall be in accordance with the installation plans and guidelines provided by the HMS manufacturer and as specified in the installation section of the IOM manual. Refer to section on Submittals for quantities and delivery schedules of the documents.
- C. Installation Inspection and Start-Up Testing Procedures
- The HMS manufacturer's authorized representative shall provide one (1) day inspection to verify that the system has been installed in accordance with the design specifications and installation drawings.
- D. Start-Up Flow Testing
1. Following installation of the complete manifold piping system, the contractor shall open the upstream isolation valve to allow flow into the tank through the manifold system. The isolation valve must be opened slowly to prevent surge or over-pressurization of the manifold system. The isolation valve must be fully opened to inspect the flow characteristics of the manifold system.
 2. The contractor and factory representative shall visually inspect the entire piping system for leakage.
 3. The contractor and factory representative shall visually inspect all of the inlet nozzles to ensure flow is being discharged into the tank through all nozzles.

- E. Warranty
1. All piping, pipe support brackets, joint connections, expansion joints, and anchors shall be warranted by the HMS manufacturer against failure under design conditions for a period of one (1) year from the date of final installation approval by the Engineer.
 2. Inlet nozzles and outlet valves shall be warranted by the manufacturer against failure under design operating conditions for a period of one (1) year from the date of final installation approval by the Engineer. Elastomer components damaged as a result of maintenance activities, foreign debris, or excessive exposure to direct ultraviolet and thermal radiation may be excluded from warranted coverage.

END OF SECTION 46 41 00



Northwest Elevated Water Storage Tank for the Barrow County Board of Commissioners

Appendix

August 2025



Report of Geotechnical Exploration
Barrow County NW Water Tank
Hoschton, Georgia
S&ME Project No. 24800066

PREPARED FOR:

**Precision Planning, Inc.
400 Pike Boulevard
Lawrenceville, Georgia 30046**

PREPARED BY:

**S&ME, Inc.
4350 River Green Parkway, Suite 200
Duluth, Georgia 30096**

April 25, 2024



April 25, 2024

Precision Planning, Inc.
400 Pike Boulevard
Lawrenceville, Georgia 30046

Attention: Mr. Richard Crowder, P.E.

Reference: **Report of Geotechnical Exploration**
Barrow County NW Water Tank
1166 GA-124, Hoschton, Georgia
S&ME Project No. 24800066

Dear Mr. Crowder:

S&ME, Inc. (S&ME) has completed a geotechnical exploration for the referenced project. Our services were performed in general accordance with our Proposal No. 24800066, dated February 21, 2024, as authorized by the Precision Planning "Agreement Between Engineer and Consultant", dated February 23, 2024. This report describes our understanding of the project, the subsurface conditions encountered, and presents our geotechnical engineering recommendations for the planned construction.

We appreciate the opportunity to serve as the geotechnical consultant during this phase of the project. Please contact us if you have questions about this report or if we may be of further service.

Sincerely,

S&ME, Inc.



William L. Fox, P.E.
Senior Engineer
GA Reg. No. 033940

A handwritten signature in blue ink, reading "Timothy J. Mirocha".

Timothy J. Mirocha, P.E.
Principal Engineer
GA Reg. No. 21386



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Appendix



1.0 Purpose

The purpose of this exploration was to obtain subsurface data so we could evaluate the site soil conditions and assess their characteristics relative to support of the proposed water tank. This report provides the following:

- A summary of the project information;
- A summary of current site conditions, topography, and area geology;
- A summary of the field exploration methods;
- A summary of the subsurface conditions encountered in the test borings;
- A summary of the laboratory test data;
- Results of our analysis and conclusions;
- Discussion of shallow foundations;
- Recommendations for design of deep foundations;
- Recommendations for Seismic Site Class based on the procedure discussed in AWWA D100-11; and
- An Appendix including Site Location Map, Boring Location Plan, individual boring logs, and laboratory test reports.

2.0 Project Information

Our understanding of the project was based on February 2024 email conversations and a February 19, 2024, site visit by Mr. Richard Crowder, P.E. of Precision Planning, Inc. (PPI) and Mr. Tim Mirocha, P.E. of S&ME. Appended to one of the emails was the drawing "Tank Site Sketch" (dated January 26, 2024) and prepared by PPI. On previous similar projects, we were provided with a "Soil Investigation Report Requirements" document (prepared by Caldwell Tanks) to use as a guideline document for preparing our proposed scope of services. That document includes information regarding the various exploration, analytical and report requirements for elevated water tanks.

We understand that PPI is helping the Barrow County Water Department with planning for construction of an elevated water tank next to an existing tank at 1166 GA-124 in Hoschton, Georgia. The approximate location of the site is shown on the appended Site Location Plan (Figure No. 1). At the time of this report, the actual tank type and size had not been determined but the tank is expected to be on the order of 0.75-million-gallon capacity. The center of the foundation was set. The foundation area was not known but is expected to be on the order of 30 to 55 feet in diameter. Details about the tank structural loading conditions were also not available. The preferred foundation systems are anticipated to be either shallow foundations (i.e., spread footings, ring, or mat foundation) if feasible, or deep foundations (i.e., piles) if shallow foundation support is not feasible.

Because structural loading information was not available at this time, we have assumed the following design information for the tank. These assumptions are based on our prior experience with a similar 0.75-million-gallon tank.



- Support stem or column ring diameter = 36 feet
- Dead load = 1,950 kips
- Water load = 6,330 kips

Based on information presented in the Soil Investigation Report Requirements document, for a multicolumn tank the maximum tolerable total settlement is 1½ inches and the maximum differential settlement is ¾ inch between adjacent column piers or between column and center riser. For a standpipe or single pedestal tank, the maximum total settlement is 2 inches, and the maximum differential settlement is 0.001 inches per 1 inch across the diameter of the foundation.

Site grading plans were not available at the time of this report. The ground surface at the proposed tower site was observed to be gently sloping from northeast to southwest, with a small apparent stockpile of soil in the southwestern side of the expected tank foundation area. Grades in the tank area (shown on the provided topographic plan) generally range from about 965 feet to 962 feet, except in the apparent stockpile area which has a top elevation of 968 to 970 feet. Thus, we anticipate that mass grading (if any) will involve cuts and fills on the order of 3 feet in the general footprint area of the water tower.

Please have the project information and assumptions detailed above reviewed and confirmed by the appropriate team members. Modifications to our conclusions and recommendations may be required if the actual conditions vary from the project information and assumptions described herein.

3.0 Exploratory and Testing Procedures

3.1 Field Exploration

Our engineer made a site reconnaissance to observe pertinent site features and mark the test boring locations. The locations of the four soil test borings (identified as B-01 through B-04) for this exploration were established by Mr. Eddie Polanco of S&ME. The borings were established using a handheld GPS unit uploaded with preestablished points. The approximate boring locations are shown on the appended Test Location Plan (Figure No. 2). Because of the limited accuracy of the methods used, the boring locations shown on the Test Location Plan and the elevations on the Boring Logs should be considered approximate.

The soil test borings for this exploration were made by mechanically twisting hollow stem augers into the soil in general accordance with ASTM D6151, *Standard Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling*. Soil samples were obtained at prescribed intervals in the upper 10 feet and at 5-foot intervals thereafter in general accordance with ASTM D1586, *Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils* until the termination depths, or shallower auger refusal, were reached. During standard penetration testing, the sampler was first seated 6 inches and then driven two additional 6-inch increments with blows of 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final 12 inches was recorded and is designated the "standard penetration test (SPT) resistance" or "N-value" with units of blows per foot (bpf).



An automatic hammer was used during the standard penetration testing. Automatic hammers are typically more efficient than manual hammers and can thus yield lower standard penetration resistances than would likely be recorded using a traditional manual hammer. We have accounted for this improved efficiency in our analysis, but the consistency descriptions shown on the boring logs are based on the field resistance data.

Groundwater level readings were attempted in each of the SPT boreholes. Upon completion of drilling, sampling, and attempted water level readings, each borehole was backfilled with soil cuttings and a borehole closure device.

Auger cuttings from the upper five feet of borings B-02 and B-04 were collected to create composite bulk soil samples. These samples were transported to our laboratory for testing.

Three relatively undisturbed samples of soil were obtained from various depths from an auger hole drilled adjacent to borings B-03. These samples were obtained by pushing a nominal three-inch-diameter, steel tube into the soil to the desired depth. After allowing the sampler to sit for a short time, it was retrieved from the borehole. The tube was then moisture sealed in the field after sampling and returned to our laboratory for further examination and testing.

3.2 Laboratory Testing

Soil samples obtained during the exploration were transported to our laboratory where a member of our engineering staff visually classified the samples in general accordance with ASTM D2488, *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*. The stratification lines shown on the appended Boring Logs represent the approximate boundaries between soil types, but the transitions may be more gradual than shown.

To aid with our classifications and analyses, select split-spoon and undisturbed samples were subjected to the following tests:

- Moisture content tests (ASTM D2216)
- Atterberg limits tests (ASTM D4318)
- Sieve analyses (ASTM D6913)
- Standard Proctor (ASTM D698)
- Triaxial shear test (ASTM D4767)
- One-dimensional consolidation tests (ASTM D2435)

4.0 Site, Geology, and Subsurface Conditions

4.1 Site Conditions

The overall site is located southwest of the intersection of GA-124 and Old Victron School Road in Hoschton, Barrow County, Georgia. The proposed location of the new tower is on the southeast part of the site adjacent to an existing Barrow County elevated water tank. At the time of our exploration, the proposed location was wooded with widely spaced large trees and contained moderate undergrowth. Some apparent dumping of soil in the area of the future water tank was observed, creating an apparent stockpile of soil, but other materials could be



contained within stockpile. Thus, path clearing was needed to create access for our drilling equipment around the irregular surface and between the large trees.

Review of historical aerial imagery from Google Earth showed that most of the proposed tower location had been wooded/vegetated and structurally undeveloped since at least 1985 (the earliest available aerial image).

4.2 Geologic Conditions

4.2.1 Fill Materials

Soils classified as fill materials were encountered in one of the test borings of this exploration. Fill materials are soils (or other materials) that have been placed in conjunction with previous site development (or farming). Fill can be composed of different soil types from various sources and can also contain debris, organics, topsoil, and/or deleterious materials. The engineering properties of fill depend primarily on its composition, density, and moisture content. We do not expect documentation of the apparent fill material exists.

4.2.2 Residual Materials

The project site is in Georgia's Piedmont physiographic province. The soil overburden of this area was formed by in-place weathering of the parent metamorphic and igneous rocks. The *Geologic Map of Georgia* (1976) indicates that the site is underlain by an undifferentiated formation of granitic gneiss and amphibolite. A typical upland Piedmont soil profile consists of a thin layer of topsoil underlain by a clayey soil stratum that transitions with increasing depth into less clayey, coarser grained soils with varying mica content. Separating the completely weathered soil overburden from the unaltered parent rock is a transition zone of very high consistency materials locally referred to as *partially weathered rock*. Partially weathered rock retains much of the appearance and fabric of the parent rock formation and may consist of alternating layers of high consistency soil and rock. Partially weathered rock exhibits standard penetration resistances of 100 blows per foot (bpf) (50/6") or more.

The weathering processes that formed the overburden soils and partially weathered rock were extremely variable, depending on such factors as rock mineralogy, past groundwater conditions, and the tectonic history (joints, faults, igneous intrusions, etc.) of the specific area. Differential weathering of the rock mass has resulted in erratically varying subsurface conditions, evidenced by abrupt changes in soil type and consistency in relatively short horizontal and vertical distances. Furthermore, depths to rock can be irregular and isolated boulders, discontinuous rock layers, or rock pinnacles can be present within the overburden and transition zones.

4.3 Subsurface Conditions

The subsurface descriptions below are of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the Appendix should be reviewed for specific information at the individual test locations. The depth and thickness of the subsurface strata indicated on the boring logs were generalized and the transitions between materials may be more gradual than indicated. Information on actual subsurface conditions exists only at the specific boring locations and is relevant to the time the exploration was performed. Variations may occur, and should be expected, between and away from the boring



locations. The stratification lines were used for our analytical purposes and should not be used as the basis for design or construction cost estimates.

4.3.1 Fill Materials

Boring B-04 initially penetrated about 3½ feet of apparent fill materials that were visually classified as silty sand (SM). An SPT N-value of weight-of-hammer ("WOH", effectively zero blows) was recorded in the fill. The fill soils were judged to be moist.

4.3.2 Residual Materials

Residual materials were encountered below the surface or underlying the fill materials in the test borings to a depth of about 23½ to 24 ½ feet. The uppermost residual materials to depths of about 3½ to 6 feet were generally described as orange, red and brown clayey sand (SC), lean clay (CL), and fat clay (CH) that transitioned to silty sands (SM) with increasing depth. SPT N-values in the residuum ranged from 8 to 86 bpf but were typically between 10 and 30 bpf. The soil samples were judged to be moist.

4.3.3 Partially Weathered Rock

Partially weathered rock (PWR) was encountered beneath the residual soils in each boring at a depth of about 23½ to 24½ feet (approximate elevations of 940.5 to 943.5). The standard penetration resistances in the PWR ranged from 50 blows for 6 to 2 inches of penetration of the sampler. Recovered samples of PWR consisted of silty sands (SM). Recovered split-spoon soil samples were moist to the touch.

4.3.4 Auger Refusal

Auger refusal was encountered at a depth of 36 feet (approximate elevation 929 feet) in boring B-01. The other borings did not encounter refusal materials above their planned termination depths. Auger refusal is typically interpreted as the upper surface of bedrock. Boring B-01 was terminated after encountering auger refusal as rock coring was not included in our scope of services.

4.3.5 Boring Termination

Three of the test borings essentially reached their planned termination depth of 30 feet, while Boring B-01, originally planned to be drilled to a depth of 65 feet, was terminated at 36 feet upon encountering auger refusal at 36 feet. After completion, each borehole was checked for the presence of groundwater and then was backfilled with soil cuttings and a borehole closure device.

4.3.6 Groundwater

Groundwater was not encountered in the boreholes at the time of drilling. We note that groundwater levels can fluctuate several feet with seasonal and yearly rainfall variations and other factors; therefore, groundwater levels could be higher than the depths encountered in this exploration in the future.



5.0 Laboratory Test Results

As previously noted, quantitative laboratory testing was performed on select samples from our exploration. The following tables present summaries of the laboratory test data and the test reports are included in the Appendix.

Boring	Depth (ft)	Natural Moisture Content (%)	Std. Proctor Maximum Dry Density (pcf)	Std. Proctor Optimum Moisture Content (%)	Fines Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)
B-01	0 – 1.5					50	27	23
B-01	3.5 – 5	20.1						
B-01	6 – 7.5	7.9						
B-02	0 – 1.5	24.4						
B-02	3.5 – 5	14.0						
B-02	0 - 5		108.6	15.7				
B-03	0 – 1.5					56	27	29
B-03	3.5 – 5	23.0						
B-03	6 – 7.5	19.1			38			
B-03	13.5 - 15				16			
B-04	0 – 1.5	14.8						
B-04	3.5 - 5	21.0						
B-04	0 - 5		110.4	16.1				

Boring	Depth (ft)	Natural Moisture Content (%)	In-Situ Dry Density (pcf)	Effective Cohesion (psf)	Effective Stress Friction Angle (°)	Consolidation Strain at 16 ksf (%)
B-03	5 – 7	22.2	94.6			6.4
B-03	15 – 17			160	27.4	

6.0 Conclusions and Recommendations

6.1 Site Assessment

Based on the boring data from this exploration and our experience, it is our opinion that the site is adaptable for the planned development. We evaluated the possibility to support a 750,000 gallon water tank on a “shallow” mat



foundation at a bearing depth of 5 feet using the assumed loads discussed in the Project Information section. Results of our preliminary analyses indicated that estimated total settlements at the assumed contact stresses may be within typically tolerable limits. We have also evaluated the use of a deep foundation system consisting of augered, cast-in-place piles for tank support. Our recommendations regarding these issues as well as other geotechnical aspects of the proposed construction are discussed in the following sections.

6.2 Earthwork Recommendations

We have assumed that maximum fill heights and cut depths on the order of 3 feet will be needed to mass grade the footprint area of the tower after removal of the apparent stockpile soils.

6.2.1 Stripping and Initial Subgrade Preparation

To prepare the site for construction, existing vegetation, utilities (to be abandoned), stockpiled soils, debris, organics, topsoil, and large root systems should be stripped from the tank, any slope areas and access road areas. As mentioned, the site was wooded with widely spaced large trees and contained moderate undergrowth. Although not shown on the boring logs, the contractor should expect large roots and/or roots in a dense state where trees are present.

After the site has been stripped, we recommend that the at-grade areas and those that are to receive fill be proofrolled. Proofrolling consists of applying repeated passes to the subgrade with heavy rubber-tired equipment such as a loaded dump truck. Materials judged to deflect excessively under the wheel loads, and which cannot be densified by continued rolling, should be undercut to stable soils before placing fill. The actual horizontal and vertical extent of undercut should be determined by the geotechnical engineer, or his qualified representative, during construction, and will be highly dependent upon final grades and conditions observed during grading.

6.2.2 Existing Cultivated/Disturbed Soils

Depending on weather conditions just before and during initial grading, some of the surficial soils may be soft, wet, and/or unstable. The time of the year that the sitework begins can affect these soils considerably. In this area, the "wet season" is generally between the months of December and May, and the "dry season" from June to October or November. The access drive for the new tank site should be maintained during wet weather to not hinder site access. There are many considerations that need to be addressed prior to bidding a project that could affect the budget based on the time of year a project starts earthwork activities. Below are considerations that should be addressed based on the time of the year earthwork is started.

6.2.2.1 "Wet" Season

During the wet season, the surface soils will have a higher moisture content and may be soft or unstable, therefore, hindering the compaction of new fill. In addition, the time period between rain events, and temperature are not generally conducive to drying soils by aeration. The decision to either try to scarify, dry, and compact the in-place soils, or to undercut and replace the soils with suitable material should be based on the anticipated weather conditions and schedule at the time of construction. Based on our experience, the amount of undercut could be 1 foot (or greater in localized areas), whereas in drier weather, lesser amounts of undercutting may be needed.



6.2.2.2 “Dry” Season

During the dry season, the surface soils tend to have a lower moisture content and may be more stable. They may be stable enough for the placement of new fill but could break down under repeated passes with heavily loaded equipment. The upper soils may be dry enough to allow re-compaction in place, if unstable. In addition, new fill from cuts or other sources may need to be moisture conditioned prior to compaction.

6.2.3 *Existing Fill Materials*

As noted above, undocumented fill materials were encountered in the apparent stockpile where boring B-04 was drilled on the southwestern side of the tank. Since we anticipate the fill soils will likely be removed during foundation construction, remediation is not anticipated to be necessary. If the soils are outside the foundation area, but underneath an appurtenant structure or area to be paved, we recommend the existing fill soils be undercut and replaced.

6.2.4 *Earth Material Utilization and Fill Placement*

After subgrade evaluation/preparation, areas to receive fill may be brought to design subgrade levels with structural fill. Structural fill is defined as inorganic natural soil with maximum particle sizes of about 6 inches and Plasticity Indexes of about 30 or less. Structural fill should be placed in relatively thin (4- to 8-inch) layers and compacted to at least 95 percent of the soil's maximum dry density as determined by the standard Proctor compaction test (ASTM D698). Because slab and pavement support characteristics of Piedmont soils typically improve with greater density, we recommend a higher degree of compaction (98 percent) in the upper 12 inches of any planned slabs on-grade and the pavement areas. In addition to achieving the compaction criteria, the materials should be firm and stable under repeated construction traffic.

The overburden soils (at proper moisture contents) are expected to be satisfactory for use as structural fill. At times, moisture conditioning of excavated soil may be needed to achieve moisture contents compatible with achieving a high degree of compaction. Moisture conditioning may include some drying, especially during the wet season and possibly some “wetting” during the drier summer months.

Maximum particle sizes for structural fill placed as backfill around utilities should be limited to about 3 inches to reduce the chance of damaging the conduits and to help facilitate adequate compaction using the smaller equipment usually necessary when backfilling utility trenches.

6.2.5 *Fill Density Testing*

In-place density testing must be performed as a check that the previously recommended compaction criteria have been achieved. We recommend that observation and density testing be performed on an essentially full-time basis during mass grading. Part-time testing should suffice for utility trench backfills and pavement area fills, if any. A suggested testing frequency is one test for every 2,500 to 5,000 square feet of pavement and slab area fill. Utility trench backfill should be tested at a frequency of every 100 to 150 linear feet. Tests should be performed at vertical intervals of 2 feet or less as the fill/backfill is being placed. We recommend density testing by a technician working under the direction of our project engineer.



6.2.6 *Groundwater Control*

We do not anticipate that groundwater will impact mass grading, shallow foundation, or utility excavations at this site. There is a chance that groundwater could be encountered in some areas during underground utility installation. If groundwater is encountered in utility excavations, it can usually be handled with pipe bedding stone and temporary pumps placed in the excavation. We recommend that dewatering (if necessary) be the contractor's sole responsibility.

6.3 **Foundation Recommendations**

6.3.1 *Shallow Foundations*

We preliminarily evaluated the option to support the assumed 0.75 million gallon tank with a shallow mat foundation. The mat foundations were assumed to bear 5 feet below present grade to allow for some backfill placement above the foundation for overturning resistance. We made calculations to estimate settlement of mat foundations using the software program Settle3D. Our analyses were based on the subsurface conditions encountered in the borings, the laboratory test results, empirical correlations for soil properties, and the assumed static loading information. We analyzed circular mat foundations from 30 to 55 feet in diameter subjected to a total static load of up to 8,280 kips evenly distributed over the foundation area. Our preliminary settlement estimates for the foundation diameters analyzed are presented in the table below.

Mat Diameter (feet)	Maximum Static Load (kips)	Estimated Total Settlement (inches)
30	8,280	4.6
35	8,280	3.4
40	8,280	2.5
45	8,280	1.8
50	8,280	1.3
55	8,280	1.0

Results of our analyses indicate anticipated maximum total settlements of 1 to 5 inches for the assumed loads and foundation diameters at a bearing depth of 5 feet. If a shallow mat foundation is planned, we should be retained to perform additional analyses and provide foundation recommendations once the tank size, type, loads, and foundation size shape and depth are known.

6.3.2 *Auger Cast Piles*

The assumed 0.75 million gallon water tank can also likely be supported by a deep foundation system consisting of augered, cast-in-place piles. Auger-cast piles are created by advancing augers into the ground and pressure grouting the augered hole during auger removal. The auger-cast piles will develop their allowable load resistance



through a combination of end bearing and skin friction. Our anticipated allowable loads as a function of installed length for individual 16-inch and 18-inch diameter piles are presented in the table below. We have included a factor of safety of 2 for skin friction and 3 for end bearing in our analyses. We recommend that the piles be spaced no closer than 3-pile diameters, center to center.

Pile Diameter (inches)	Installed Length Below Pile Cap (feet)	Allowable Compressive Load (Tons)	Allowable Uplift Load (Tons)
16	35	100	15
18	35	120	17

The recommended allowable loads presented above assume that the piles are installed to the recommended lengths below the pile cap (assumed 5 feet deep) or pile auger refusal. The axial compressive load can be increased by 1/3 for transient loads such as wind or seismic forces. If the recommended uplift resistances are not sufficient, available resistances can be increased if the piles can be confirmed to penetrate into the partially weathered rock but that may require additional drilling efforts during installation.

We have also analyzed the subsurface conditions for resistance of lateral loading by the auger-cast piles using the computer program LPILE. For our analysis, we have assumed that the upper 20 feet of each pile will be reinforced with six No. 6 bars for 16-inch diameter piles and with eight No. 6 bars for 18-inch diameter piles. The results of our analyses indicate the ultimate lateral resistances listed in the table below should be available for the pile head deflections and fixity conditions.

Head Fixity	Head Deflection (in)	Ultimate Lateral Resistance (kips)	
		16 in. Diameter	18 in. Diameter
Pinned	¼	19	24
	½	26	34
Fixed	¼	33	42
	½	45	59

If the above ultimate lateral resistances are not sufficient to resist the anticipated lateral forces with an adequate factor of safety, piles can be battered to provide resistance to lateral forces. The appropriate design code should be checked to confirm if battered piles can also be relied upon for support of vertical loads. If battered piles are used, we do not recommend that the ultimate lateral resistances above be used in conjunction with the battered capacities.



The pile contractor should be qualified, experienced and properly equipped to drill piles of the specified diameters into the soil types encountered at this site. The provided allowable loads for auger-cast piles are based on the assumption that the piles will be installed with a rotary drive box which applies at least 25,000 foot-pounds of torque and weighs (drive box and auger) at least 5,000 pounds. Piles should be drilled to the designed length or to "refusal". "Refusal" should be defined as a penetration rate of less than 1 foot per minute with the recommended equipment at maximum torque and down pressure. We do not anticipate that refusal will be routinely encountered within the lengths recommended in the above table.

We recommend that a static load-testing program, consisting of at least one static pile load test, be performed to check pile allowable load and installation procedures. For additional information, strain gauges could be placed in a test pile at the tip, along the shaft, and at the top of the pile to monitor the distribution of load transfer from the pile to the adjacent soil during the testing program. Revisions to pile design embedment depths and/or capacities may be necessary based on the results of the testing program and the strain gauge data would be valuable in interpreting the load test data. The static load-testing program should be performed in accordance with ASTM D1143 (Quick Test) to a minimum of 200 percent of the final design load. However, we recommend that the Contractor be equipped to attempt to "plunge" the test pile to provide its ultimate capacity. That data may allow for length adjustments to the production piles.

We recommend that all piles contain at least 1.15 times the neat-line volume of grout calculated for the length of pile installed. The specifications should require that before commencing grouting operations, the contractor have at the job site the volume of grout necessary to complete each pile. At the start of pumping grout, the contractor should raise the auger approximately 6 to 12 inches. After a grout head of 5 feet is built up, the augers should be redrilled back to the bottom of the hole, and the pile hole should be filled with grout as the auger is removed, without interruption. During the forming of the pile, the minimum required pump strokes per linear foot of pile, as determined by pump calibration and load test, shall be achieved. Should less than the required pump strokes per foot occur in any 1-foot increment, the auger should immediately be advanced 3 feet below the point in question and forming of the pile resumed. Pressure of the grout during pumping should be maintained between 75 and 150 pounds per square inch (psi). If the pressure falls below 75 psi, the auger should be advanced to a point 3 feet lower than the elevation at which the pressure loss occurred. The auger hoisting equipment should be capable of withdrawing the auger smoothly and at a constant rate. If the auger jumps upward during withdrawal, if the process is interrupted, or if there is decreased grouting pressure, the auger should be reinserted at least 3 feet below the point in question and the pumping process continued.

The leads should be clearly marked for the purpose of measurement of auger penetration, at a minimum of 1-foot intervals, in such a manner that the depth of the auger tip can easily be determined from observations made at the ground level. Auger flights should be continuous and have a nominal outside diameter equal to the pile's design diameter. A cork should be provided at the point of discharge for protection of the hollow shaft during augering. Excessively worn augers should be replaced. The bit should be a bottom discharge bit or should discharge at a point below the auger cutting teeth. Cutting teeth should periodically be replaced as they wear.

Auger-cast piles will require special attention during construction so that recently placed pile grout is not damaged by adjacent pile installation. A minimum edge to edge spacing of at least six pile diameters should be maintained between piles installed on the same day.



We recommend that detailed field records be maintained by our representative to check pile type, location, length, diameter, tip and butt elevations, the quantity of grout actually pumped into each pile hole, and pertinent remarks. Grout volumes should be monitored both by recording actual pump displacement and by observing the time rate of auger withdrawal. During grouting, qualified personnel should be present to cast compressive test specimens. We recommend that at least one set of specimens, six specimens per set, be cast per day or that at least one set of specimens be cast for every 25 cubic yards of grout pumped. Batching tickets should reference the mix approved in the specifications and show batching time. A flow cone should be used to check the fluidity of the grout mix. The use of the flow cone is analogous to checking concrete slump. We recommend that the flow test be in accordance with ASTM C939, *Standard Method for Flow of Grout for Preplaced-Aggregate Concrete* except that a $\frac{3}{4}$ -inch orifice should be used. A recommended flow rate is 15 to 28 seconds. We request that we be allowed to review the contractor's proposed equipment and installation procedure prior to mobilization and construction.

Field monitoring of the auger-cast pile installation is an extension of the foundation design and is particularly critical for this foundation type. Detailed knowledge of subsurface conditions as well as the foundation design process is necessary for the field judgments routinely required during foundation installation. Because of these factors, the previously described foundation recommendations must be considered valid *only* if S&ME is afforded the opportunity to observe pile installation. If you retain another consultant for observation of foundation installation, we strongly recommend that you verify with that consultant the ultimate responsibility for the performance of the foundation system. Our company simply cannot be held responsible for performance of these foundations unless we are allowed to observe their installation.

6.4 Site Class

Each of the borings of this exploration reached partially weathered rock or refusal materials. Based on the soil conditions encountered and Table 25 of AWWA D100-11, *Welded Carbon Steel Tanks for Water Storage*, we recommend the Site Class of C for this project.

7.0 Limitations of Report

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. This report is for our geotechnical service only, and no environmental assessment efforts have been performed. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.

The analyses and recommendations submitted herein are based, in part, upon the data obtained from the exploration. The nature and extent of variations between the borings may not become evident until construction. If variations appear evident, then we should be given the opportunity to re-evaluate the recommendations of this report. In the event that any changes in the nature, design, or location of the structure are planned, the conclusions and recommendations contained in this report will not be considered valid unless the changes are reviewed, and conclusions modified or confirmed in writing.



For additional information regarding the use and limitations of this report, please read the *Important Information about your Geotechnical Engineering Report* document located at the end of this report.

Appendix



REFERENCE:
Google Earth

DRAWING FOR INFORMATION PURPOSES ONLY



SITE LOCATION PLAN

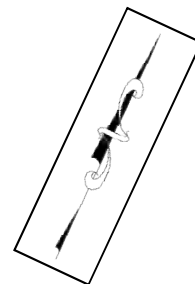
BARROW COUNTY NW WATER TANK
1166 GA-124
HOSCHTON, GEORGIA

SCALE:
NOT TO SCALE

DATE:
4-17-2024
PROJECT NUMBER
24800066

FIGURE NO.

1



REFERENCE:
"Geotech Sketch", dated June 16, 2023, prepared by Precision Planning.

DRAWING FOR INFORMATION PURPOSES ONLY

LEGEND:



APPROXIMATE TEST BORING LOCATION



TEST LOCATION PLAN

BARROW COUNTY NW WATER TANK
 1166 GA-124
 HOSCHTON, GEORGIA

SCALE:
 NOT TO SCALE

DATE:
 4-17-2024
 PROJECT NUMBER
 24800066

FIGURE NO.

2

SOIL LOG

LEGEND



SOIL PROPERTY SYMBOLS

N - Standard Penetration, bpf **LL** - Liquid Limit, % **PPV** - Pocket Penetrometer Value, tsf
NMC - Natural Moisture Content, % **PL** - Plastic Limit, % **Qu** - Unconfined Compressive Strength
F - Fines Content, % **PI** - Plasticity Index, % **γ_d** - Dry Unit Weight, pcf

The STANDARD PENETRATION TEST (SPT) as defined by ASTM D1586 (or AASHTO T206) is a method to obtain a disturbed soil sample for examination and testing and to obtain relative density and consistency information. A standard 1.4-inch I.D./2-inch O.D. split-barrel sampler is driven three 6-inch increments with a 140 lb. hammer freely falling 30 inches. The hammer can either be of a trip, free-fall design, or actuated by a rope and cathead. The SPT N Value is determined by adding the number of blows from the 2nd and 3rd 6-inch increments. A normalized blowcount (N_{60}) may be determined by the following equation: $N_{60} = [\text{Rig Energy Ratio (\%)} / 60] * N$.



SPT



ST

SHELBY TUBE (ST) samples are obtained by hydraulically pushing a thin-walled tube (typically 3-inches in diameter) to obtain a relatively undisturbed sample for testing of fine-grained soils to determine engineering properties such as strength, compressibility, permeability, and density. Shelby tubes are sampled in general accordance with ASTM D1587 (AASHTO T207).

Descriptive Order of Soil Strata: Geologic Disposition (i.e., Fill, Colluvium, Alluvium, etc.), ASTM Group Name (ASTM Group Symbol), quantified/qualified soil constituents, misc. constituents, consistency/density, color, organic description, moisture. ASTM group classifications is determined per ASTM D2487 where lab testing has been performed and ASTM D2488 where lab testing has not been performed.

ASTM GROUP NAME (SYMBOL) AND GRAPHIC

	WELL GRADED GRAVEL (GW)		WELL GRADED SAND (SW)		LEAN CLAY (CL)		TOPSOIL
	POORLY GRADED GRAVEL (GP)		POORLY GRADED SAND (SP)		SILTY CLAY (CL-ML)		ASPHALT
	WELL GRADED GRAVEL WITH SILT (GW-GM)		WELL GRADED SAND WITH SILT (SW-SM)		SILT (ML)		BASE - CEMENT MODIFIED
	WELL GRADED GRAVEL WITH CLAY (GW-GC)		WELL GRADED SAND WITH CLAY (SW-SC)		FAT CLAY (CH)		BASE - CEMENT STABILIZED AGGREGATE
	POORLY GRADED GRAVEL WITH SILT (GP-GM)		POORLY GRADED SAND WITH SILT (SP-SM)		ELASTIC SILT (MH)		BASE - GRAVEL
	POORLY GRADED GRAVEL WITH CLAY (GP-GC)		POORLY GRADED SAND WITH CLAY (SP-SC)		ORGANIC LOW PLASTICITY SILT OR CLAY (OL)		CONCRETE
	SILTY GRAVEL (GM)		SILTY SAND (SM)		ORGANIC HIGH PLASTICITY SILT OR CLAY (OH)		VOID / NO RECOVERY
	CLAYEY GRAVEL (GC)		CLAYEY SAND (SC)		PEAT (PT)		IGM / PWR
	CLAYEY GRAVEL WITH SILT (GC-GM)		CLAYEY SAND WITH SILT (SC-SM)				

FINE-GRAINED SOIL (Relative Consistency)			COARSE-GRAINED SOIL (Relative Density)		MINOR CONSTITUENTS (% By Weight)		ORGANIC CONTENT OF SOIL (Determined by ASTM D2974 or AASHTO T267)	
	N	PPV		N		Percentage	Classification	Percentage
Very Soft	< 2 bpf	< 0.25 tsf	Very Loose	< 5 bpf	Trace	0% - 10%	With Organic Matter	4% - 15%
Soft	2 - 4 bpf	> 0.25 - 0.5 tsf	Loose	5 - 10 bpf	Little	11% - 20%	Organic Soil	16% - 30%
Firm	5 - 8 bpf	> 0.5 - 1.0 tsf	Medium Dense	11 - 30 bpf	Some	21% - 35%	Peat	> 30%
Stiff	9 - 15 bpf	> 1.0 - 2.0 tsf	Dense	31 - 50 bpf	"And"	≥ 36%		
Very Stiff	16 - 30 bpf	> 2.0 - 4.0 tsf	Very Dense	> 50 bpf				
Hard	> 30 bpf	> 4.0 tsf						

MOISTURE CONDITION



At Time of Drilling (ATD)



End of Drilling



After Drilling

Dry Absense of moisture, dusty, dry to touch

Moist Damp but no visible water

Wet Visible free water, usually soil is below water table

Groundwater observation made anytime during the drilling process. Depending on time of reading and drilling methodologies, this value may be influenced by the drilling process.

Groundwater measurement soon after the drilling processes are complete, and the borehole is at final depth. Drilling fluids, if introduced during drilling, may influence this measurement.

Groundwater measurements made in a borehole hours to days after drilling is complete. Depending on subsurface conditions, elapsed time, drilling process, etc. this observation may reflect a stabilized level.

REFERENCES:

FHWA NHI-16-072, Geotechnical Engineering Circular No. 5 "Geotechnical Site Characterization"

ASTM Specifications D2487 and D2488

DOT Specifications & Design Manuals from NC, SC, OH, MI, IN, PA, VA.

PROJECT:

Barrow County NW Water Tank

1166 GA-124, Hoschton, GA

S&ME Project No. 24800066

BORING LOG: B-01

Sheet 1 of 2

DATE DRILLED: 03/12/2024

ELEVATION: 965 ft

NOTES:

DRILL RIG: Diedrich D-50

DATUM:

DRILLER: Piedmont Environmental Drilling

BORING DEPTH: 36.0 ft

HAMMER TYPE: Automatic hammer

CLOSURE: Cuttings with Hole Closure Device

DRILLING METHOD: 3-1/4" HSA

LOGGED BY: Eddie Polanco

LATITUDE:

LONGITUDE:

SAMPLING METHOD: SS

PROJECT COORDINATE SYSTEM - NAD 1983 StatePlane Georgia West FIPS 1002 Feet

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA					ELEVATION	
							20	40	60	80	100		
0		Residuum		S-01	CLAYEY SAND (SC), trace organics, trace mica, loose, orange, moist	3-3-7 N = 10	●						965
3.5	S-02			SILTY SAND (SM), trace mica, loose, brown and tan, fine to medium grained, moist	5-5-5 N = 10	●	○						960
6.0	S-03			SILTY SAND (SM), trace mica, medium dense, white and tan, fine to medium grained, slightly moist	5-7-9 N = 16	○	●						
10	S-04				5-6-8 N = 14	●							955
13.5	S-05				9-15-22 N = 37		●						950
18.5	S-06			SILTY SAND (SM), trace mica, medium dense, white tan and orange, fine to medium grained, moist	6-9-10 N = 19	●							945
23.5	Hole Cave at 21.0 feet	Partially Weathered Rock		S-07	PWR, sampled as SILTY SAND (SM), trace mica, very dense, white gray and brown orange, fine to medium grained, moist	18-50/6" N = 50/6"					●	940	
30				S-08		50/6" N = 50/6"					●	935	

GROUNDWATER

ATD

END OF DRILLING

AFTER DRILLING

AFTER DRILLING

DATE

03/12/2024

DEPTH (FT)

REMARKS

Not encountered

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf),
AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:		Barrow County NW Water Tank 1166 GA-124, Hoschton, GA S&ME Project No. 24800066		BORING LOG: B-02 <i>Sheet 1 of 1</i>	
DATE DRILLED: 03/12/2024		ELEVATION: 965 ft		NOTES: LATITUDE: LONGITUDE:	
DRILL RIG: Diedrich D-50		DATUM:			
DRILLER: Piedmont Environmental Drilling		BORING DEPTH: 29.3 ft			
HAMMER TYPE: Automatic hammer		CLOSURE: Cuttings with Hole Closure Device			
DRILLING METHOD: 3-1/4" HSA		LOGGED BY: Eddie Polanco			
SAMPLING METHOD: SS		PROJECT COORDINATE SYSTEM - NAD 1983 StatePlane Georgia West FIPS 1002 Feet			

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA					ELEVATION		
							20	40	60	80	100			
0	Bulk sample from soil cuttings to about 5 feet	Residuum		S-01	SANDY LEAN CLAY (CL), trace mica, stiff, orange, moist	3-5-6 N = 11	●	○					965	
3.5				S-02	SILTY SAND (SM), trace mica, medium dense, white gray and tan, fine to medium grained, moist	8-12-14 N = 26	○	●						960
5				S-03		6-11-19 N = 30		●						
10				S-04		12-15-14 N = 29		●					955	
13.5				S-05	SILTY SAND (SM), trace mica, medium dense, white gray and brown, fine to medium grained, moist	7-12-18 N = 30		●						950
15				S-06		13-12-11 N = 23		●					945	
20	Hole Cave at 19.0 feet													
23.5		Partially Weathered Rock		S-07	PWR, sampled as SILTY SAND (SM), trace mica, very dense, white gray and brown, fine to medium grained, moist	28-50/4" N = 50/4"					●		940	
25				S-08		22-50/3" N = 50/3"					●		935	
29.3				Borehole terminated at 29.3 feet										

GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD	03/12/2024		Not encountered
END OF DRILLING			
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
 LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf),
 AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:		Barrow County NW Water Tank 1166 GA-124, Hoschton, GA S&ME Project No. 24800066		BORING LOG: B-03 <i>Sheet 1 of 1</i>	
DATE DRILLED: 03/12/2024		ELEVATION: 965 ft		NOTES: Undisturbed samples were taken from an offset boring @ 5-7 ft, 13-15 ft & 15-17 ft.	
DRILL RIG: Diedrich D-50		DATUM:			
DRILLER: Piedmont Environmental Drilling		BORING DEPTH: 28.7 ft			
HAMMER TYPE: Automatic hammer		CLOSURE: Cuttings with Hole Closure Device			
DRILLING METHOD: 3-1/4" HSA		LOGGED BY: Eddie Polanco		LATITUDE: LONGITUDE:	
SAMPLING METHOD: SS			PROJECT COORDINATE SYSTEM - NAD 1983 StatePlane Georgia West FIPS 1002 Feet		

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA					ELEVATION	
							20	40	60	80	100		
0				S-01	FAT CLAY WITH SAND (CH), trace organics, trace mica, stiff, red and brown, moist	3-5-8 N = 13	●						965
5				S-02		5-5-8 N = 13	●	○					960
6.0				S-03	SILTY SAND (SM), trace mica, medium dense, brown and orange, fine to medium grained, moist	5-7-6 N = 13	●	○	△				
8.5				S-04	SILTY SAND (SM), trace mica, medium dense, white tan and orange, fine to medium grained, moist	6-5-7 N = 12	●						
10													
13.5				S-05	SILTY SAND (SM), trace mica, loose to medium dense, white tan and gray, fine to medium grained, moist	4-4-4 N = 8	●	△					950
15													
20	Hole Cave at 19.0 feet			S-06		4-6-6 N = 12	●						945
25				S-07	PWR, sampled as SILTY SAND (SM), trace mica, trace rock fragments, very dense, white tan and gray, fine to medium grained, moist	27-36-50 N = 86				●			940
28.7				S-08	Borehole terminated at 28.7 feet	50/2" N = 50/2"					●		935

GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	03/12/2024		Not encountered
AFTER DRILLING			
AFTER DRILLING			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
 LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf),
 AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT: Barrow County NW Water Tank 1166 GA-124, Hoschton, GA S&ME Project No. 24800066				BORING LOG: B-04 <i>Sheet 1 of 1</i>			
DATE DRILLED: 03/12/2024		ELEVATION: 968 ft		NOTES: LATITUDE: LONGITUDE:			
DRILL RIG: Diedrich D-50		DATUM:					
DRILLER: Piedmont Environmental Drilling		BORING DEPTH: 28.8 ft					
HAMMER TYPE: Automatic hammer		CLOSURE: Cuttings with Hole Closure Device					
DRILLING METHOD: 3-1/4" HSA		LOGGED BY: Eddie Polanco		PROJECT COORDINATE SYSTEM - NAD 1983 StatePlane Georgia West FIPS 1002 Feet			
SAMPLING METHOD: SS							

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA					ELEVATION		
							20	40	60	80	100			
0	Bulk sample from soil cuttings to about 5 feet	Fill		S-01	SILTY SAND (SM), trace organics, trace mica, very loose, brown, fine to medium grained, moist	0-0-0 N = WOH	●	○					968	
3.5				S-02	SILTY SAND (SM), trace mica, medium dense, white tan and orange, fine to medium grained, moist	4-7-9 N = 16	●	○						963
6.0				S-03	SILTY SAND (SM), trace mica, medium dense, orange and brown, fine to medium grained, moist	2-4-7 N = 11	●							
8.5				S-04	SILTY SAND (SM), trace mica, dense to very dense, white tan gray and brown, fine to medium grained, moist	13-22-15 N = 37	●							958
10		Residuum												
15				S-05		13-22-20 N = 42	●							953
20				S-06		27-33-24 N = 57	●							948
25	Hole Cave at 18.0 feet	Partially Weathered Rock		S-07	PWR, sampled as SILTY SAND (SM), trace mica, trace rock fragments, very dense, white tan and gray brown, fine to medium grained, moist	5-13-50 N = 63			●				943	
28.8				S-08	Borehole terminated at 28.8 feet	50/4" N = 50/4"				●				938

GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	03/12/2024		Not encountered
AFTER DRILLING			
AFTER DRILLING			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
 LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf),
 AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT: Barrow County NW Water Tank 1166 GA-124, Hoschton, GA S&ME Project No. 24800066				BORING LOG: B-3 Offset <i>Sheet 1 of 1</i>			
DATE DRILLED: 03/12/2024		ELEVATION:		NOTES: Offset from B-03 for undisturbed sampling.			
DRILL RIG: Diedrich D-50		DATUM:					
DRILLER: Piedmont Environmental Drilling		BORING DEPTH: 17.0 ft					
HAMMER TYPE: Automatic hammer		CLOSURE: Cuttings with Hole Closure Device					
DRILLING METHOD: 3-1/4" HSA		LOGGED BY: Eddie Polanco		LATITUDE:		LONGITUDE:	
SAMPLING METHOD: UD				PROJECT COORDINATE SYSTEM - NAD 1983 StatePlane Georgia West FIPS 1002 Feet			

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA					ELEVATION
							△ % Fines	○ NMC	┐ PL-LL	20	40	
0					N/A							0
5	5.0			UD-01	Shelby Tube							-5
7.0	7.0				N/A							
10												-10
13.0	13.0			UD-02	Shelby Tube							
15	15.0			UD-03	Shelby Tube							-15
17.0	17.0				Borehole terminated at 17.0 feet							
20												-20
25												-25
30												-30

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	Σ			
END OF DRILLING	Σ			
AFTER DRILLING	Σ			
AFTER DRILLING	Σ			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
 LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf),
 AR = Auger Refusal, IGM = Intermediate Geomaterial

Form No: TR-D2216-T265-1
Revision No. 1
Revision Date: 08/16/17

LABORATORY DETERMINATION OF WATER CONTENT



ASTM D 2216 ☒ AASHTO T 265 ☐

S&ME, Inc. - Atlanta: 4350 River Green Parkway, Suite 200, Duluth, GA 30096

Project #: 24800066 Report Date: 3/21/2024
Project Name: Barrow County NW Water Tank Test Date(s): 3/19-3/20/2024
Client Name: Precision Planning
Client Address: 400 Pike Boulevard, Lawrenceville, GA 30046
Sample by: S&ME Sample Date(s): 3/12/2024
Sampling Method: Split Spoon Log No: 80-848

Method: A (1%) ☐ B (0.1%) ☒ Balance ID. 25128 Calibration Date: 3/3/2024
Oven ID. 31332 Calibration Date: 2/21/2024

Boring No.	Sample No.	Sample Depth	Tare #	Tare Weight	Tare Wt. + Wet Wt	Tare Wt. + Dry Wt	Water Weight	Percent Moisture	Note
		ft.		grams	grams	grams	grams	%	
B-1	2	3.5-5	3	60.13	312.79	270.53	42.26	20.1%	
B-1	3	6-7.5	4	59.99	270.75	255.30	15.45	7.9%	
B-2	1	0-1.5	5	59.96	253.52	215.60	37.92	24.4%	
B-2	2	3.5-5	6	60.34	338.61	304.34	34.27	14.0%	
B-3	2	3.5-5	7	59.97	285.48	243.33	42.15	23.0%	
B-3	3	6-7.5	NP4	99.01	315.80	280.99	34.81	19.1%	
B-4	1	0-1.5	8	60.03	172.63	158.11	14.52	14.8%	
B-4	2	3.5-5	9	59.22	273.44	236.25	37.19	21.0%	

Notes / Deviations / References

Jimmy Hanson
Technical Responsibility

Jimmy Hanson
Signature

Geotechnical Lab Supervisor
Position

3/21/2024
Date

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Sieve Analysis of Soils

Quality Assurance

ASTM D6913 Method A

S&ME, Inc. - Atlanta: 4350 River Green Parkway, Suite 200, Duluth, GA 30096

Project #: 24800066

Report Date: 3/21/2024

Project Name: Barrow County NW Water Tank

Test Date(s): 3/19-3/21/2024

Client Name: Precision Planning

Client Address: 400 Pike Boulevard, Lawrenceville, GA 30046

Sample ID: B-3

Type: Split Spoon

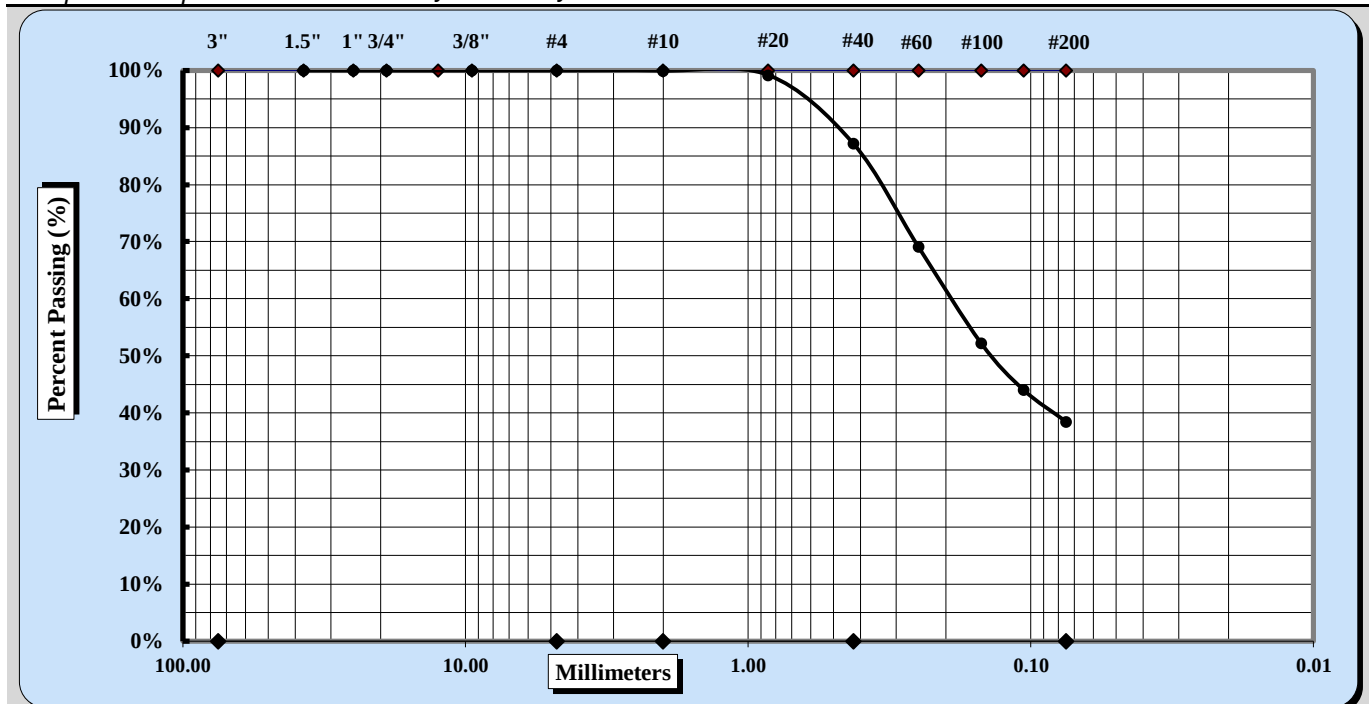
Sample Date: 3/12/2024

Sample Log No.: 80-848

Sample: 3

Depth: 6-7.5 ft

Sample Description: Reddish yellow silty sand



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt and Clay	< 0.075 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)		
Medium Sand	< 2.00 mm and > 0.425 mm (#40)		

Maximum Particle Size	#20	Coarse Sand	0%	Fine Sand	49%
Gravel	0%	Medium Sand	13%	Silt & Clay	38%

Description of Sand & Gravel Particles:		Rounded	☐	Angular	☒
Hard & Durable	☒	Soft	☐	Weathered & Friable	☐

Notes / Deviations / References:

Jimmy Hanson

Technical Responsibility

Signature

Geotechnical Lab Supervisor

Position

3/21/2024

Date

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Sieve Analysis of Soils

Quality Assurance

ASTM D6913 Method A

S&ME, Inc. - Atlanta: 4350 River Green Parkway, Suite 200, Duluth, GA 30096

Project #: 24800066

Report Date: 3/21/2024

Project Name: Barrow County NW Water Tank

Test Date(s): 3/19-3/21/2024

Client Name: Precision Planning

Client Address: 400 Pike Boulevard, Lawrenceville, GA 30046

Sample ID: B-3

Type: Split Spoon

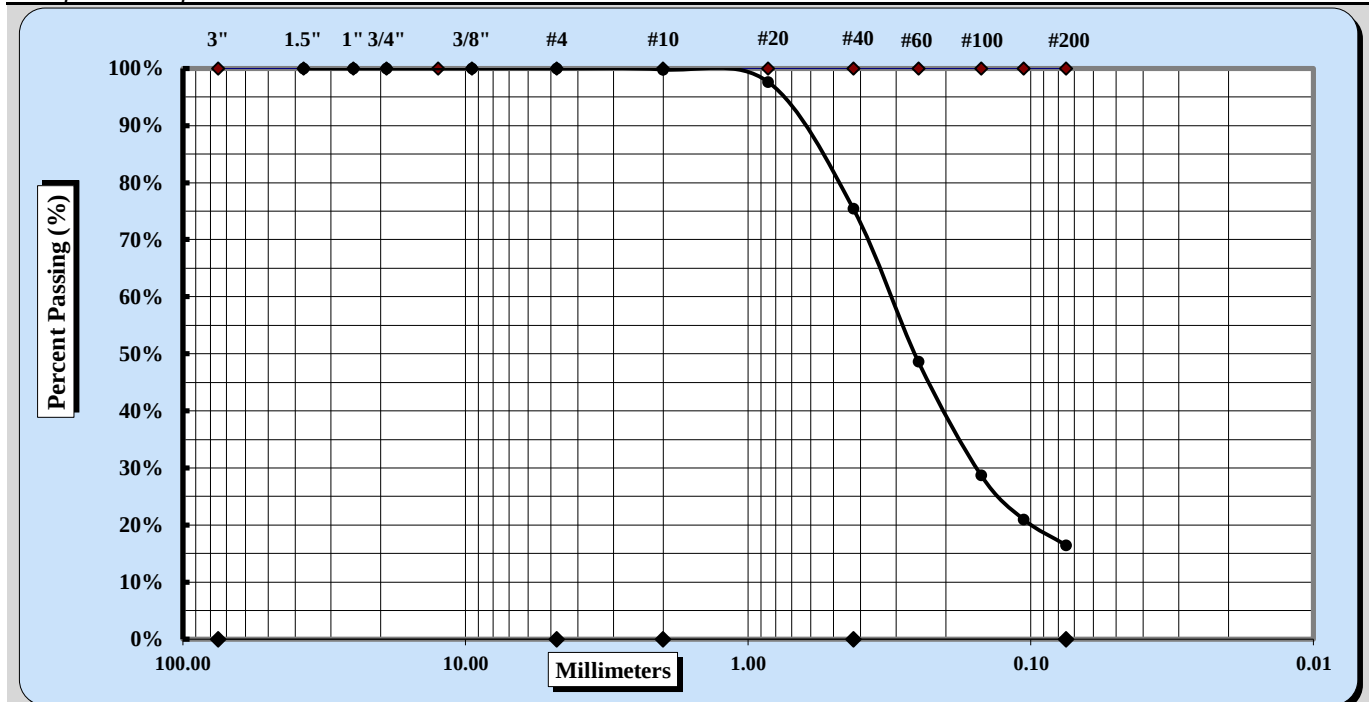
Sample Date: 3/12/2024

Sample Log No.: 80-848

Sample: 5

Depth: 13.5-15 ft

Sample Description: Very pale brown silty sand



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt and Clay	< 0.075 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)		
Medium Sand	< 2.00 mm and > 0.425 mm (#40)		

Maximum Particle Size	#10	Coarse Sand	0%	Fine Sand	59%
Gravel	0%	Medium Sand	24%	Silt & Clay	16%

Description of Sand & Gravel Particles:			Rounded	☐	Angular	☒
Hard & Durable	☒	Soft	☐	Weathered & Friable		☐

Notes / Deviations / References:

Jimmy Hanson

Technical Responsibility

Signature

Geotechnical Lab Supervisor

Position

3/21/2024

Date

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LIQUID LIMIT, PLASTIC LIMIT, & PLASTIC INDEX



Quality Assurance ASTM D4318 ☒ AASHTO T 89 ☐ AASHTO T 90 ☐

S&ME, Inc. - Atlanta: 4350 River Green Parkway, Suite 200, Duluth, GA 30096

Project #: 24800066 Report Date: 3/21/2024
 Project Name: Barrow County NW Water Tank Test Date(s) 3/19-3/21/2024
 Client Name: Precision Planning
 Client Address: 400 Pike Boulevard, Lawrenceville, GA 30046

Boring #: B-1 Sample #: 1 Sample Date: 3/12/2024
 Log #: 80-848 Depth: 0-1.5 ft

Description: Yellowish red clayey sand

Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.01 g)	25128	3/3/2024	Grooving tool	26551	2/21/2024
LL Apparatus	34905	2/21/2024	No. 40 Sieve	26285	1/3/2024
Oven	31332	2/21/2024			

Pan #		Liquid Limit						Plastic Limit		
Tare #:		56	57	58				59	60	
A	Tare Weight	15.13	15.35	15.12				15.01	15.26	
B	Wet Soil Weight + A	27.95	28.38	28.58				22.28	22.89	
C	Dry Soil Weight + A	23.76	24.03	24.02				20.79	21.26	
D	Water Weight (B-C)	4.19	4.35	4.56				1.49	1.63	
E	Dry Soil Weight (C-A)	8.63	8.68	8.90				5.78	6.00	
F	% Moisture (D/E)*100	48.6%	50.1%	51.2%				25.8%	27.2%	
N	# OF DROPS	35	26	15				Moisture Contents determined by ASTM D2216		
LL	LL = F * FACTOR									
Ave.	Average							26.5%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☐
 Liquid Limit **50**
 Plastic Limit **27**
 Plastic Index **23**
 Group Symbol **CH**

Multipoint Method ☒

One-point Method ☐

Wet Preparation ☐ Dry Preparation ☒ Air Dried ☒

Notes / Deviations / References: **Group symbol is for minus No. 40 portion only.**

ASTM D4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

Sara Ziaee
Technician Name

3/21/2024
Date

Jimmy Hanson
Technical Responsibility

3/21/2024
Date

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LIQUID LIMIT, PLASTIC LIMIT, & PLASTIC INDEX



Quality Assurance

ASTM D4318



AASHTO T 89



AASHTO T 90



S&ME, Inc. - Atlanta: 4350 River Green Parkway, Suite 200, Duluth, GA 30096

Project #: 24800066

Report Date: 3/21/2024

Project Name: Barrow County NW Water Tank

Test Date(s) 3/19-3/21/2024

Client Name: Precision Planning

Client Address: 400 Pike Boulevard, Lawrenceville, GA 30046

Boring #: B-3

Sample #: 1

Sample Date: 3/12/2024

Log #: 80-848

Depth: 0-1.5 ft

Description: Yellowish red sandy clay

Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.01 g)	25128	3/3/2024	Grooving tool	26551	2/21/2024
LL Apparatus	34905	2/21/2024	No. 40 Sieve	26285	1/3/2024
Oven	31332	2/21/2024			

Pan #		Liquid Limit						Plastic Limit	
Tare #:		31	32	33				34	35
A	Tare Weight	16.74	16.59	16.63				16.63	16.64
B	Wet Soil Weight + A	28.74	28.96	28.73				23.91	23.80
C	Dry Soil Weight + A	24.53	24.50	24.20				22.38	22.24
D	Water Weight (B-C)	4.21	4.46	4.53				1.53	1.56
E	Dry Soil Weight (C-A)	7.79	7.91	7.57				5.75	5.60
F	% Moisture (D/E)*100	54.0%	56.4%	59.8%				26.6%	27.9%
N	# OF DROPS	35	24	15				Moisture Contents determined by ASTM D2216	
LL	LL = F * FACTOR								
Ave.	Average							27.3%	



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic



Liquid Limit 56

Plastic Limit 27

Plastic Index 29

Group Symbol CH

Multipoint Method ☒One-point Method ☐Wet Preparation ☐ Dry Preparation ☒ Air Dried ☒

Notes / Deviations / References: Group symbol is for minus No. 40 portion only.

ASTM D4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

Sara Ziaee

Technician Name

3/21/2024

Date

Jimmy Hanson

Technical Responsibility

3/21/2024

Date

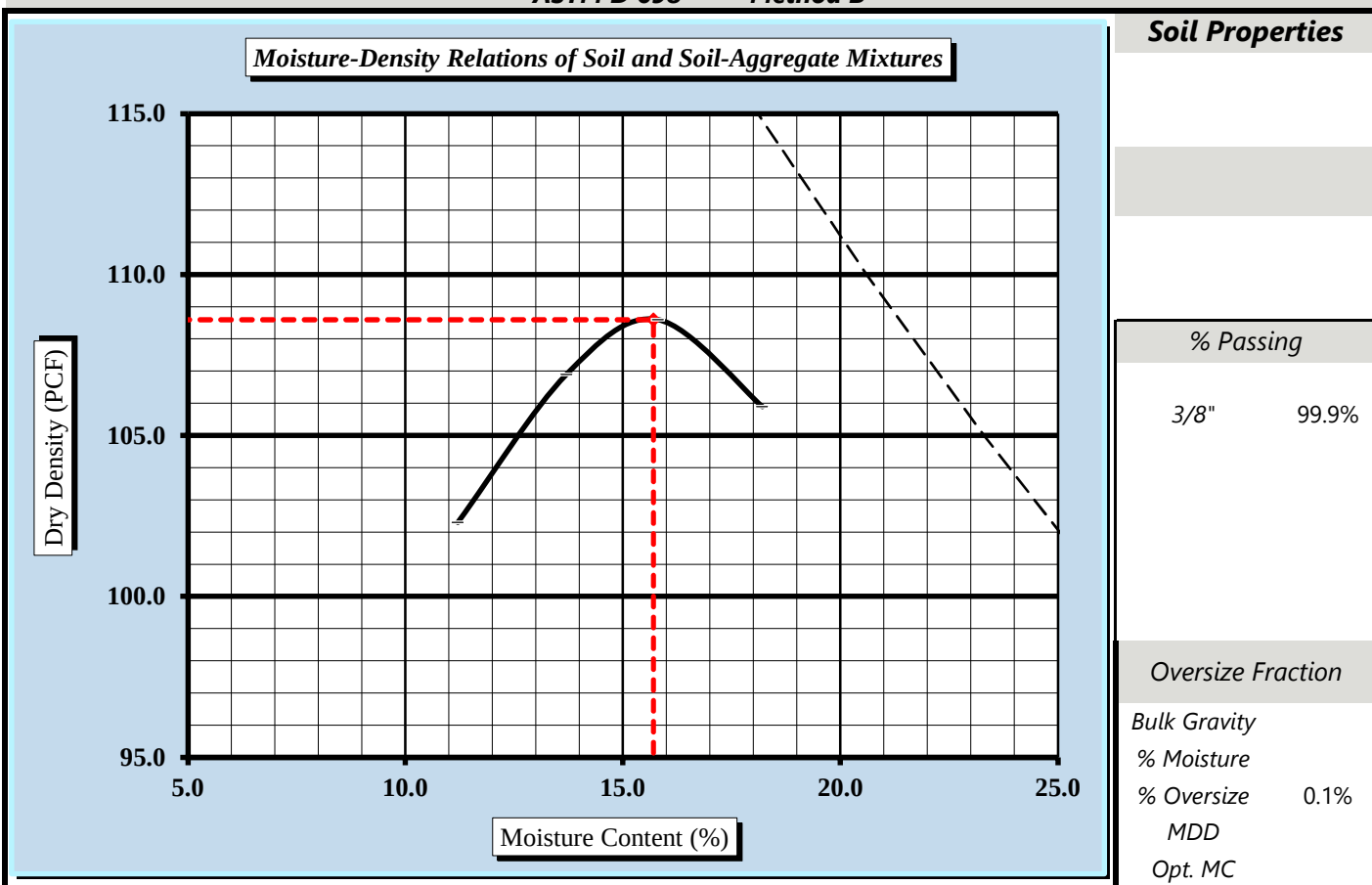
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MOISTURE - DENSITY REPORT



Quality Assurance

S&ME, Inc. - Atlanta: 4350 River Green Parkway, Suite 200, Duluth, GA 30096			
S&ME Project #:	24800066	Report Date:	3/26/2024
Project Name:	Barrow County NW Water Tank	Test Date(s):	3/25/2024
Client Name:	Precision Planning, Inc.		
Client Address:	400 Pike Boulevard, Lawrenceville GA. 30046		
Boring #:	B-02	Sample #:	1
		Sample Date:	N/A
Location:	B-02	Depth:	0'- 5'
Sample Description:	Light Brown Silty Sand		
Maximum Dry Density	108.6	PCF.	
		Optimum Moisture Content	15.7%
ASTM D 698 Method B			



Moisture-Density Curve Displayed:	Fine Fraction ☒	Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction:	#4 Sieve ☐	3/8 inch Sieve ☒ 3/4 inch Sieve ☐
Mechanical Rammer ☐	Manual Rammer ☒	Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Technical Responsibility

Signature

Position

Date

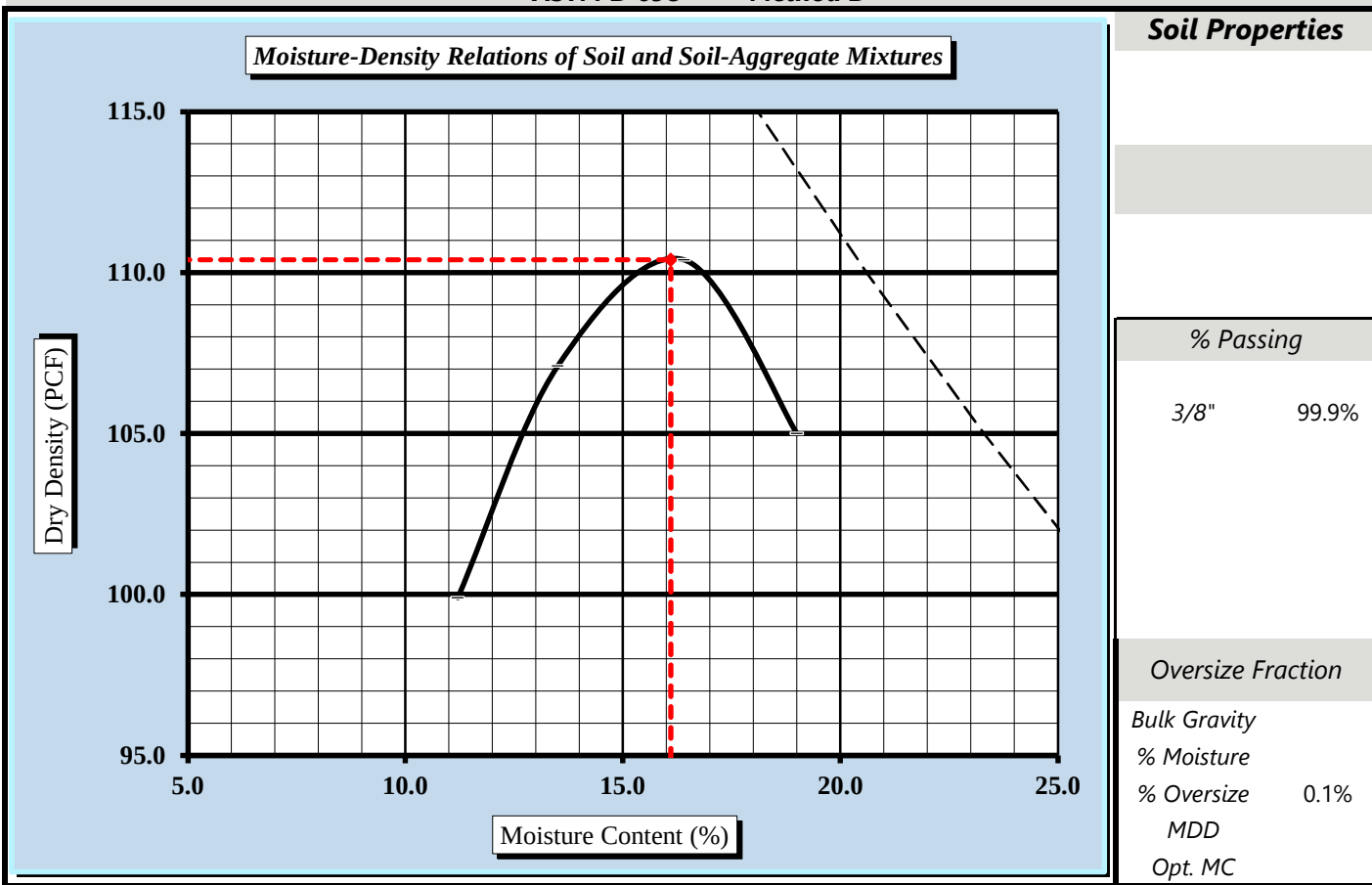
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MOISTURE - DENSITY REPORT



Quality Assurance

S&ME, Inc. - Atlanta: 4350 River Green Parkway, Suite 200, Duluth, GA 30096			
S&ME Project #:	24800066	Report Date:	3/26/2024
Project Name:	Barrow County NW Water Tank	Test Date(s):	3/25/2024
Client Name:	Precision Planning, Inc.		
Client Address:	400 Pike Boulevard, Lawrenceville GA. 30046		
Boring #:	B-04	Sample #:	2
		Sample Date:	N/A
Location:	B-04	Depth:	0' - 5'
Sample Description:	Light Brown Silty Sand		
Maximum Dry Density	110.4	PCF.	
		Optimum Moisture Content	16.1%
ASTM D 698 Method B			



Moisture-Density Curve Displayed:	Fine Fraction ☒	Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction:	#4 Sieve ☐	3/8 inch Sieve ☒ 3/4 inch Sieve ☐
Mechanical Rammer ☐	Manual Rammer ☒	Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Technical Responsibility

Signature

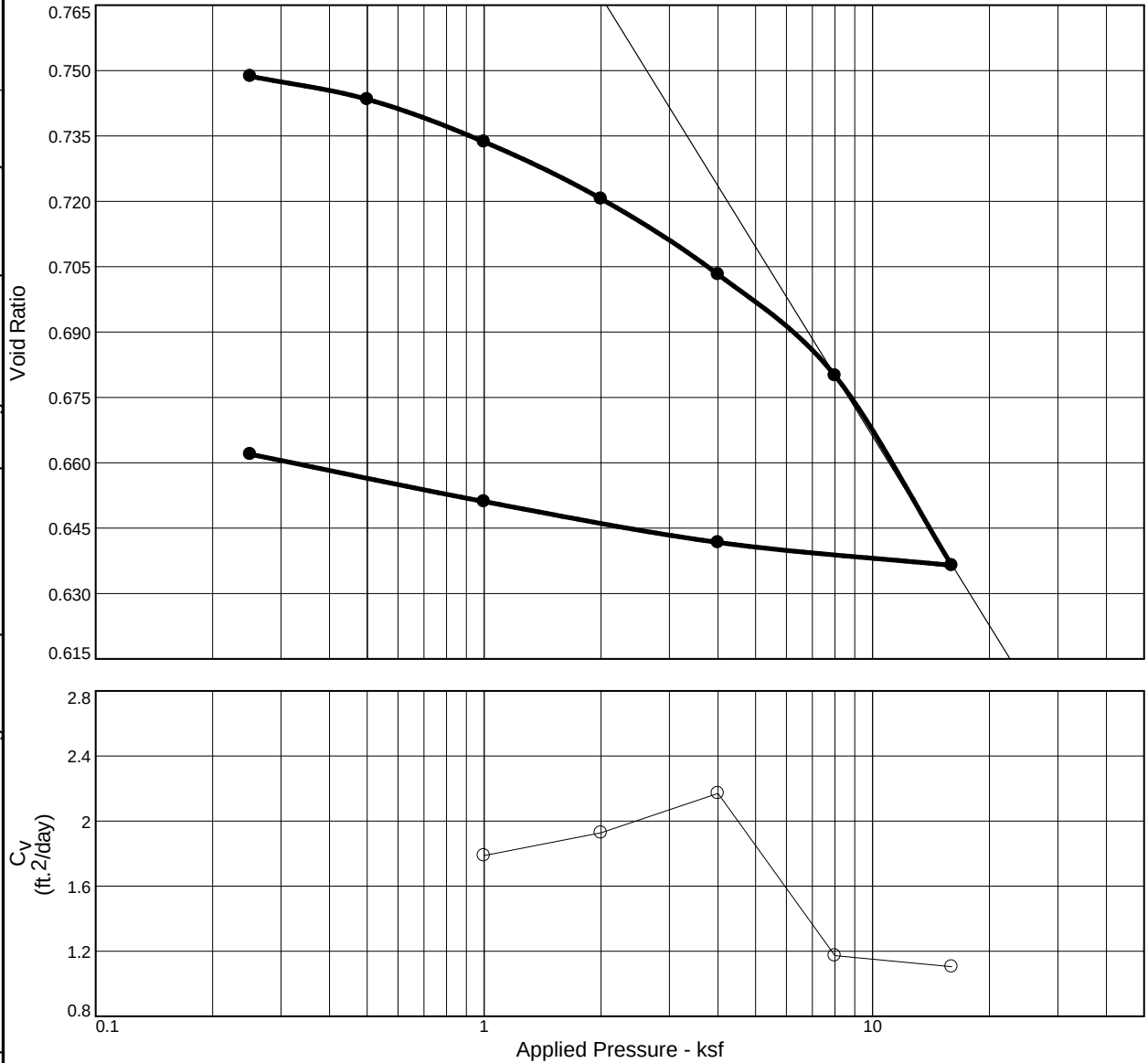
Position

Date

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Cc, Pc etc are not test results but an interpretation of test results. The designer is responsible for interpreting test data as provided by S&ME, Inc.

CONSOLIDATION TEST REPORT

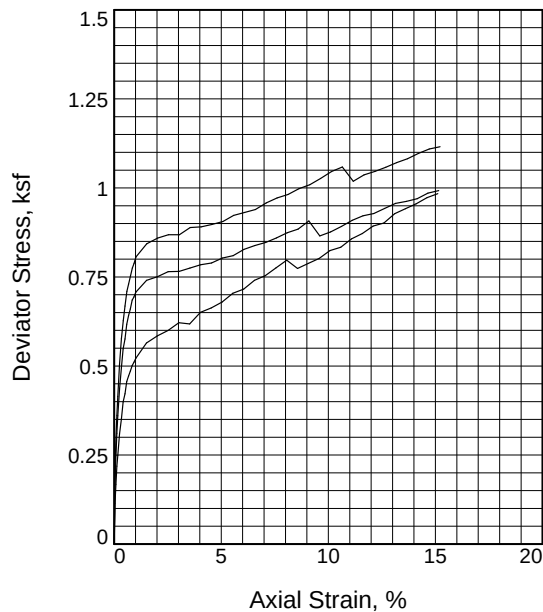
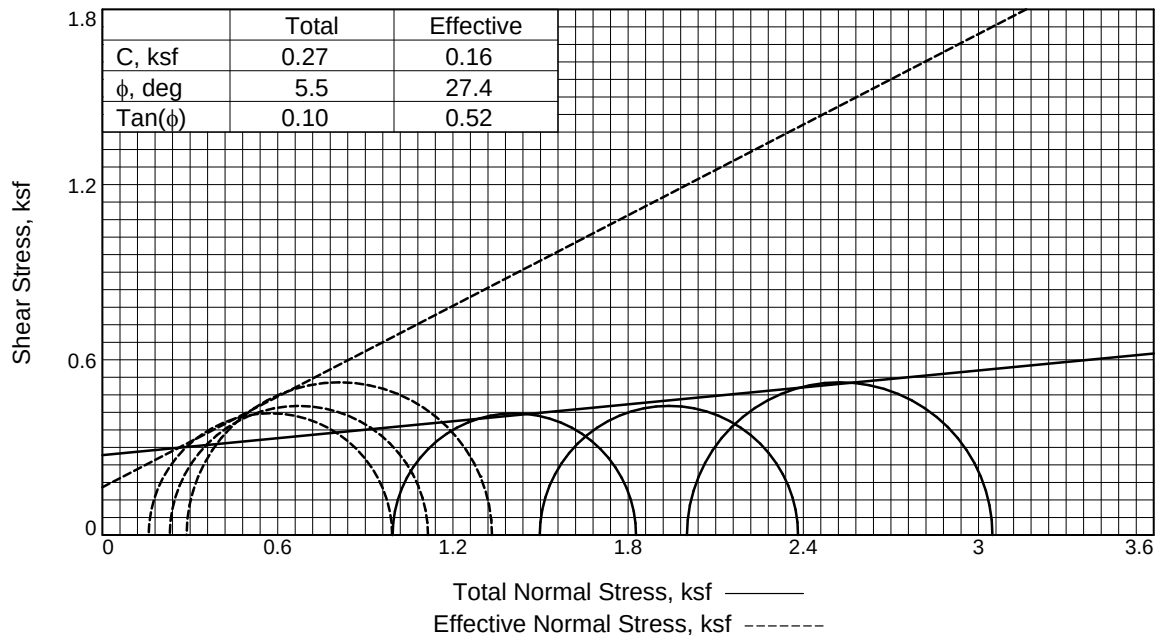


Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P _c (ksf)	C _c	C _r	Initial Void Ratio
Saturation	Moisture									
78.3 %	22.2 %	94.6	N/A	N/A	2.645	.6	3.4	0.14		0.748
MATERIAL DESCRIPTION									USCS	AASHTO
Red silty clayey sand									N/A	N/A
Project No. 24800066			Client: Precision Planning, Lawrenceville, GA 30046							
Project: Barrow County NW Water Tank			Remarks: Specimen was inundated in seating load.							
Location: B-3		Depth: 5-7 ft	Sample Number: UD-1							
			S&ME, Inc.							
			Duluth, Georgia							

Figure 1

Tested By: Jimmy Hanson 2/20/2024

c & phi are not test results but an interpretation of the test results. The designer is responsible for interpreting test data as provided by S&ME.



Type of Test:

CU with Pore Pressures

Sample Type: Intact

Description: Very pale brown sand with some silt

LL= N/A

PI= N/A

Assumed Specific Gravity= 2.65

Remarks: Specimens failed by bulging.

Figure 1

Sample Number.		1	2	3
Initial	Water Content, %	11.2	9.4	9.2
	Dry Density, pcf	82.7	79.9	82.6
	Saturation, %	29.7	23.3	24.5
	Void Ratio	0.9997	1.0693	1.0022
	Diameter, in.	2.85	2.86	2.84
	Height, in.	6.05	6.05	6.04
At Test	Water Content, %	34.1	35.6	34.4
	Dry Density, pcf	86.9	85.2	86.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.9043	0.9424	0.9129
	Diameter, in.	2.80	2.80	2.80
	Height, in.	5.96	5.94	5.91
Strain rate, %/min.		0.16	0.16	0.16
Back Pressure, psi		70.00	70.00	70.00
Cell Pressure, psi		76.90	80.40	83.90
Fail. Stress, ksf		0.83	0.88	1.05
Excess Pore Pr., ksf		0.84	1.27	1.71
Ult. Stress, ksf		0.98	0.99	1.12
Excess Pore Pr., ksf		0.78	1.24	1.67
$\bar{\sigma}_1$ Failure, ksf		0.99	1.11	1.33
$\bar{\sigma}_3$ Failure, ksf		0.16	0.23	0.29

Client: Precision Planning, Lawrenceville, GA 30046

Project: Barrow County NW Water Tank

Location: B-3

Sample Number: UD-3

Depth: 15-17 ft

Proj. No.: 24800066

Date Sampled: 3/12/2024

TRIAXIAL SHEAR TEST REPORT

S&ME, Inc.

Duluth, Georgia

Tested By: Jimmy Hanson 2/25/2024



Important Information About Your Geotechnical Engineering Report

Variations in subsurface conditions can be a principal cause of construction delays, cost overruns and claims. The following information is provided to assist you in understanding and managing the risk of these variations.

Geotechnical Findings Are Professional Opinions

Geotechnical engineers cannot specify material properties as other design engineers do. Geotechnical material properties have a far broader range on a given site than any manufactured construction material, and some geotechnical material properties may change over time because of exposure to air and water, or human activity.

Site exploration identifies subsurface conditions at the time of exploration and only at the points where subsurface tests are performed or samples obtained. Geotechnical engineers review field and laboratory data and then apply their judgment to render professional opinions about site subsurface conditions. Their recommendations rely upon these professional opinions. Variations in the vertical and lateral extent of subsurface materials may be encountered during construction that significantly impact construction schedules, methods and material volumes. While higher levels of subsurface exploration can mitigate the risk of encountering unanticipated subsurface conditions, no level of subsurface exploration can eliminate this risk.

Scope of Geotechnical Services

Professional geotechnical engineering judgment is required to develop a geotechnical exploration scope to obtain information necessary to support design and construction. A number of unique project factors are considered in developing the scope of geotechnical services, such as the exploration objective; the location, type, size and weight of the proposed structure; proposed site grades and improvements; the construction schedule and sequence; and the site geology.

Geotechnical engineers apply their experience with construction methods, subsurface conditions and exploration methods to develop the exploration scope. The scope of each exploration is unique based on available project and site information. Incomplete project information or constraints on the scope of exploration increases the risk of variations in subsurface conditions not being identified and addressed in the geotechnical report.

Services Are Performed for Specific Projects

Because the scope of each geotechnical exploration is unique, each geotechnical report is unique. Subsurface conditions are explored and recommendations are made for a specific project.

Subsurface information and recommendations may not be adequate for other uses. Changes in a proposed structure location, foundation loads, grades, schedule, etc. may require additional geotechnical exploration, analyses, and consultation. The geotechnical engineer should be consulted to determine if additional services are required in response to changes in proposed construction, location, loads, grades, schedule, etc.

Geo-Environmental Issues

The equipment, techniques, and personnel used to perform a geo-environmental study differ significantly from those used for a geotechnical exploration. Indications of environmental contamination may be encountered incidental to performance of a geotechnical exploration but go unrecognized. Determination of the presence, type or extent of environmental contamination is beyond the scope of a geotechnical exploration.

Geotechnical Recommendations Are Not Final

Recommendations are developed based on the geotechnical engineer's understanding of the proposed construction and professional opinion of site subsurface conditions. Observations and tests must be performed during construction to confirm subsurface conditions exposed by construction excavations are consistent with those assumed in development of recommendations. It is advisable to retain the geotechnical engineer that performed the exploration and developed the geotechnical recommendations to conduct tests and observations during construction. This may reduce the risk that variations in subsurface conditions will not be addressed as recommended in the geotechnical report.

BARROW NORTHWEST ELEVATED WATER STORAGE TANK

FOR THE
BARROW COUNTY BOARD OF COMMISSIONERS
PPI PROJECT NUMBER E23136



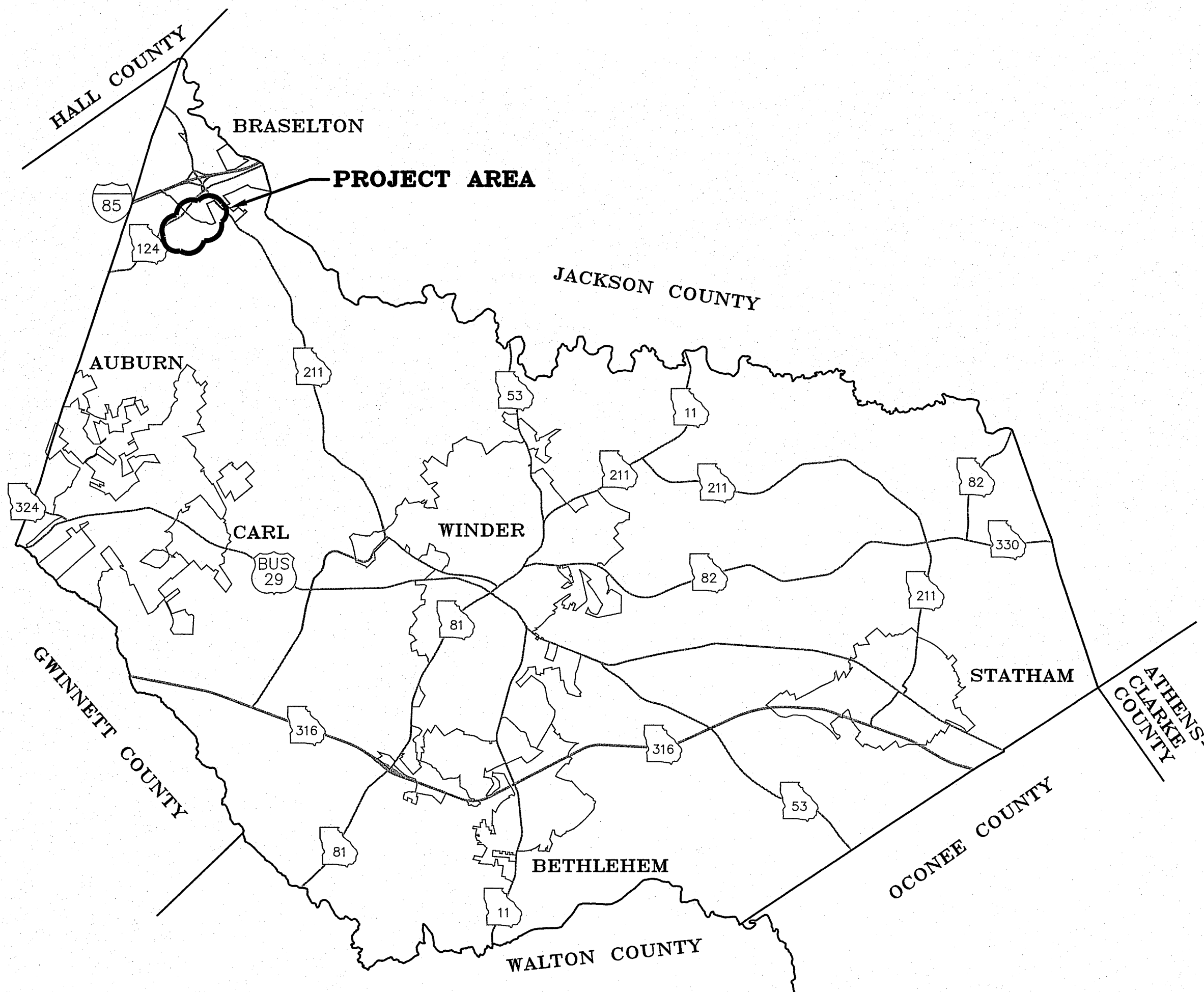
Board of Commissioners

30 NORTH BROAD ST.
WINDER, GA 30680
PHONE: 770.307.3001

Prepared by:



802 East Spring Street, Monroe, Ga 30655
770.267.8800 • www.ppi.us



BARROW COUNTY
PROJECT LOCATION
N.T.S.



SHEET INDEX	
SHEET TITLE	SHEET NUMBER
COVER	--
GENERAL NOTES & LEGEND	2
SITE PLAN	3
WATER TANK PLAN	4
CONSTRUCTION DETAILS	5-7
EROSION CONTROL NOTES	8
EROSION CONTROL PLAN	9
EROSION CONTROL DETAILS	10
NPDES NOTES	11
NPDES CHECKLIST & STORMWATER MONITORING PLAN	12
ELECTRICAL LEGEND & NOTES	E1
MATERIAL SCHEDULE	E2
ONE LINE DIAGRAM	E3
ELECTRICAL SITE PLAN	E4
ELECTRICAL INSTALLATION DETAILS	E5-E6

TOTAL SITE AREA	2.65
TOTAL DISTURBED AREA	1.26

NO.	REVISION DESCRIPTION	DATE
0	ISSUED FOR BID	08/05/25



24-HOUR CONTACT
DEAN GARRETT
UTILITIES MANAGER
17701 307-3014

FILE PATH: W:\PROJECTS\2025\23136-WP-BARROW NW TANK\DWG\23136_C001_COVER_PAGE.DWG - 2025-08-05 - DYLAN PARKER
PLOT DATE: 8/5/2025 8:33 AM

DATE: 08/05/25
CLIENT/PPI NO. E23136
BARROW NORTHWEST ELEVATED WATER STORAGE TANK
ISSUED FOR BID

1. OWNER: BARROW COUNTY
BOARD OF COMMISSIONERS
30 NORTH BROAD STREET
WINDER, GA 20680
CONTACT: MR. DEAN GARRETT
PHONE: (770) 307-3014
2. ENGINEER: PRECISION PLANNING, INC.
400 PIKE BLVD.
LAWRENCEVILLE, GA 30046
CONTACT: MR. RICH CROWDER, P.E.
PHONE: (770) 338-8161
3. LOCATION OF LOT LINES, PROPERTY LINES, RIGHT-OF-WAY LINES, AND OTHER LAND DIVISION REFERENCES WERE OBTAINED FROM RECORDED DATA AND LAND USE OBSERVATIONS. THE LAND DIVISIONS WERE NOT FIELD CHECKED. THEREFORE, THEY MUST ONLY BE CONSIDERED TO APPROXIMATELY REPRESENT THE ACTUAL LAND DIVISIONS, PROPERTY AND/OR EASEMENTS.
4. THE CONTRACTOR SHALL NOTIFY EACH INDIVIDUAL UTILITY OWNER OF HIS PLAN OF OPERATION IN THE AREA OF WORK. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL CONTACT THE UTILITY OWNERS AND REQUEST THEM TO PROPERLY LOCATE THEIR RESPECTIVE UTILITY ON THE GROUND. THIS NOTIFICATION SHALL BE GIVEN AT LEAST THREE BUSINESS DAYS PRIOR TO COMMENCEMENT OF WORK.
5. CONTRACTOR TO NOTIFY THE UTILITY PROTECTION AGENCY 72 HOURS PRIOR TO START OF WORK. PHONE 811.
6. THE CONTRACTOR SHALL BE FINANCIALLY RESPONSIBLE FOR THE ADJUSTMENT OR RELOCATION OF ALL EXISTING UTILITIES. ALL COSTS AND/OR FEES RESULTING FROM UTILITY ADJUSTMENT OR RELOCATION SHALL BE PAID FOR BY THE CONTRACTOR.
7. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO EXCAVATION OR DEMOLITION. ADDITIONAL UTILITIES MAY NOT BE SHOWN ON THESE PLANS. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR LOCATIONS SHOWN.
8. IF THE CONTRACTOR DAMAGES ANY EXISTING UTILITIES DURING CONSTRUCTION, HE SHALL, AT HIS OWN EXPENSE, HAVE REPLACED OR REPAIRED THE UTILITIES TO THEIR ORIGINAL OR BETTER CONDITION AND QUALITY, AS APPROVED BY THE OWNER AND REPRESENTATIVE OF THE APPROPRIATE UTILITY COMPANY. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONTACTING ALL AFFECTED UTILITIES PRIOR TO SUBMITTING HIS BID IN ORDER TO DETERMINE THE EXTENT TO WHICH UTILITY RELOCATIONS AND/OR ADJUSTMENT WILL AFFECT THE SCHEDULING OF WORK FOR THE PROJECT. SOME UTILITY FACILITIES MAY NEED TO BE ADJUSTED CONCURRENTLY WITH THE CONTRACTOR'S OPERATIONS, WHILE SOME WORK MAY BE REQUIRED AROUND UTILITY FACILITIES THAT WILL REMAIN IN PLACE. IT IS UNDERSTOOD AND AGREED THAT THE CONTRACTOR WILL RECEIVE NO ADDITIONAL COMPENSATION FOR ANY DELAYS OR INCONVENIENCE CAUSED BY THE UTILITY ADJUSTMENTS.
9. CONTRACTOR IS TO MEET ALL LOCAL UTILITY COMPANY REGULATIONS IN ANY READJUSTMENT OR RELOCATION OF EXISTING SERVICES.
10. A MINIMUM HORIZONTAL SEPARATION OF 10' SHALL BE MAINTAINED BETWEEN WATER LINES AND SANITARY SEWER LINES. AN 18" MINIMUM VERTICAL SEPARATION SHALL BE MAINTAINED AT CROSSINGS OF WATER AND SEWER LINES. WHEN CROSSING A WATER LINE, SEWER LINE, OR ANY OTHER PIPING, PIPE JOINTS SHALL BE PLACED AS FAR AWAY AS POSSIBLE FROM THE OTHER PIPE.
11. CONTRACTOR MAY TEMPORARILY RELOCATE CREEKS, STREAMS, BRANCHES OR DITCHES WITHIN THE EASEMENTS AT HIS EXPENSE USING PROPER EROSION CONTROL MEASURES, IF AUTHORIZED BY THE APPLICABLE REGULATORY AGENCY AND THE OWNER.
12. ALL CONSTRUCTION STAKING SHALL BE BY THE CONTRACTOR AT HIS EXPENSE.
13. WHEN CONSTRUCTION INVOLVES THE REMOVAL OF FENCE, POLES, SIDEWALKS, DRIVES, TEMPORARY OR FIXED STRUCTURES; THE CONTRACTOR AT HIS EXPENSE SHALL PROVIDE FOR TEMPORARY SERVICE OR CONTAINMENT TO THE AFFECTED PROPERTY, AND SHALL REPLACE SUCH ITEMS WITH SIMILAR OR BETTER MATERIALS AS SOON AS PRACTICAL OR AS DIRECTED BY THE OWNER FOLLOWING UTILITY INSTALLATION.
14. THE CONTRACTOR SHALL RESTORE OR HAVE RESTORED, AT HIS EXPENSE, ALL EXISTING FACILITIES WHICH HAVE BEEN DAMAGED DUE TO HIS CONSTRUCTION ACTIVITIES, TO THE ORIGINAL OR BETTER CONDITION. THE CONTRACTOR SHALL UTILIZE THE SAME MATERIAL COMPOSITION AS EXISTING TO REPLACE THE EXISTING FACILITIES UNLESS APPROVED OTHERWISE BY THE OWNER.
15. ALL NEW WATER MAINS ARE TO BE INSPECTED, TESTED, AND DISINFECTED PRIOR TO THE CONNECTION OF ANY SERVICES.
16. SEE SHEET 08 FOR SOIL EROSION AND SEDIMENT CONTROL NOTES AND LEGEND.
17. PEDESTRIAN AND LOCAL VEHICULAR TRAFFIC SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. SAFETY DEVICES AND FLAGMEN SHALL BE PROVIDED BY THE CONTRACTOR AT HIS EXPENSE. WRITTEN PERMISSION TO CLOSE THE CONSTRUCTION AREA TO TRAFFIC MUST BE OBTAINED FROM THE APPROPRIATE GOVERNMENT AGENCY PRIOR TO THE CLOSING. ALL LOCAL EMERGENCY SERVICES SHALL BE NOTIFIED IN WRITING A MINIMUM 72 HOURS PRIOR TO ROAD CLOSINGS.

18. DURING CONSTRUCTION THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY TRAFFIC CONTROL MEASURES TO ENSURE SAFETY AT ALL TIMES FOR EMPLOYEES, RESIDENTS, AND MOTORISTS, IN ACCORDANCE WITH THE 'MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES', ANSI D6.1, LATEST REVISION.
19. ALL EARTHWORK OPERATIONS SHALL COMPLY WITH THE REQUIREMENTS OF OSHA 29 CFR PART 1926, SUBPART P-EXCAVATIONS, LATEST REVISION, AND SHALL BE CONDUCTED IN A MANNER ACCEPTABLE TO OWNER.
20. ALL WATER MAIN PIPE MATERIALS SHALL BE DUCTILE IRON PIPE, IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS. BEDDING FOR ALL PIPING SHALL BE TYPE 2 UNLESS OTHERWISE DIRECTED.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PAINTING OF THE PROJECT STATIONING ALONG THE EDGE OF THE ROADWAY.
22. LOCATIONS SHOWN FOR FIRE HYDRANTS, VALVES, AND APPURTENANCES MAY BE FIELD ADJUSTED BY THE OWNER PRIOR TO INSTALLATION TO ACCOMMODATE EXISTING FIELD CONDITIONS.
23. HORIZONTAL PIPE BENDS/FITTINGS NOTED ON PLANS ARE TO ASSIST THE CONTRACTOR WITH THE HORIZONTAL ALIGNMENT OF THE WATER MAIN(S), AND IS NOT INTENDED TO DEPICT ALL NECESSARY HORIZONTAL BENDS/FITTINGS TO CONSTRUCT THE WATER MAIN.

1. ALL WATER SYSTEM IMPROVEMENTS MUST BE INSTALLED IN STRICT ACCORDANCE WITH THE BARROW COUNTY WATER DEPARTMENT POLICIES AND STANDARDS, DATED OCTOBER 2021.
2. ALL WATER MAIN PIPING 4" DIAMETER TO 12" DIAMETER SHALL BE PRESSURE CLASS 35 DUCTILE IRON PIPE (DIP). ALL WATER MAIN PIPING 14" DIAMETER TO 20" DIAMETER SHALL BE PRESSURE CLASS 300 DIP.
3. ALL WATER MAINS SHALL HAVE A MINIMUM COVER OF 4' OF COMPACTED FILL ABOVE THE TOP OF THE PIPE.
4. ALL WATER SERVICE LINES SHALL BE COPPER, AND REQUIRE AN INDIVIDUAL TAP ON THE MAIN. DOUBLE SPLIT SERVICES ARE NOT PERMITTED. LONG SIDE SERVICES ALSO REQUIRE A 2-INCH PVC CASING UNDER THE PAVEMENT. REFERENCE STANDARD DETAILS W05.
5. ALL VALVES SHALL BE INSTALLED IN THE SHOULDER OF THE ROADWAY. EVEN IF GRAPHICALLY DEPICTED ON THE PLANS DUE TO SCALING, NO VALVES SHALL BE INSTALLED IN THE PAVEMENT OR IN A SIDEWALK.
6. FIRE HYDRANTS SHALL GENERALLY BE LOCATED AT INTERVALS NO TO EXCEED 500 FEET. INLINE VALVES SHALL BE LOCATED AT INTERVALS NOT TO EXCEED 1,000 FEET WITHIN A RESIDENTIAL SUBDIVISION.
7. THE CONTRACTOR SHALL SCHEDULE AND COORDINATE A PRE-CONSTRUCTION MEETING WITH BARROW COUNTY WATER DEPARTMENT PERSONNEL AT LEAST 7 DAYS PRIOR TO BEGINNING WORK.

IN ADDITION TO SHOWING THE STRUCTURES TO BE BUILT FOR THIS PROJECT, THE DRAWINGS SHOW CERTAIN INFORMATION OBTAINED BY THE ENGINEER REGARDING THE PIPES, POLE LINES, CONDUITS AND OTHER STRUCTURES WHICH EXIST ALONG THE LINE OF THE WORK BOTH ABOVE AND BELOW THE SURFACE OF THE GROUND. THE ENGINEER AND THE OWNER EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION GIVEN ON THE DRAWINGS WITH REGARD TO EXISTING STRUCTURES, AND THE CONTRACTOR WILL NOT BE ENTITLED TO ANY EXTRA COMPENSATION ON ACCOUNT OF INACCURACY OR INCOMPLETENESS OF SUCH INFORMATION, SAID STRUCTURES BEING INDICATED ONLY FOR THE CONVENIENCE OF THE CONTRACTOR, WHO MUST VERIFY THE INFORMATION TO HIS OWN SATISFACTION. THE GIVING OF THIS INFORMATION UPON THE CONTRACT DRAWINGS WILL NOT RELIEVE THE CONTRACTOR OF HIS OBLIGATION TO SUPPORT AND PROTECT ALL PIPES, CONDUITS, AND OTHER STRUCTURES WHICH MAY BE ENCOUNTERED DURING THE CONSTRUCTION OF WORK, AND TO MAKE GOOD ALL DAMAGES DONE TO SUCH PIPES, CONDUITS, AND OTHER STRUCTURES, AS PROVIDED IN THESE SPECIFICATIONS. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND OBSTRUCTIONS PRIOR TO EXCAVATION SO AS TO PREVENT DAMAGE TO THOSE SERVICES OR OTHER UTILITIES. ANY SUCH DAMAGES MUST BE REPAIRED WITHOUT DELAY AND THE COST OF SUCH REPAIRS SHALL BE PAID FOR BY THE CONTRACTOR.

WATER MAINS AND APPURTENANCES **MUST** BE COMPLETELY INSTALLED, FLUSHED, AND DISINFECTED WITH SATISFACTORY BACTERIOLOGICAL SAMPLE RESULTS RECEIVED PRIOR TO PERMANENT CONNECTIONS BEING MADE TO THE EXISTING WATER SYSTEM OR SERVICE CONNECTIONS ACTIVATED TO INDIVIDUAL WATER CUSTOMERS. SANITARY CONSTRUCTION PRACTICES **MUST** BE FOLLOWED DURING INSTALLATION OF THE FINAL CONNECTION, SO THAT THERE IS NO CONTAMINATION OF THE NEW OR EXISTING WATER MAIN WITH FOREIGN MATTER OR GROUNDWATER.

A map of the project area showing the intersection of I-85, SR 124, and SR 217. The project area is marked with a diamond symbol on SR 124. Other roads shown include Braselton Hwy, Old Victor School Rd, and Freeman Johnson Rd. A north arrow is present in the top right corner.

EXISTING		NEW	
		WATER	
		SANITARY SEWER	N.A.
		FORCE MAIN	N.A.
		GAS LINE	N.A.
		UNDERGROUND POWER	N.A.
		UNDERGROUND TELEPHONE	N.A.
		ROAD CENTERLINE	
		EDGE OF PAVEMENT	N.A.
		EDGE OF GRAVEL DRIVE	N.A.
		GUARDRAIL	N.A.
		FENCE	
		TREE LINE	N.A.
		CREEK CENTERLINE	N.A.
		DITCH CENTERLINE	
		STORM DRAIN	
		CONTOUR	
		RIGHT-OF-WAY	N.A.
		PERMANENT EASEMENT	
N.A.		TEMPORARY CONSTRUCTION EASEMENT	
		PROPERTY LINE	N.A.
		25' STREAM BUFFER	N.A.
		50' STREAM BUFFER	N.A.
		75' STREAM BUFFER	N.A.
		100-YR FLOOD LIMITS	N.A.
		POWER POLE	N.A.
		GUY WIRE	N.A.
		SEWER MANHOLE	N.A.
		WATER VALVE	
		FIRE HYDRANT	
		WATER METER	N.A.
		TELEPHONE PEDESTAL	N.A.
		AIR RELEASE VALVE	N.A.
		IRON PIN	N.A.
		SIGN	N.A.
		TREE	N.A.
		RIP RAP	
		WETLANDS	N.A.
		BUILDING	
		CONCRETE PAVING	N.A.
		ASPHALT PAVING	

ARV	AIR RELEASE VALVE	HDWL	HEADWALL
BOC	BACK OF CURB	I.E	INVERT ELEVATION
BM	BENCHMARK	IPF	IRON PIN FOUND
CB	CATCH BASIN	JB	JUNCTION BOX
CF	CUBIC FEET	LFH	LINEAR FOOT
CL	CENTER LINE	MH	MANHOLE
COMP	CORRUGATED METAL PIPE	N/A or N/A	NOT APPLICABLE
CO	CLEAN OUT	N/A	NOW OR FORMERLY
CY	CUBIC YARD	PERM.	PERMANENT
D.E.	DRAINAGE EASEMENT	PL	PROPERTY LINE
DI	DROP INLET	P	POWER POLE
DIA.	DIAMETER	PUE	PERMANENT UTILITY EASEMENT
DIV.	DIET IRON PIPE	PC	POLYCHLORIDE PIPE
D/W	DRIVEWAY	RC	REINFORCED CONCRETE PIPE
ESMT	EASEMENT	R/W	RIGHT-OF-WAY
ELEV.	ELEVATION	SSE	SANITARY SEWER EASEMENT
EOP	EDGE OF PAVEMENT	STA.	STATION
EX	EXISTING	TBM	TEMPORARY BENCHMARK
FE	FIELD END SECTION	TCE	TEMPORARY CONSTRUCTION
FFE	FINISHED FLOOR ELEVATION		EASEMENT
FH	FIRE HYDRANT	TEMP.	TEMPORARY
GDOT	GEORGIA DEPARTMENT OF TRANSPORTATION	VCP	VITRIFIED CLAY PIPE
		WL	WATER LINE
G.M.D.	GEORGIA MILITARY DISTRICT	WM	WATER METER
GV	GAS VALVE	WV	WATER VALVE
		VQ	VERTICAL CURVE

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GEORGIA
REGISTERED
NO. 26613
PROFESSIONAL
ENGINEER
RICHARD H. CROWDER

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BARROW NORTHWEST ELEVATED WATER STORAGE TANK

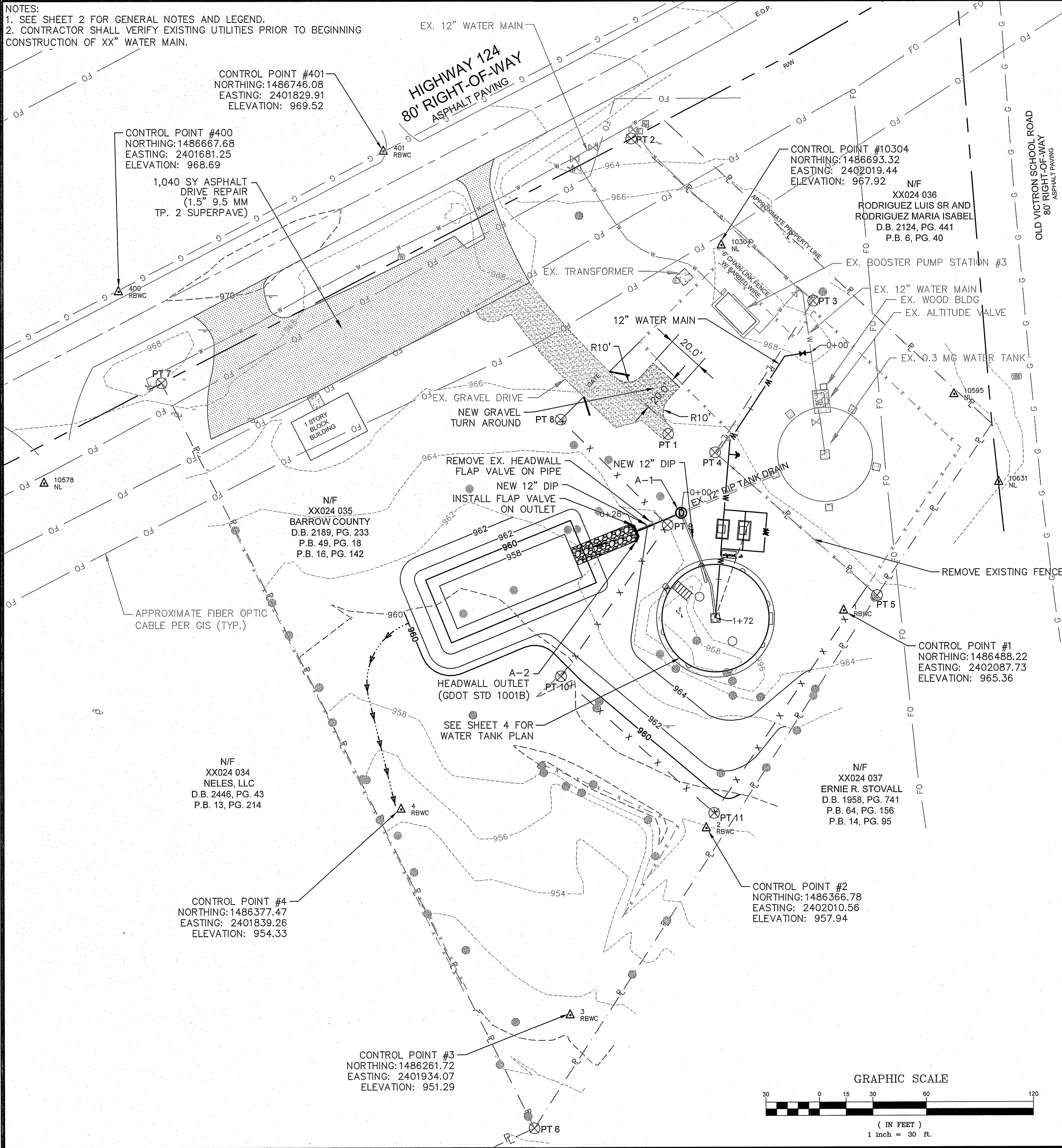
GENERAL NOTES & LEGEND

SHEET TITLE		
DESIGN	DRAWN	CHECKED

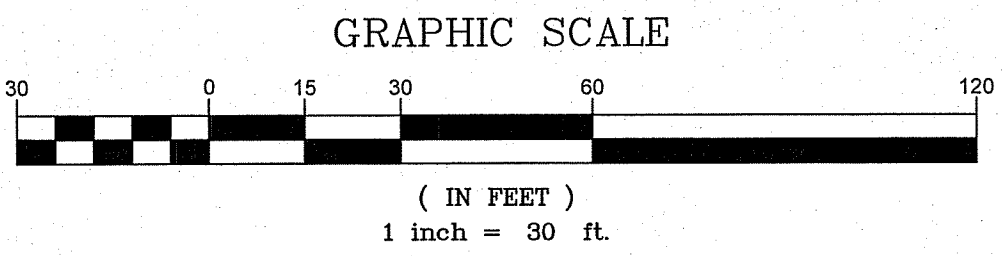
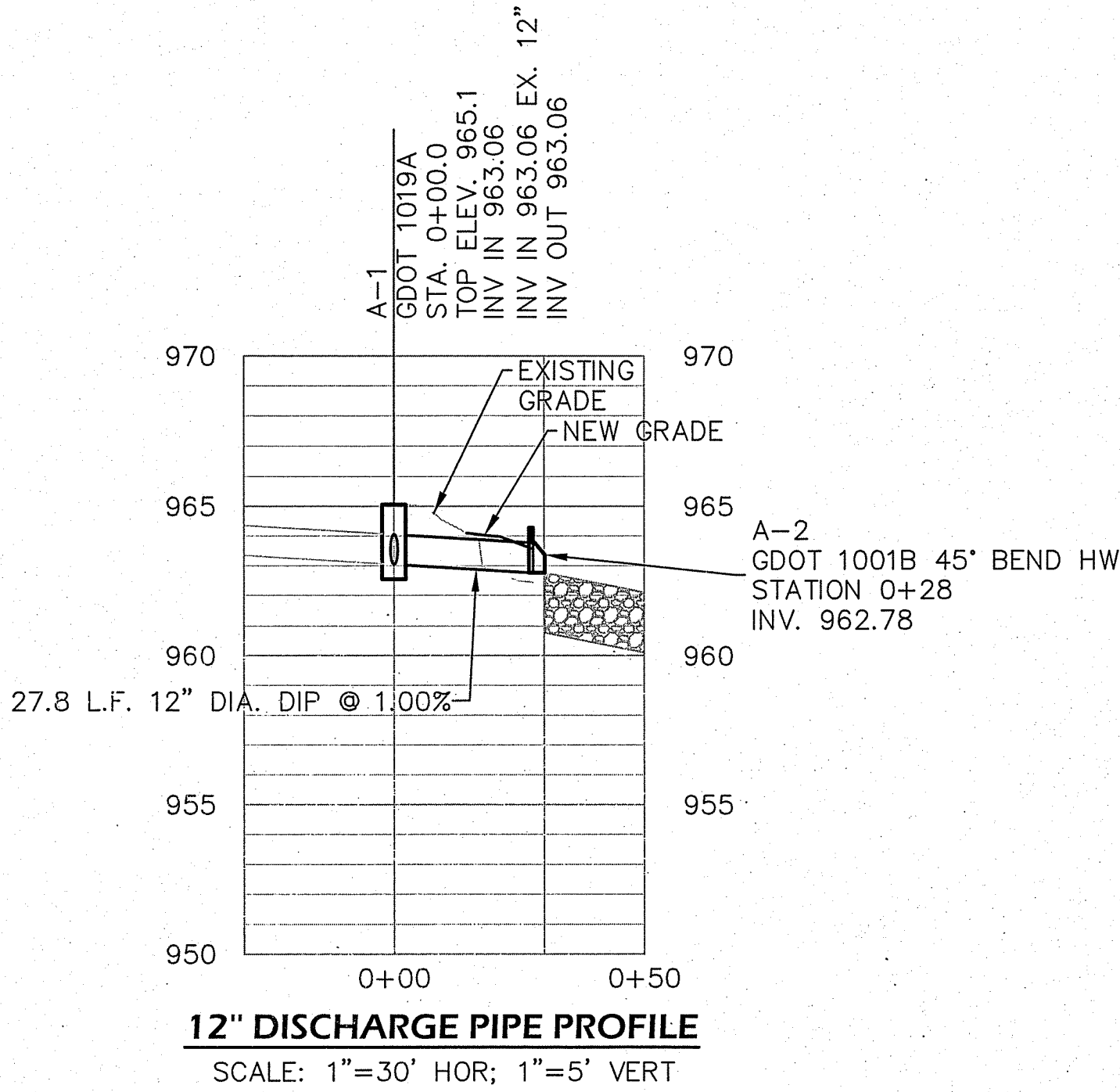
RELEASE

02

NOTES:
1. SEE SHEET 2 FOR GENERAL NOTES AND LEGEND.
2. CONTRACTOR SHALL VERIFY EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION OF XX" WATER MAIN.

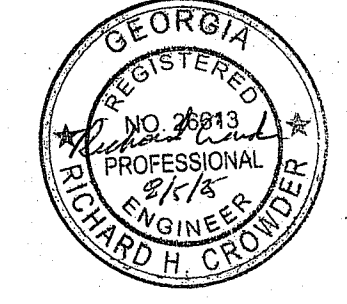


Point Table				
Point	Description	Elevation	Northing	Easting
PT.1	CL DRIVE	965.79	1486587.87	2401989.36
PT.2	PROPERTY CORNER	962.74	1486753.16	2401968.84
PT.3	PROPERTY CORNER	967.60	1486662.39	2401968.84
PT.4	PROPERTY CORNER	965.86	1486577.53	2402015.65
PT.5	PROPERTY CORNER	965.27	1486496.77	2402106.29
PT.6	PROPERTY CORNER	946.97	1486198.07	2401913.73
PT.7	PROPERTY CORNER	968.20	1486616.59	2401705.18
PT.8	FENCE CORNER	N/A	1486596.13	2401929.14
PT.9	FENCE CORNER	N/A	1486536.41	2401988.94
PT.10	FENCE CORNER	N/A	1486451.74	2401929.14
PT.11	FENCE CORNER	N/A	1486375.28	2402014.89



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**BARROW NORTHWEST
ELEVATED WATER
STORAGE TANK**

SHEET TITLE		CHECKED	RC
SITE PLAN	DRAWN	DP	
	DESIGN	RC	

DATE	NO.	DESCRIPTION
08/05/25	0	ISSUED FOR BID

E23136
PPI PROJECT NO.

03

NOTES:
1. SEE SHEET 2 FOR GENERAL NOTES AND LEGEND.
2. CONTRACTOR SHALL VERIFY EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
3. CONTRACTOR TO OBTAIN ELEVATION OF EXISTING TANK DRAIN AT NEW JB LOCATION AND MATCH THIS ELEVATION WITH THE NEW DRAIN BEFORE ORDERING THE NEW JB. TOP OF THE NEW JB SHALL BE A MINIMUM OF 1' ABOVE EXISTING GRADE. NEW TANK DRAIN SHALL HAVE A MINIMUM SLOPE OF 1%.

CONTROL POINT #1 (RBWC)
NORTHING: 1486488.22
EASTING: 2402087.73
ELEVATION: 965.35'

CONTROL POINT #2 (RBWC)
NORTHING: 1486366.78
EASTING: 2402010.56
ELEVATION: 957.94'

CONTROL POINT #4 (RBWC)
NORTHING: 1486377.47
EASTING: 2401839.26
ELEVATION: 954.33'

CHECK VALVE (W-2)
ASSEMBLY VAULT (05)

A-1
N 1486543.26
E 2401996.56

SEE NOTE 3

OVERFLOW PIPE CONNECTED
TO 12" DRAIN PIPE

41SY TYPE 3
RIP RAP

EXTERIOR TANK LADDER

TOWER LADDER
BALCONY W/
HANDRAIL (TYP.)

ROOF MANHOLE

N/F
XX024 035
BARROW COUNTY
D.B. 2189, PG. 233
P.B. 49, PG. 18
P.B. 16, PG. 142

N/F
XX024 036
RODRIGUEZ LUIS SR AND
RODRIGUEZ MARIA ISABEL
D.B. 2124, PG. 441
P.B. 6, PG. 40

W23 STA. 59+48
12"x12" TAPPING
SLEEVE & VALVE

POB CHAIN LINK
05 FENCE & GATE

W01 FIRE HYDRANT
06 2' INSIDE FENCE

12" X 10" TEE (TYP.)
10" X 10" TEE (TYP.)
10" 90° BEND, TYP.

W-1 ALTITUDE VALVE
05 ASSEMBLY VAULT

W02 10" GATE VALVE
06 BYPASS LINE

10" DIP

EQUIPMENT RACK -
LOCATE AS DIRECTED
BY OWNER - SEE
ELECTRICAL PLAN

LEVEL INDICATOR

3/4" COPPER PRESSURE
SENSING LINE TO TANK RISER
W/ MIN. 2' COVER

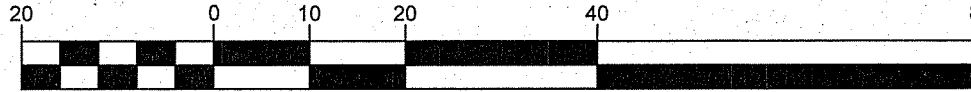
EXHAUST FAN MANHOLE

(T02) RISER PIER
05

(T01) 0.75 MG ELEVATED
WATER STORAGE TANK

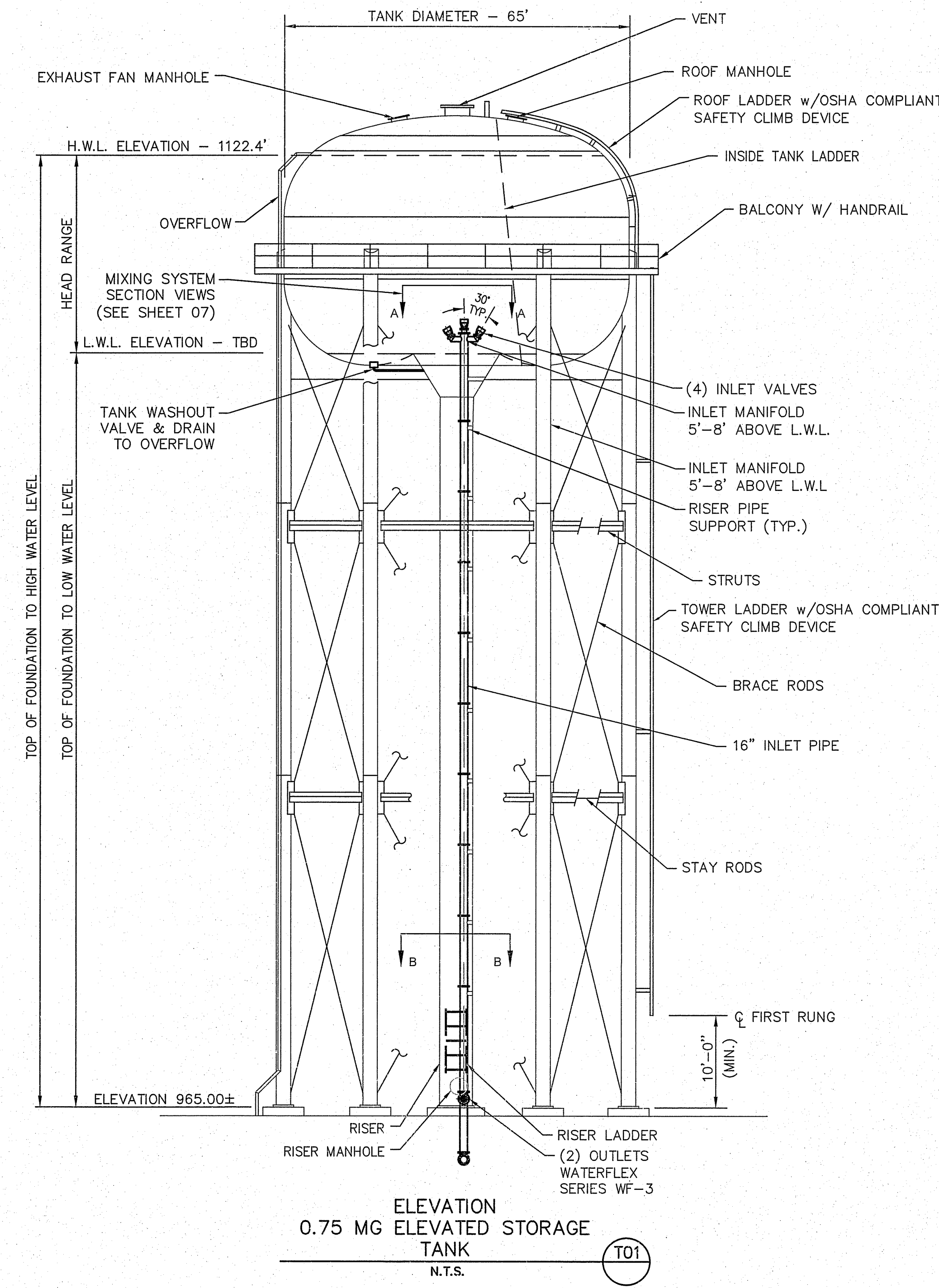
N/F
XX024 037
ERNIE R. STOVALL
D.B. 1958, PG. 741
P.B. 64, PG. 156
P.B. 14, PG. 95

GRAPHIC SCALE



(IN FEET)
1 inch = 20 ft.

TANK SITE PLAN



NOTE:
1. SEE SPECIFICATIONS SECTION 098700, ATTACHMENT 1 FOR THE TANK LOGO.
2. SIZE (EST. 15'x40') AND LOCATIONS (EST. 2) OF GRAPHICS/LETTERING SHALL BE APPROVED BY OWNER BEFORE PAINTING.

- NOTE:
- FOUNDATION DESIGN INCLUDING RISER PIER SHALL BE THE RESPONSIBILITY OF THE TANK CONTRACTOR.
 - PEDESTAL AND FOOTING DIMENSIONS AND CONCRETE REINFORCEMENT SHALL BE DETERMINED BY THE TANK CONTRACTOR.
 - FOUNDATION CONSTRUCTION SHALL COMPLY WITH AWWA D100-21, A.C.I. 318-19, A.C.I. 301-20 AND APPLICABLE SECTIONS OF THE PROJECT SPECIFICATIONS AND THE REPORT OF GEOTECHNICAL EXPLORATION BARROW COUNTY NE WATER TANK (S&ME PROJECT NO. 23800194).
 - CONCRETE COMPRESSIVE STRENGTH SHALL BE 4,000 PSI @ 28 DAYS.
 - REINFORCEMENT SHALL CONFORM TO A.S.T.M. A615 GR. 60.
 - CONSTRUCTION JOINTS SHALL BE ROUGHENED ACROSS ENTIRE FACE WITH 1/4" MINIMUM DEPTH INDENTATIONS.
 - THE TOP OF CONCRETE FOR ALL PIERS INCLUDING THE CENTER PIER SHALL BE LEVEL AND SHALL BE THE SAME ELEVATION (UNLESS OTHERWISE NOTED BY A SPECIFIED ELEV.) WITH A MAXIMUM DIFFERENTIAL OF (+ -) 1/4".
 - ANCHOR BOLTS SHALL BE PLACED WITHIN (+/-) 1/8" OF THE PLAN DIMENSIONS AT THE TOP OF THE CONCRETE. PLUMB WITHIN 1/4" IN 12" AND EXTEND WITHIN 1/2" OF THE SPECIFIED PROJECTION ABOVE THE TOP OF THE FOUNDATION.
 - TANK AND TOWER SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH AWWA D100-21 AND PROJECT SPECIFICATIONS

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ENGINEER
NO. 38683
8/15/05
GEORGIA
RICHARD H. CROWD

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STAMP

WATER TANK PLAN

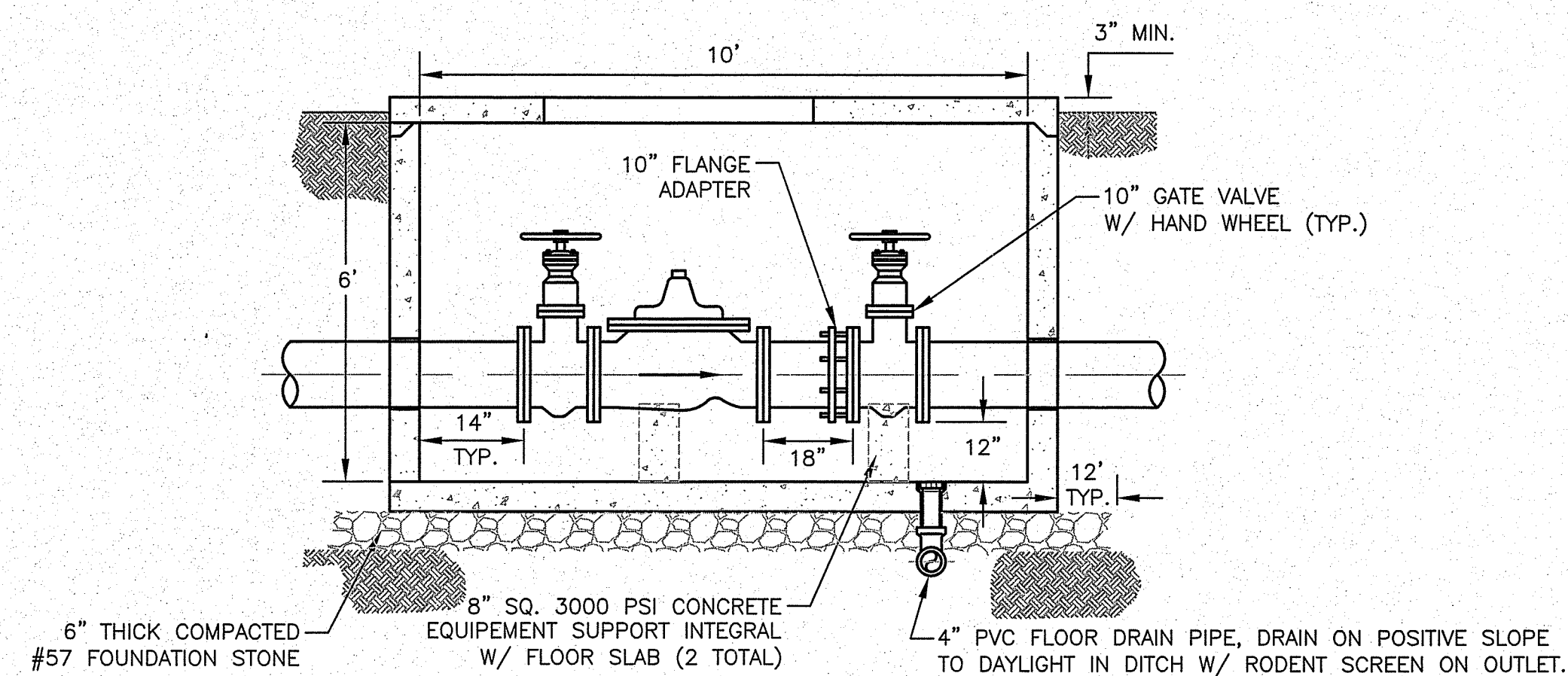
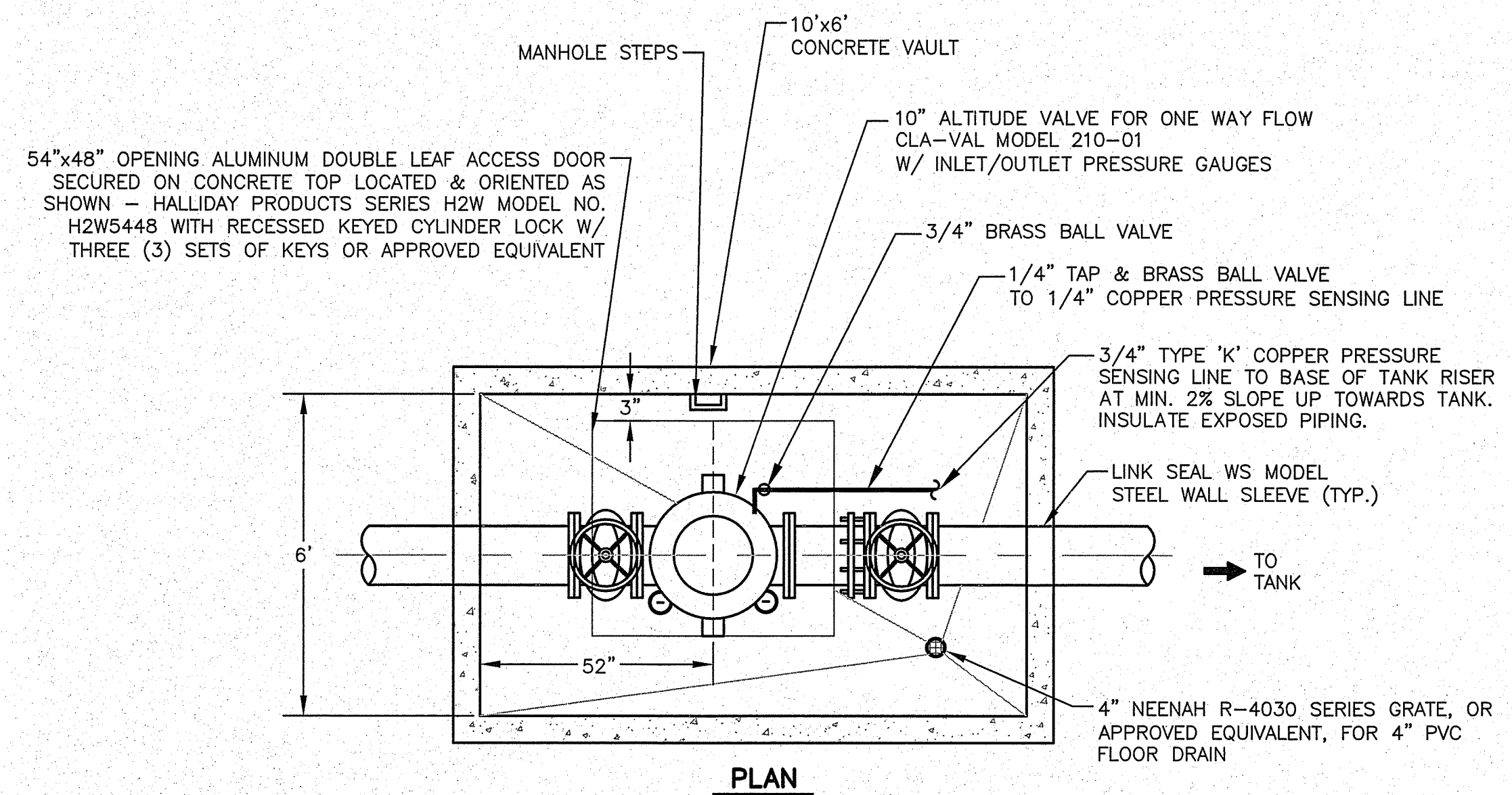
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DESIGN RC
DRAWN DP
CHECKED RC

RELEASE

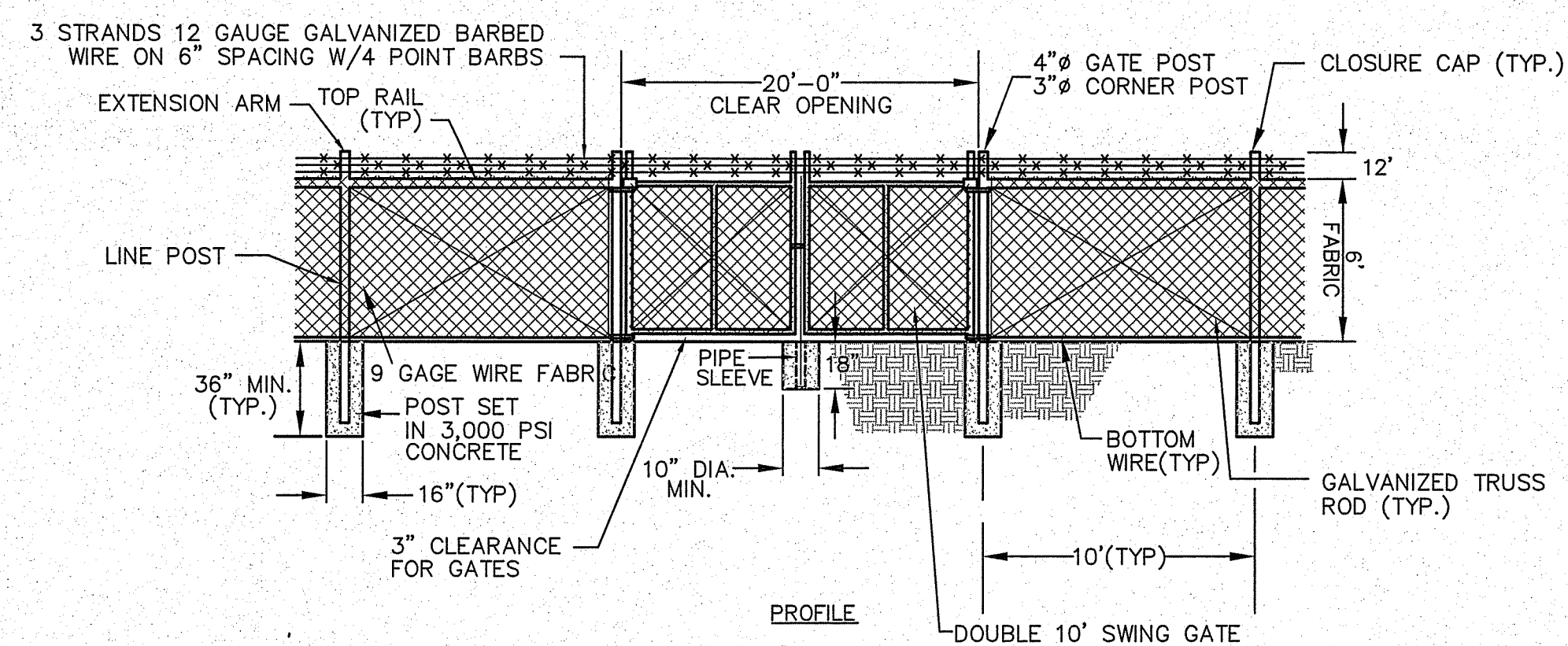
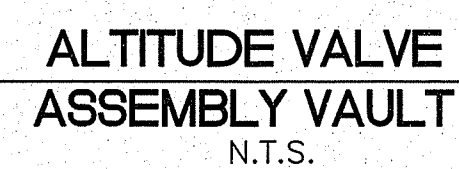
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PPI PROJECT NO.

04



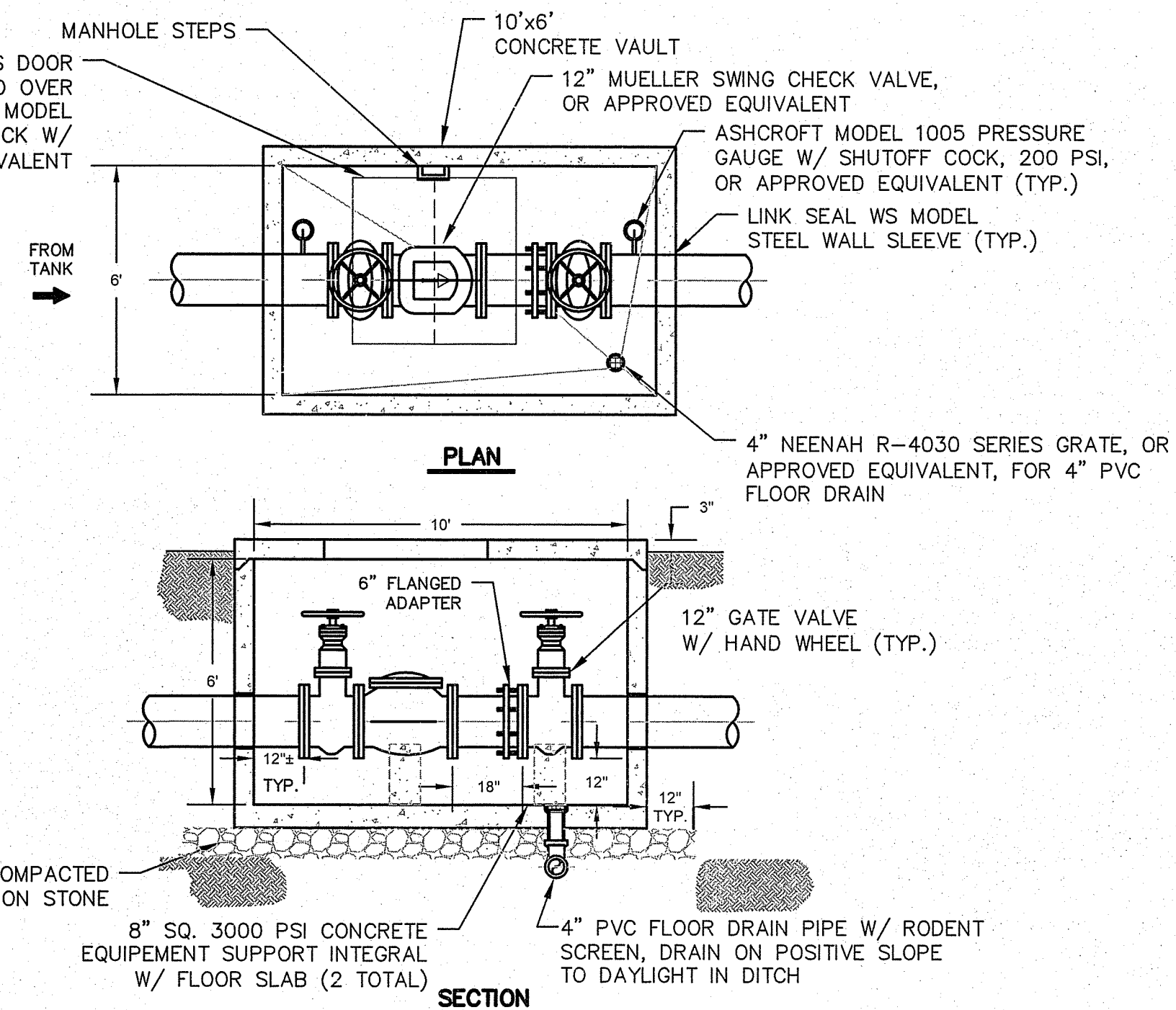
NOTES:

1. ALL PIPING SHALL BE PRESSURE CLASS 350 DIP.
2. VAULT SHALL BE REINFORCED CONCRETE (MIN. 4000 PSI) IN ACCORDANCE WITH ASTM C 858 AND ASTM C 913 FOR HS 20-44 WHEEL LOADING. SUBMIT SHOP DRAWINGS FOR VAULT STAMPED AND SIGNED BY A GEORGIA REGISTERED PROFESSIONAL ENGINEER.
3. INSTALL ALUMINUM ACCESS DOORS CAST IN VAULT TOP IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.



CHAINLINK FENCE AND GATE (P08)
N.T.S.

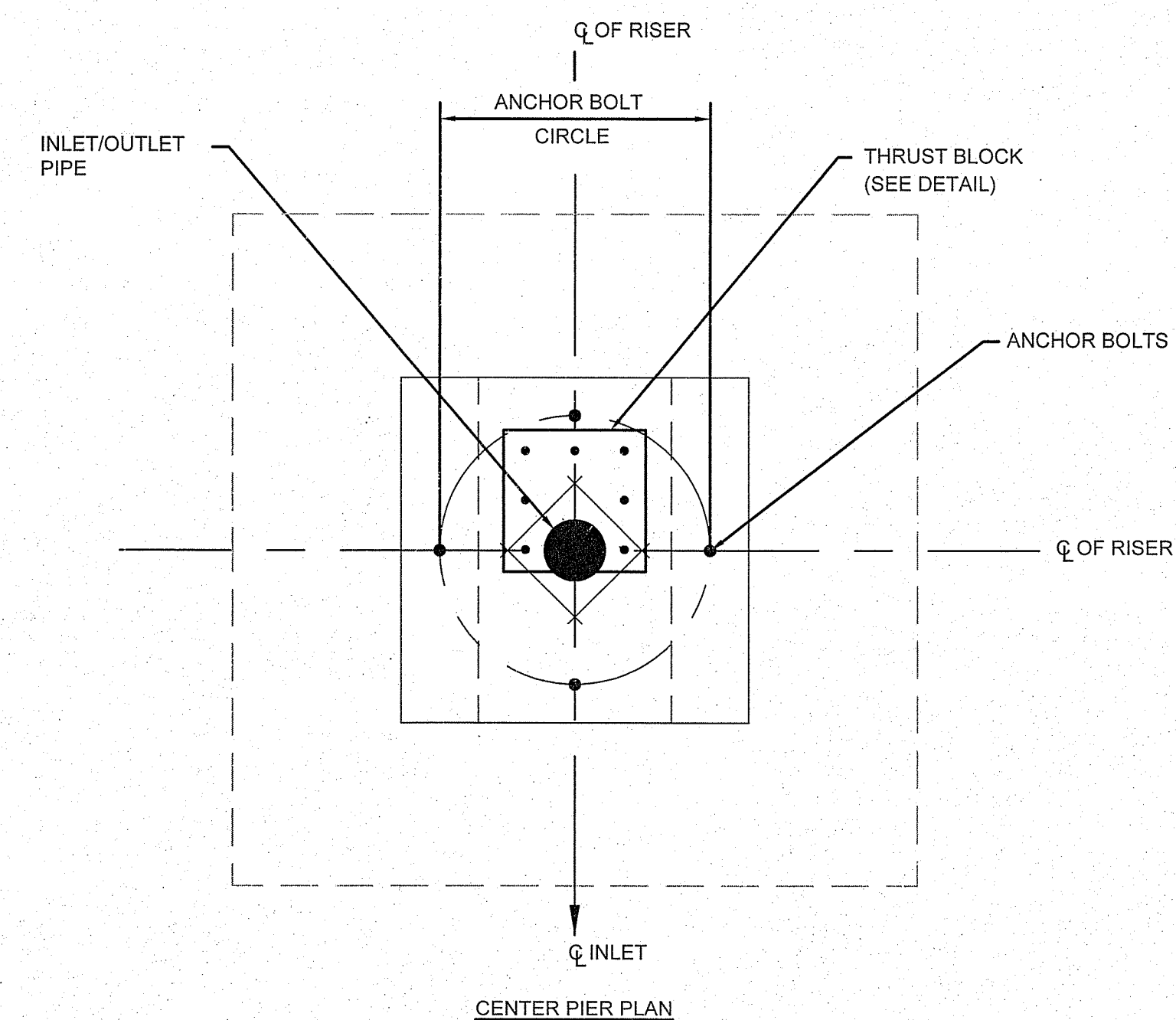
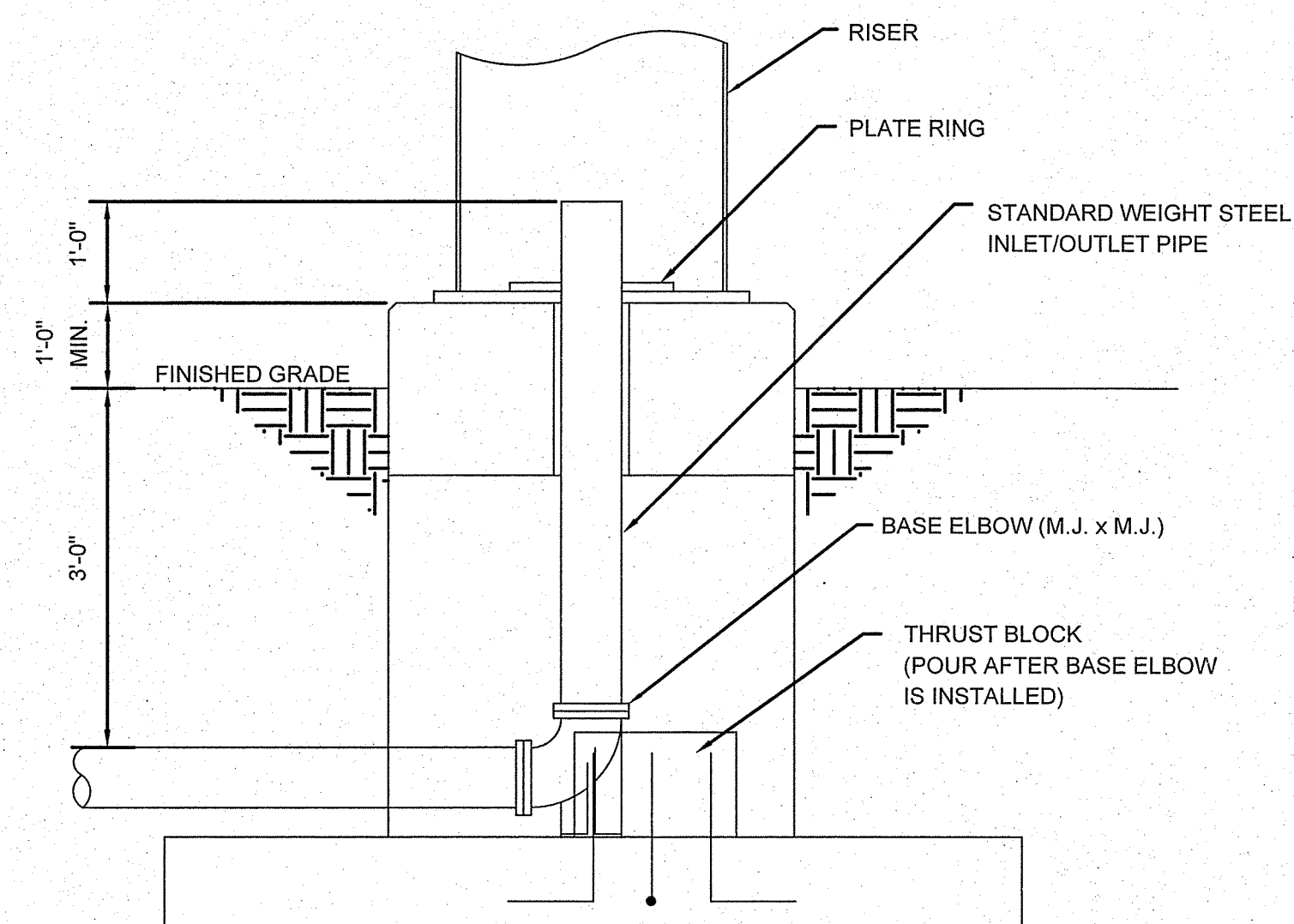
42"x42" OPENING ALUMINUM DOUBLE LEAF ACCESS DOOR
SECURED ON CONCRETE TOP LOCATED & CENTERED OVER
CHECK VALVE - HALLIDAY PRODUCTS SERIES H2W MODEL
NO. H2W4242 WITH RECESSED KEYED CYLINDER LOCK W/
THREE (3) SETS OF KEYS OR APPROVED EQUIVALENT



NOTES:

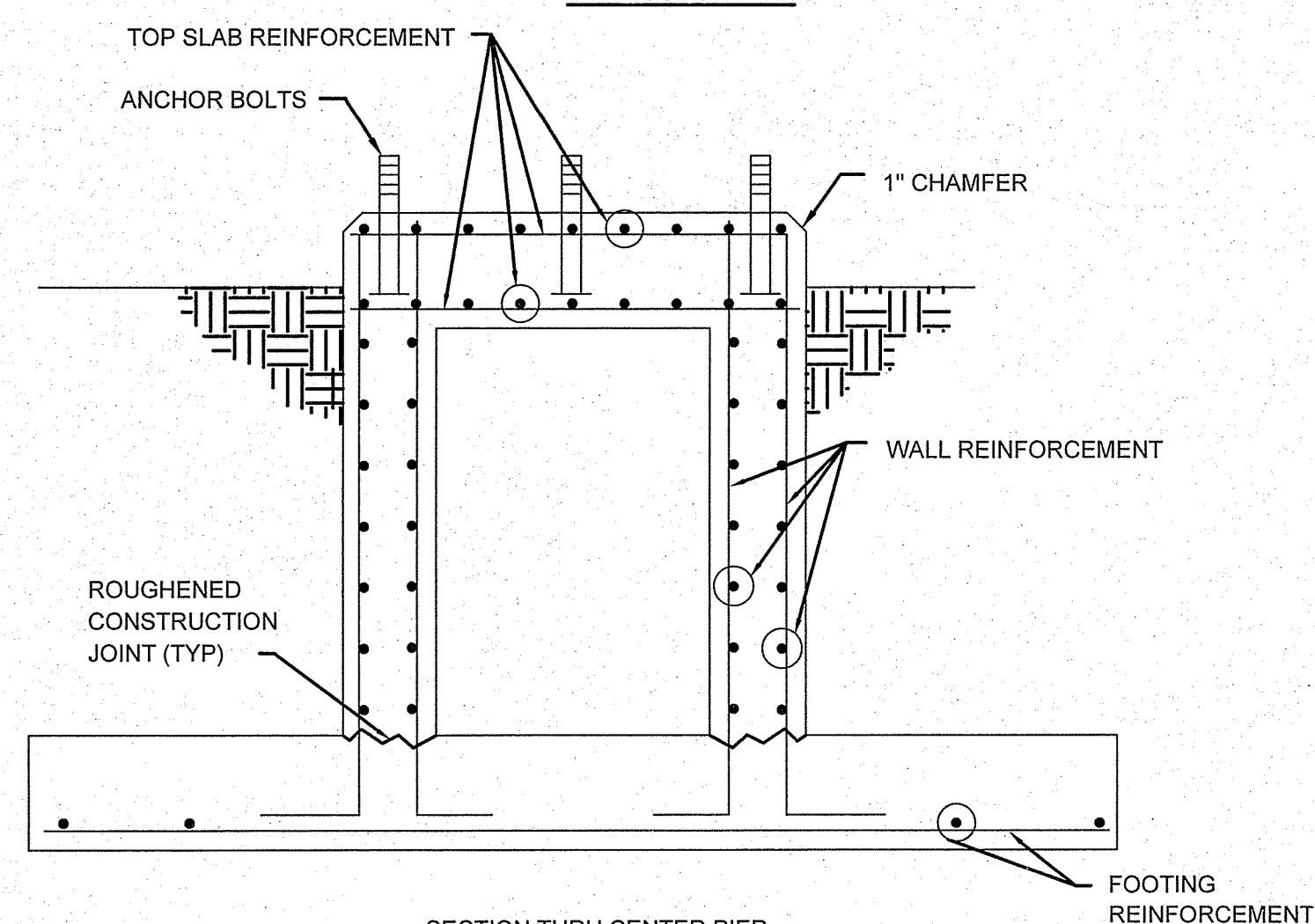
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3. INSTALL ALUMINUM ACCESS DOORS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

CHECK VALVE
ASSEMBLY VAULT
N.T.S.



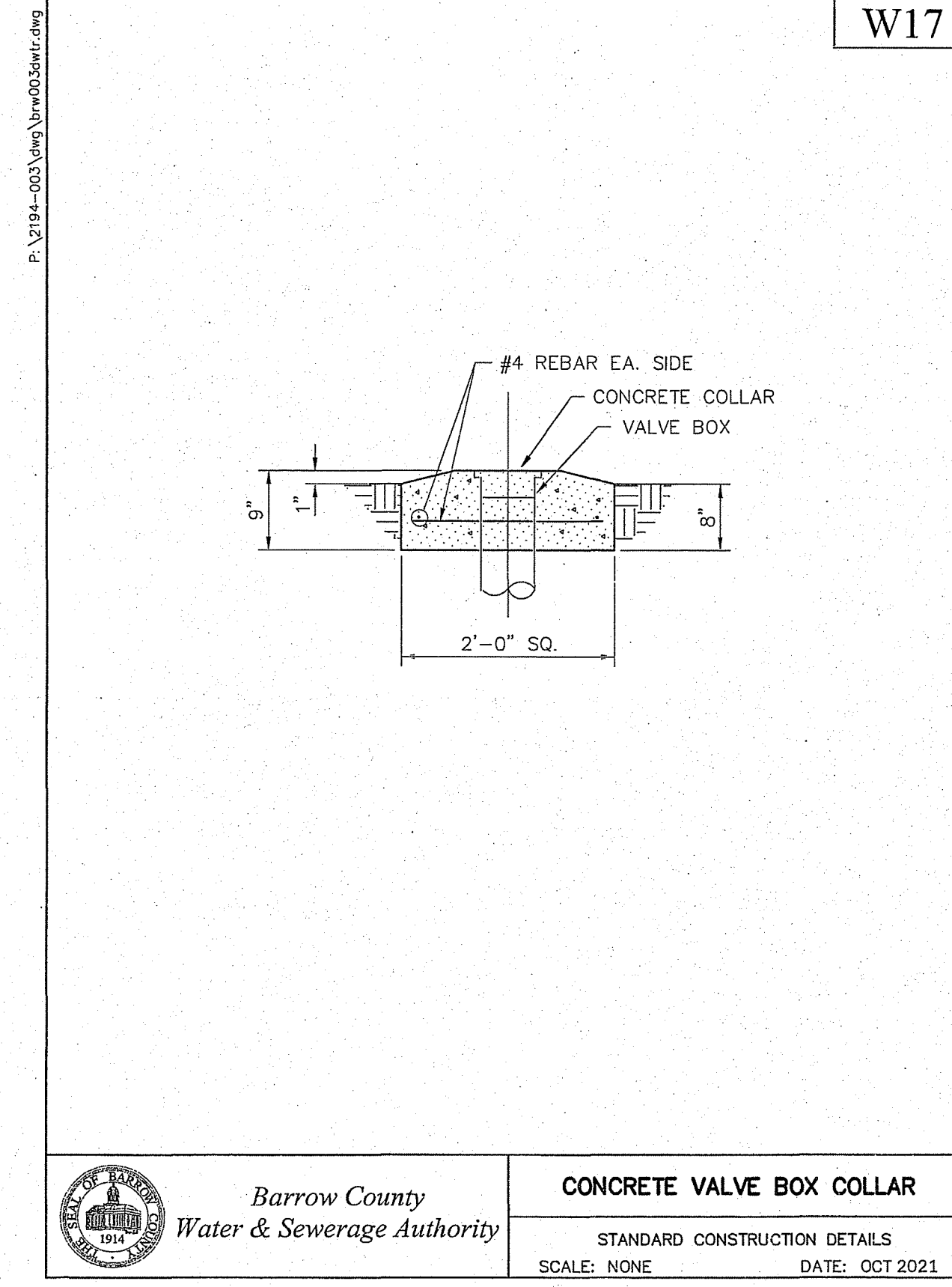
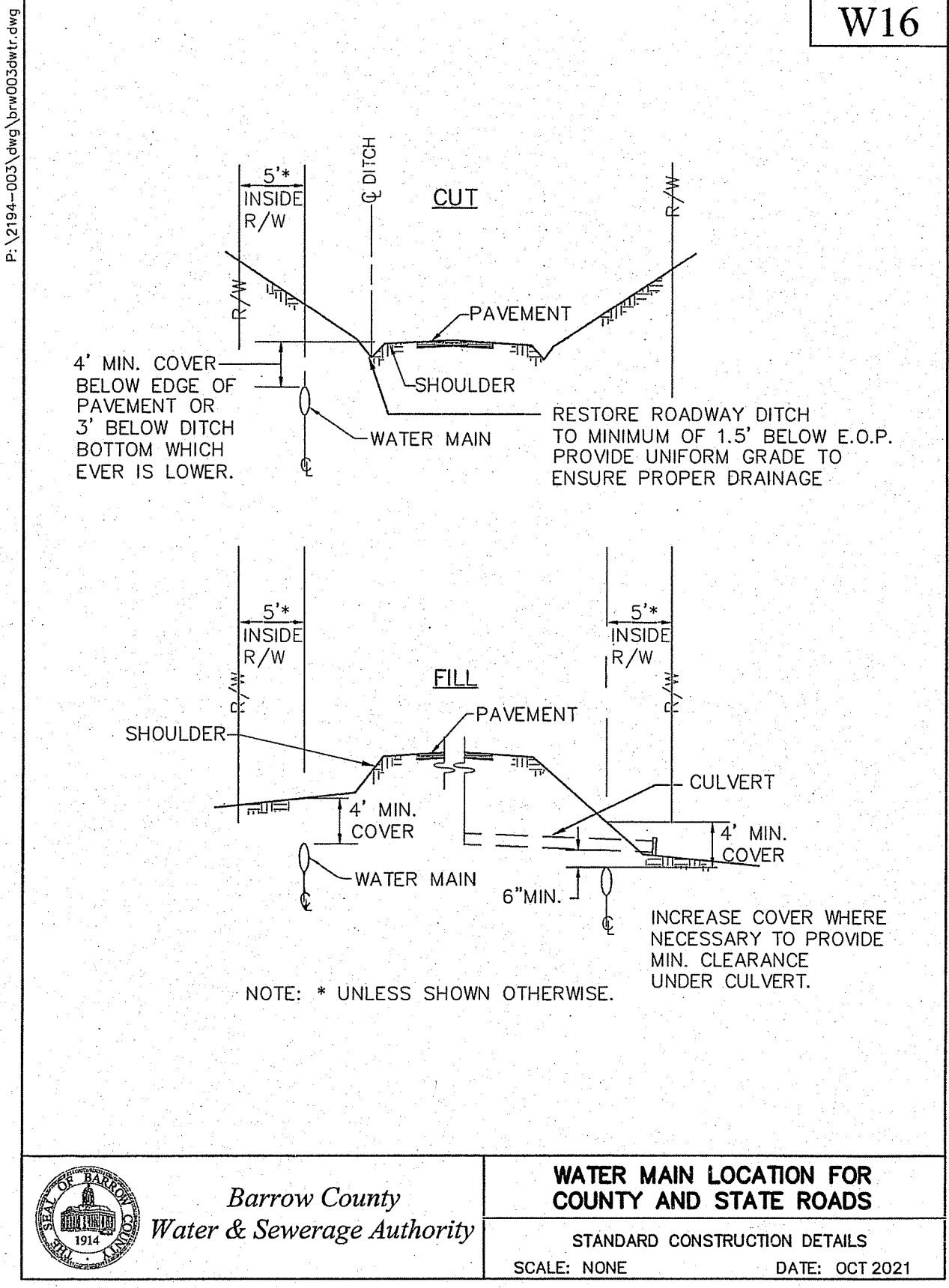
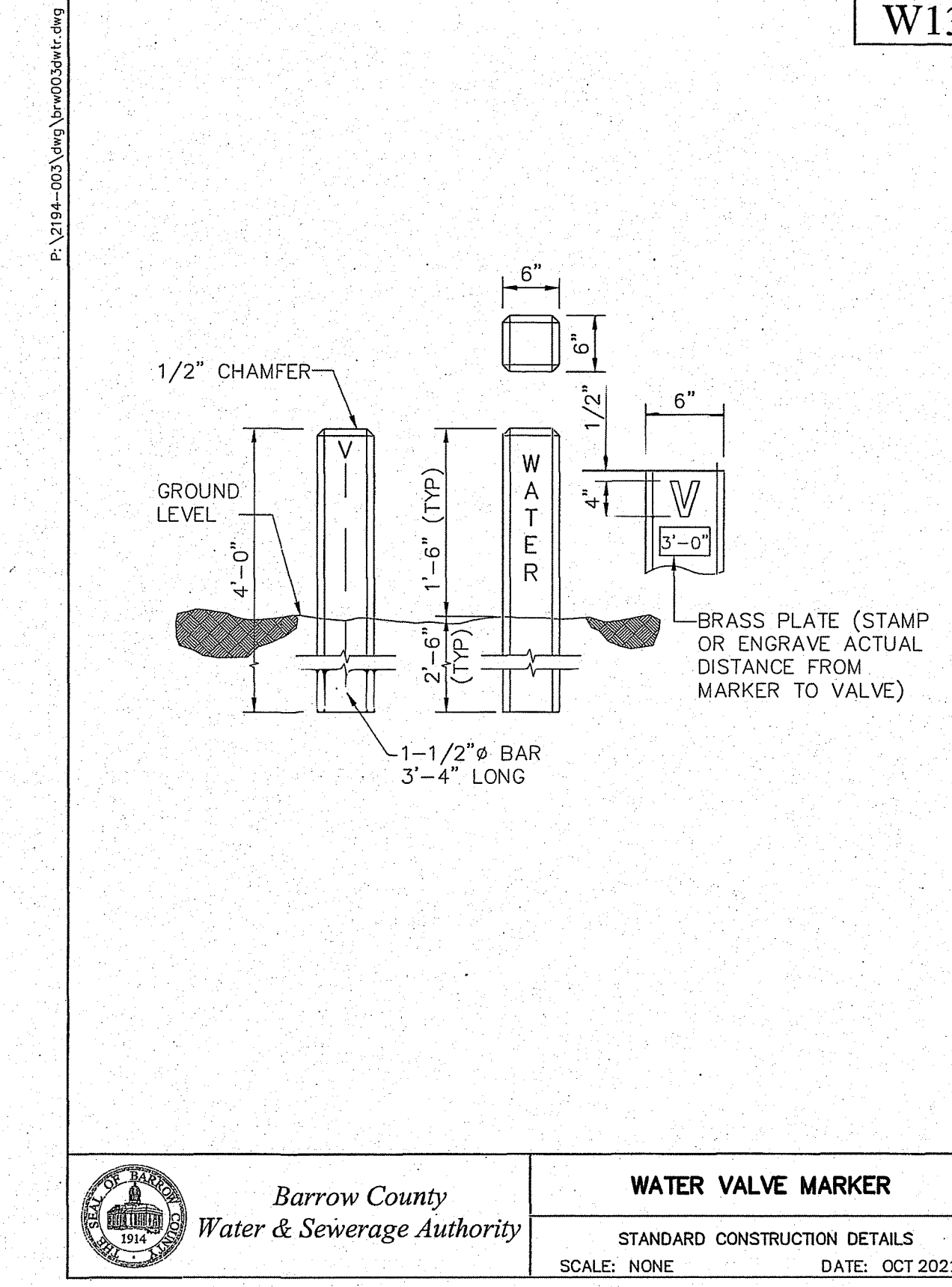
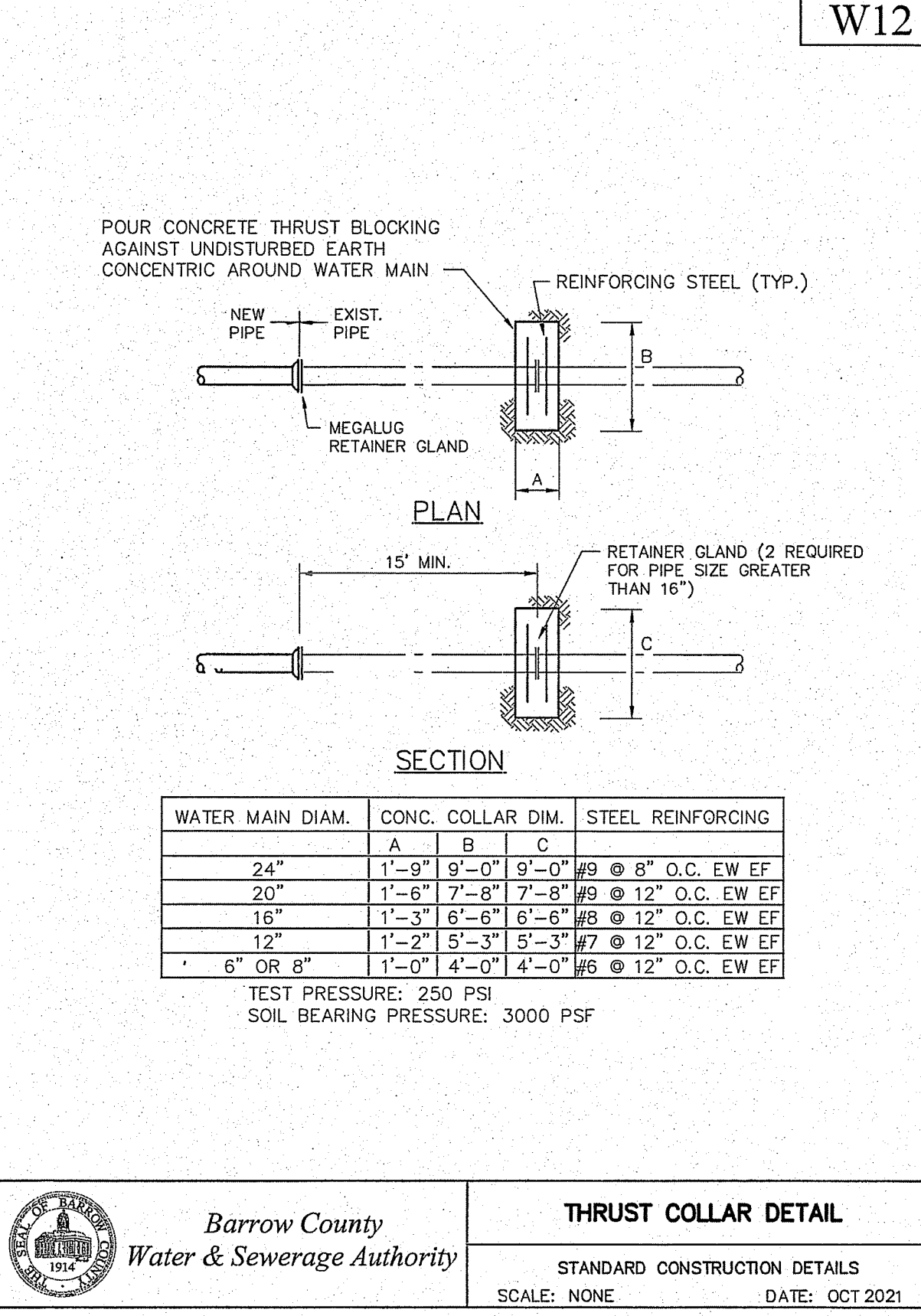
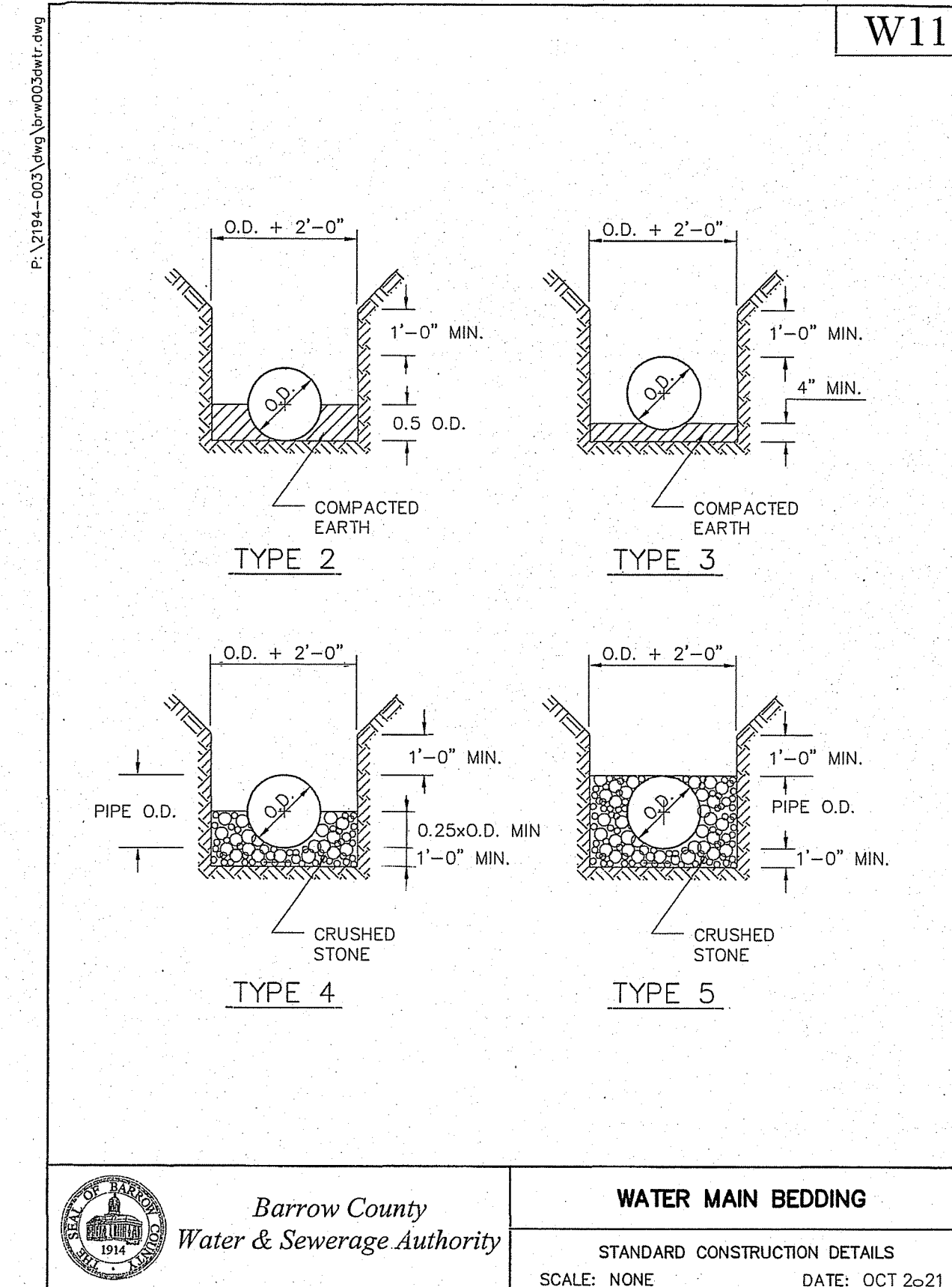
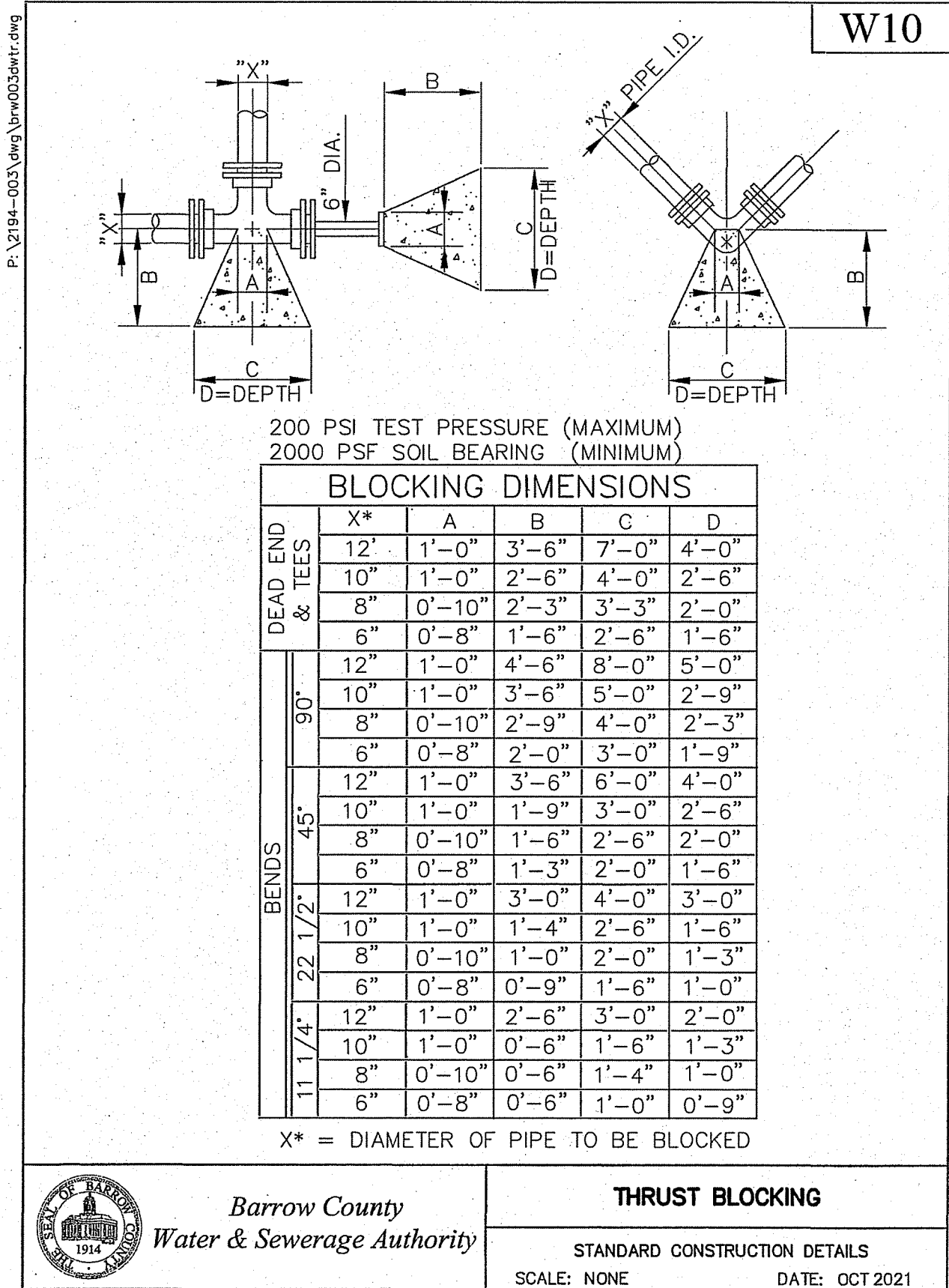
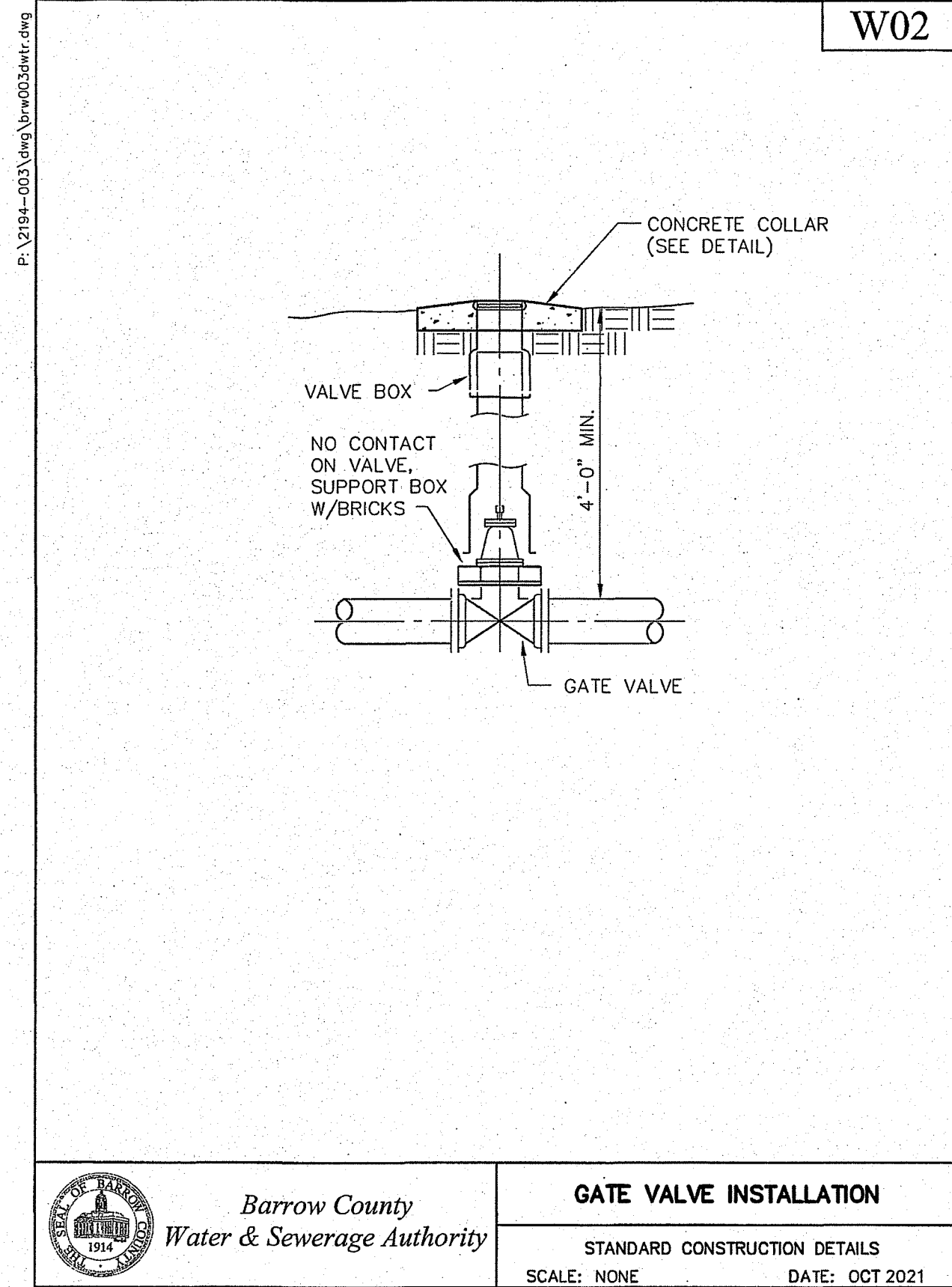
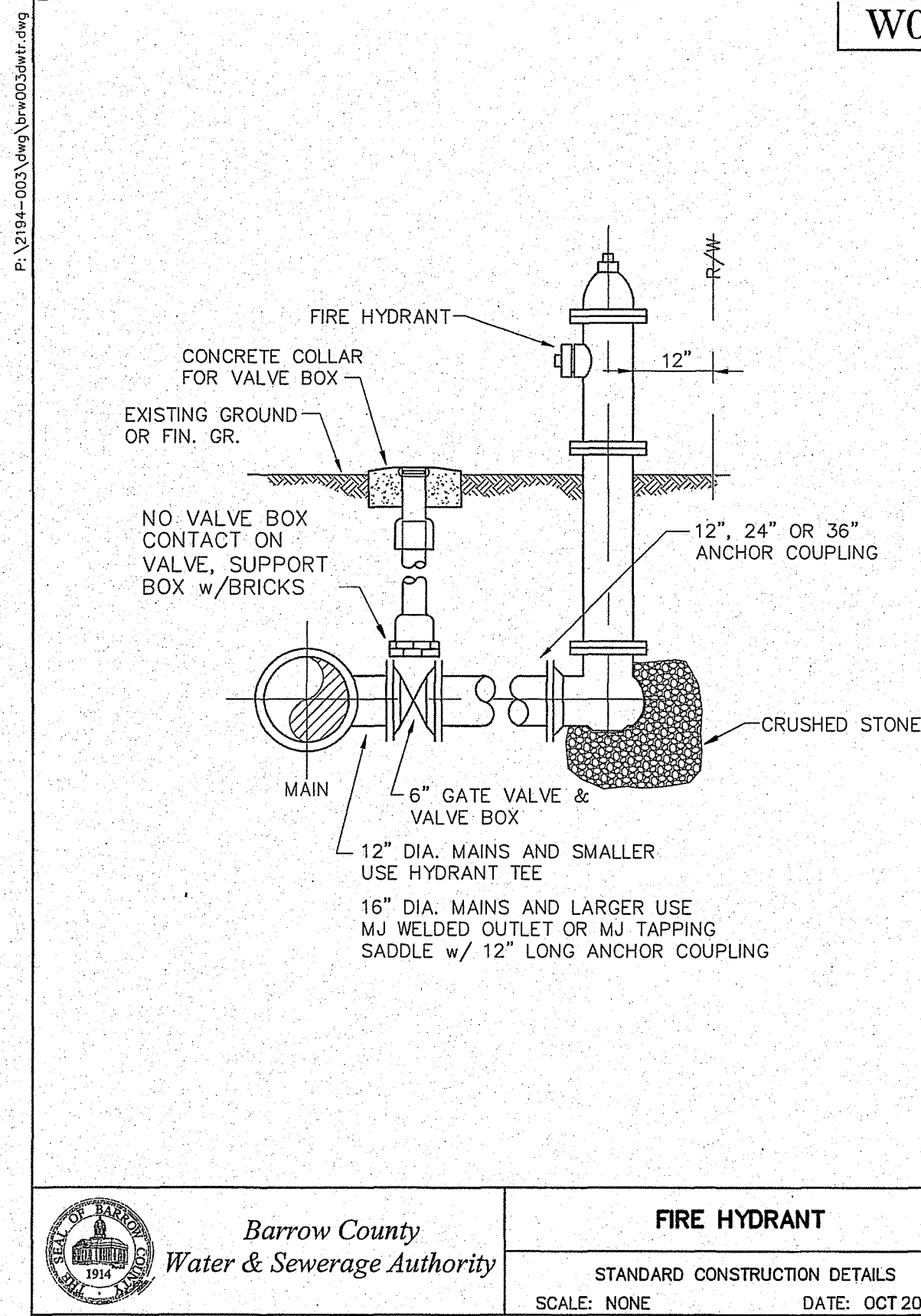
NOTES:

1. FOUNDATION DESIGN WILL BE THE RESPONSIBILITY OF THE TANK CONTRACTOR.
2. PEDESTAL AND FOOTING DIMENSIONS AND CONCRETE REINFORCEMENT SHALL BE DETERMINED BY THE TANK CONTRACTOR.
3. FOUNDATION CONSTRUCTION SHALL COMPLY WITH AWSWA D100, A.C.I. 318, A.C.I. 301 (LATEST EDITIONS), AND THE REPORT OF GEOTECHNICAL EXPLORATION, OCONEE COUNTY WATER TANKS, 250,000 TANK (S&ME PROJECT NO. 1880-17-071).
4. CONCRETE COMPRESSIVE STRENGTH SHALL BE 4,000 PSI @ 28 DAYS.
5. REINFORCEMENT SHALL CONFORM TO A.S.T.M. A615 GR. 60.
6. CONSTRUCTION JOINTS SHALL BE ROUGHENED ACROSS ENTIRE FACE WITH 1/4" MINIMUM DEPTH INDENTATIONS.
7. THE TOP OF CONCRETE FOR ALL PIERS INCLUDING THE CENTER PIER SHALL BE LEVEL AND SHALL BE THE SAME ELEVATION WITH A MAXIMUM DIFFERENCE OF 0.15".
8. ANCHOR BOLTS SHALL BE PLACED WITHIN (+) 1/8" OF THE MANUFACTURER'S PLAN DIMENSIONS AT THE TOP OF THE CONCRETE, PLUMB WITHIN 1/4" IN 12" AND EXTEND WITHIN 1/2" OF THE SPECIFIED PROJECTION ABOVE THE TOP OF THE FOUNDATION.



RISER DETAIL

N.T.S.



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REGISTERED PROFESSIONAL ENGINEER
GEORGIA
RICHARD H. CROWDER
No. 12113

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Georgia Engineering Firm COA # PE000529
400 Pike Boulevard, Lawrenceville, GA 30046
770.338.8000 • www.ppi.us

STAMP

**BARROW NORTHWEST
ELEVATED WATER
STORAGE TANK**

CONSTRUCTION DETAILS

SHEET TITLE

DESIGN RC
DRAWN DP
CHECKED RC

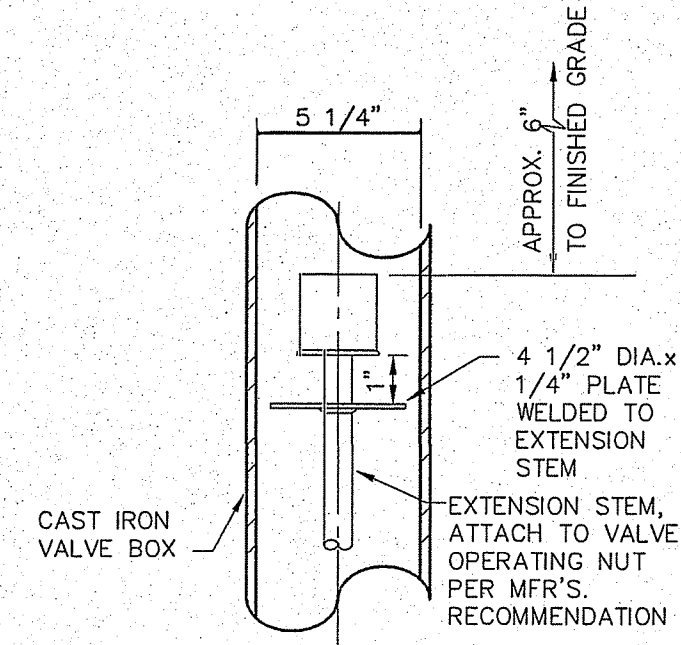
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DATE 08/05/25
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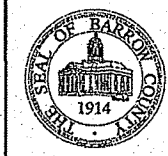
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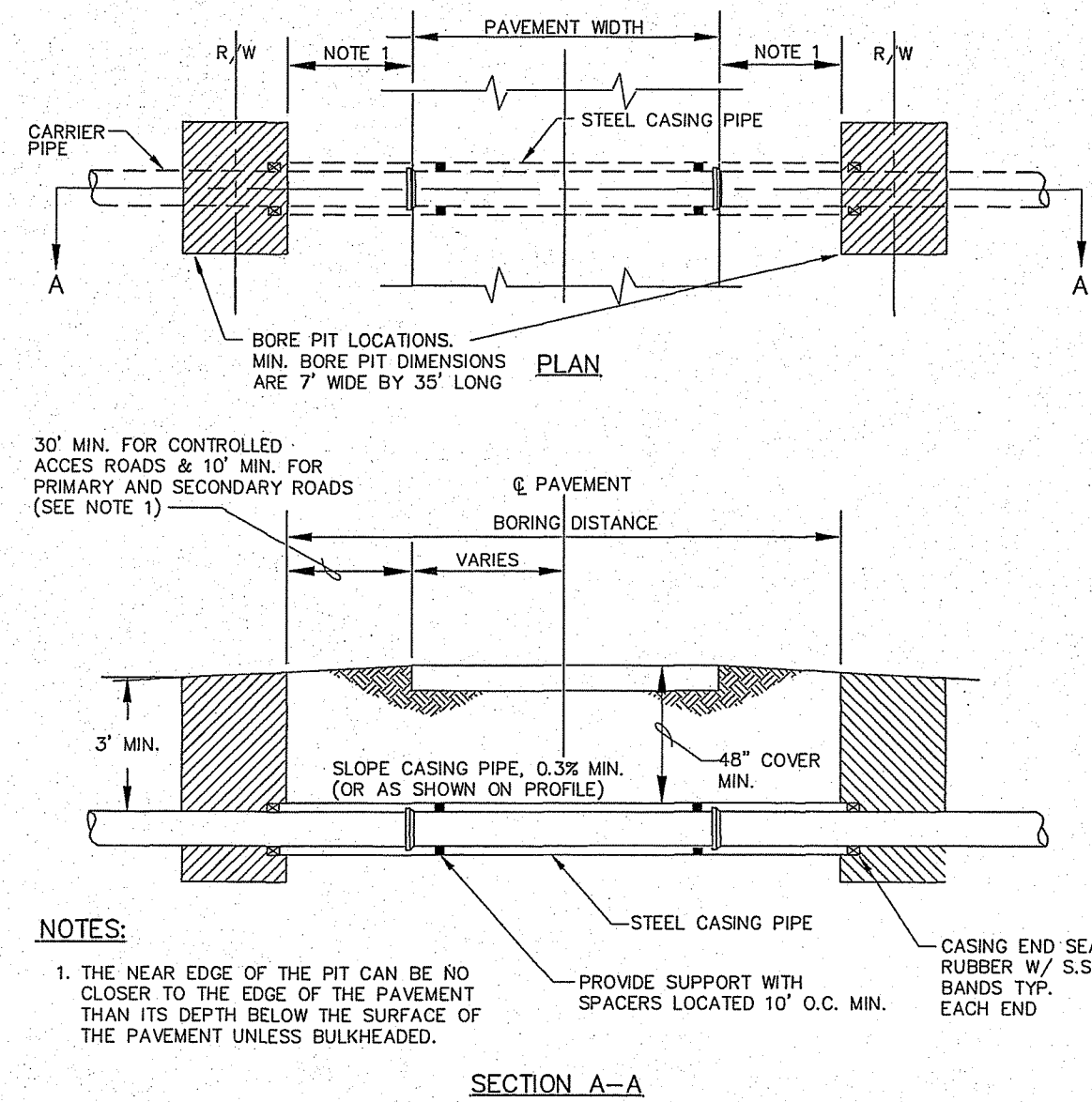


Barrow County
Water & Sewerage Authority

EXTENSION STEM

STANDARD CONSTRUCTION DETAILS
SCALE: NONE DATE: OCT 2021

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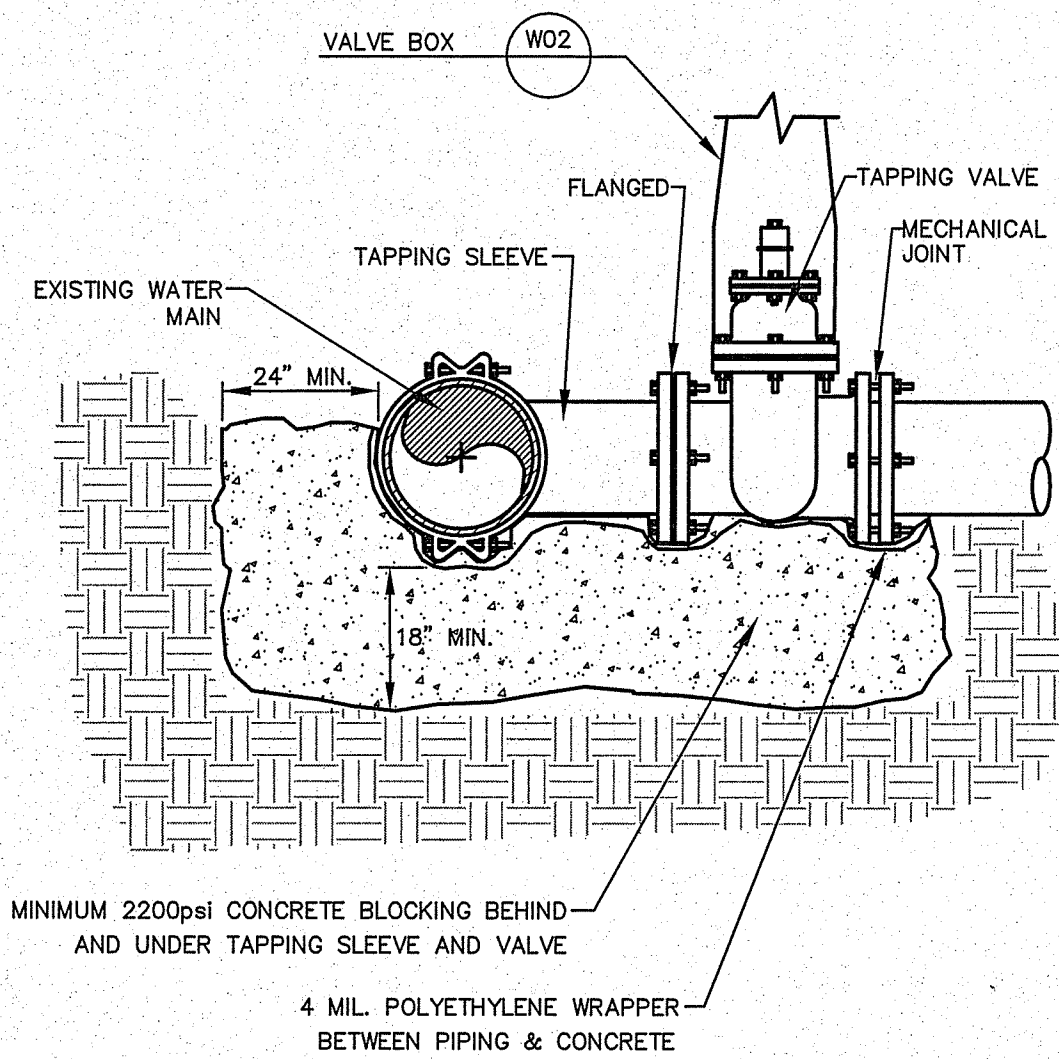
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Barrow County
Water & Sewerage Authority

JACK AND BORE - CASING PIPE

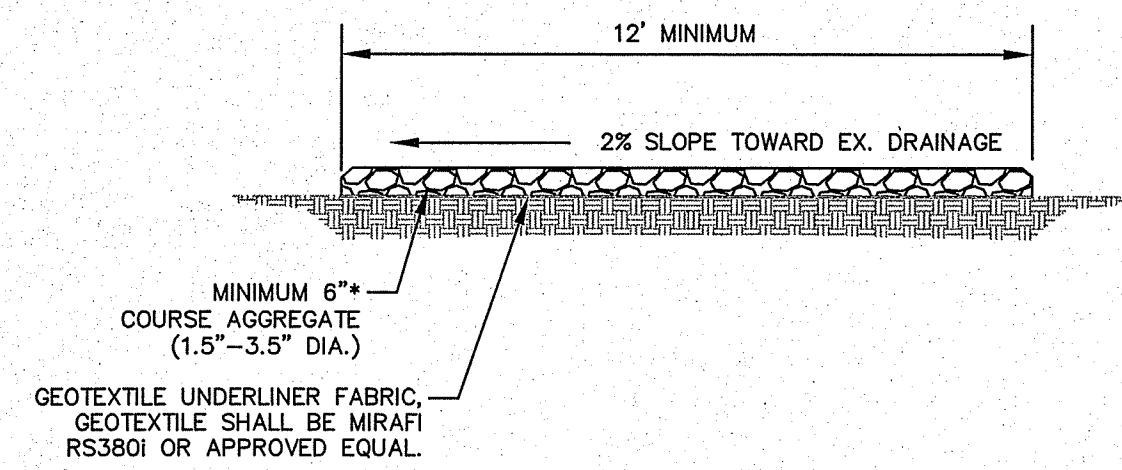
STANDARD CONSTRUCTION DETAILS
SCALE: NONE DATE: OCT 2021



TAPPING SLEEVE AND VALVE

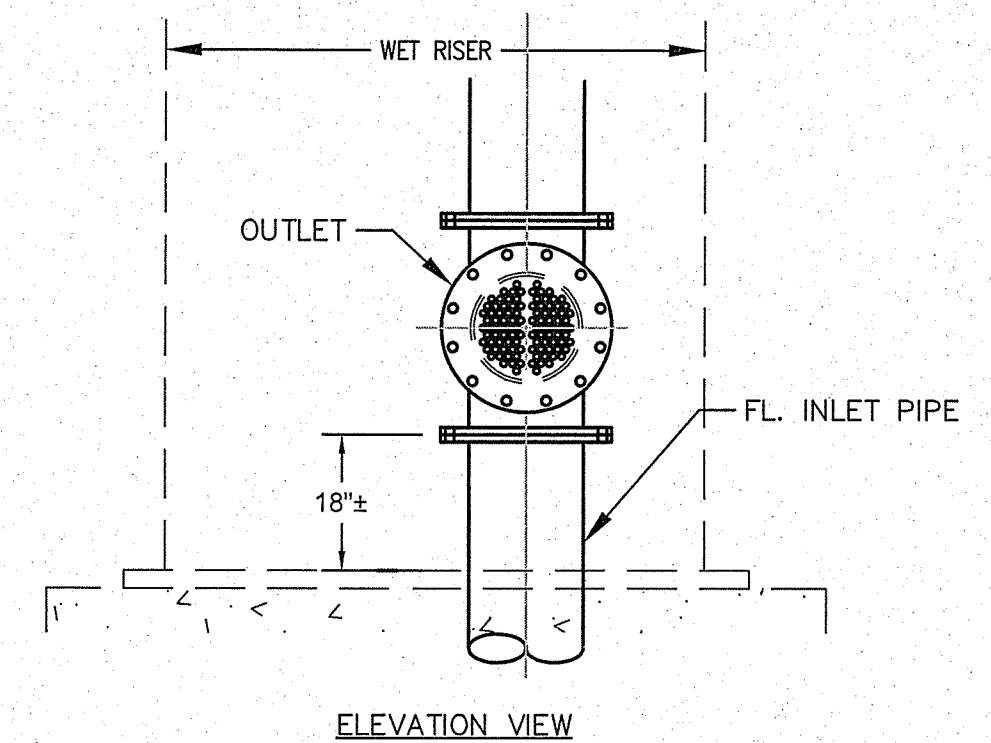
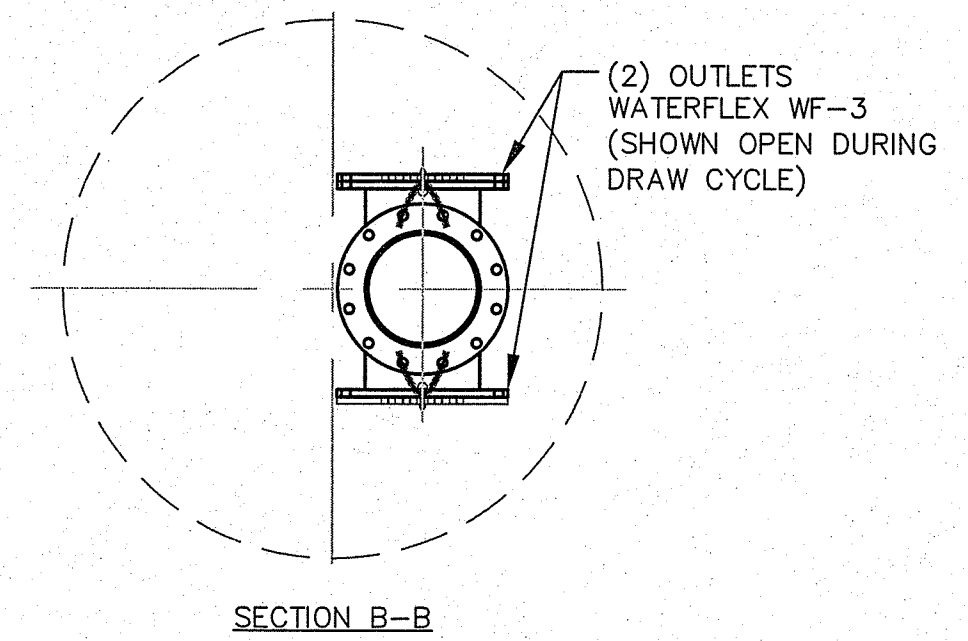
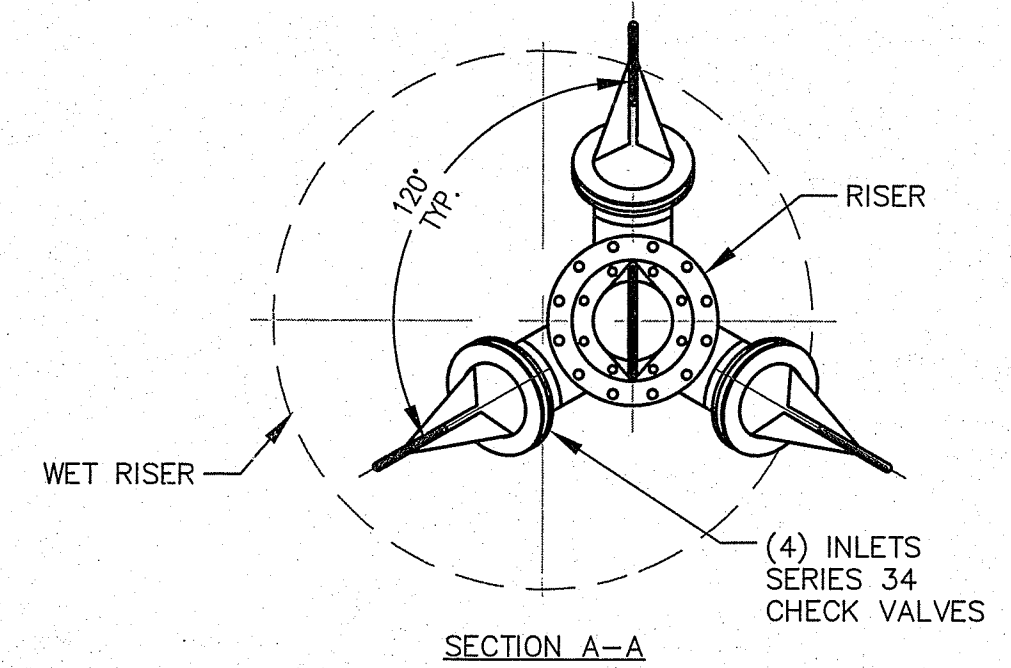
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W23



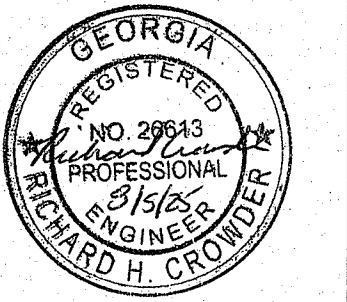
GRAVEL DRIVE

N.T.S.



RISER PEIR/MIXING SYSTEM
SECTION VIEWS
N.T.S.

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**BARROW NORTHWEST
ELEVATED WATER
STORAGE TANK**

CONSTRUCTION
DETAILS
SHEET TITLE
DESIGN RC
DRAWN DP
CHECKED RC

DATE	NO.	DESCRIPTION
08/06/25	0	ISSUED FOR BID

E23136
PPI PROJECT NO.

07

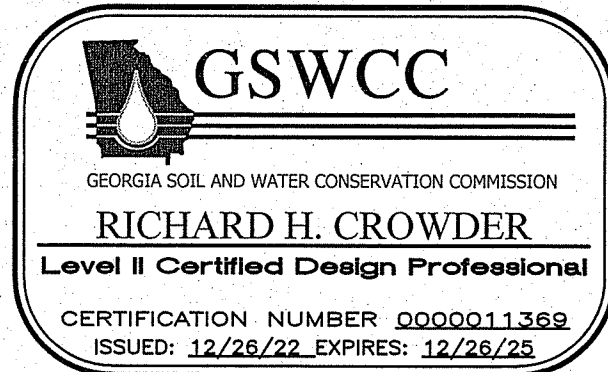
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PLOT DATE: 8/5/2025 9:49 AM

OWNER/PRIMARY PERMITTEE:
BARROW COUNTY BOARD OF
COMMISSIONERS
30 NORTH BROAD STREET
WINDER, GA 30680
PH. (770) 307-3014
email: dgarret@barrowga.org



Know what's below.
Call before you dig.

24-HOUR EMERGENCY CONTACT:
DEAN GARRETT
(770) 307-3014



SOIL EROSION NOTES

1. DISTURBED AREA CALCULATIONS INDICATE MAXIMUM TOTAL AREA DISTURBED DURING CONSTRUCTION AND IS LIMITED TO EASEMENT AREAS SHOWN. FOR TRENCHING OPERATIONS WITHIN RIGHTS-OF-WAY, THE AREAS INCLUDE TRENCH, EQUIPMENT TRACK, AND SPOIL HEAP WIDTHS.

TOTAL PROJECT AREA: 2.65
TOTAL DISTURBED AREA: 1.26

2. GPS COORDINATES OF THE PROJECT LOCATION ARE LATITUDE 34.0865° N AND LONGITUDE 83.8189° W.
3. DESCRIPTION OF THE NATURE OF CONSTRUCTION ACTIVITY AND EXISTING SITE CONDITIONS: THE EXISTING SITE IS A SMALL HILL, PARTIALLY WOODED, ADJACENT TO AN EXISTING WATER TANK. THIS INFRASTRUCTURE PROJECT INCLUDES CONSTRUCTION OF A 0.75 MGD POTABLE WATER TANK THAT WILL INCLUDE LINework TO TIE INTO THE EXISTING WATER DISTRIBUTION SYSTEM, AND ASSOCIATED SITE WORK. LINework WILL BE INSTALLED BY TRENCHING AND EXISTING GRADE WILL BE RESTORED OVER THE PIPELINE, AND MILD GRADING WILL BE REQUIRED FOR FACILITY SITE WORK.
4. THE RECEIVING WATER IS A TRIBUTARY TO THE MULBERRY RIVER WHICH IS A WARM WATER FISHERY. THERE ARE NO WETLANDS OR OTHER SENSITIVE AREAS IDENTIFIED ON OR ADJACENT TO THE SITE.
5. CERTIFICATION STATEMENTS:

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATION DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT UNDER MY SUPERVISION."

"I CERTIFY THAT THE PERMITTEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED. PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OR THE SAMPLING OF THE STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100002."

"I CERTIFY THAT THE PERMITTEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR THE MONITORING OF: (A) ALL PERENNIAL AND INTERMITTENT STREAMS AND OTHER WATER BODIES SHOWN ON THE USGS TOPOGRAPHIC MAP AND ALL OTHER FIELD VERIFIED PERENNIAL AND INTERMITTENT STREAMS AND OTHER WATER BODIES, OR (B) WHERE ANY SUCH SPECIFIC IDENTIFIED PERENNIAL OR INTERMITTENT STREAM AND OTHER WATER BODY IS NOT PROPOSED TO BE SAMPLED, I HAVE DETERMINED IN MY PROFESSIONAL JUDGMENT, UTILIZING THE FACTORS REQUIRED IN THE GENERAL NPDES PERMIT NO. GAR 100002, THAT THE INCREASE IN THE TURBIDITY OF EACH SPECIFIC IDENTIFIED SAMPLED RECEIVING WATER WILL BE REPRESENTATIVE OF THE INCREASE IN THE TURBIDITY OF A SPECIFIC IDENTIFIED UN-SAMPLED RECEIVING WATER."

Richard Crowder
SIGNATURE OF DESIGN PROFESSIONAL

6. THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT AND CERTIFY THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WITHIN 7 DAYS AFTER INSTALLATION.
7. NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AS MEASURED FROM THE POINT OF WRESTED VEGETATION WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMITS.
8. THERE ARE NO ENCROACHMENTS INTO THE 25-FOOT UNDISTURBED STREAM BUFFER AS PART OF THIS PLAN.
9. AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.
10. WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.
11. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND DISTURBING ACTIVITIES.
12. EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
13. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.
14. CONSTRUCTION ACTIVITY DOES NOT DISCHARGE STORM WATER INTO AN IMPAIRED STREAM SEGMENT, OR WITHIN 1 LINEAR MILE UPSTREAM OF ANY PORTION OF A BIOTA-IMPAIRED STREAM SEGMENT.
15. CONCRETE WASHDOWN: WASHOUT OF THE DRUM AT THE CONSTRUCTION SITE IS PROHIBITED. USE BMP'S FOR WASHDOWN OF TOOLS, MIXER CHUTES, HOPPERS, AND THE REAR OF VEHICLES.
16. REMEDIATION OF PETROLEUM SPILLS AND LEAKS: ANY LEAKS OR SPILLS OF PETROLEUM PRODUCTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTAIN, CONTROL, AND REMEDIATE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL GUIDELINES, ORDINANCES, AND LAWS.
 - LOCAL, STATE AND MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND PROCEDURES WILL BE MADE AVAILABLE TO SITE PERSONNEL.
 - MATERIAL AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREAS. TYPICAL MATERIALS AND EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO, BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, CAT LITTER, SAND, SAWDUST, AND PROPERLY LABELED PLASTIC AND METAL WASTE CONTAINERS.
 - PETROLEUM SPILLS SHALL BE IMMEDIATELY CONTAINED. ALL INLETS MUST BE PLUGGED IMMEDIATELY, AND THE PETROLEUM DIRECTED AWAY FROM RECEIVING WATERS OR STORM DRAINAGE SYSTEMS. CLEANUP MAY BE ACCOMPLISHED BY, BUT IS NOT LIMITED TO, SWEEPING, SHOVELING, AND VACUUMING ALONG WITH THE USE OF SORBENTS AND GELS.
 - ANY CONTAMINATED SOILS MUST BE REMOVED FROM THE SITE IMMEDIATELY AND REPLACED WITH SOIL OF SIMILAR PROPERTIES.
 - SPILL PREVENTION PRACTICES AND PROCEDURES WILL BE REVIEWED AFTER A SPILL AND ADJUSTED AS NECESSARY TO PREVENT FUTURE SPILLS.
 - ALL SPILLS WILL BE CLEANED UP IMMEDIATELY UPON DISCOVERY. ALL SPILLS WILL BE REPORTED AS REQUIRED BY LOCAL, STATE, AND FEDERAL REGULATIONS.
 - FOR SPILLS THAT IMPACT SURFACE WATER (LEAVE A SHEEN ON SURFACE WATER). THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS AT 1-800-424-8802.
 - FOR SPILLS OF AN UNKNOWN AMOUNT, THE NATIONAL CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS AT 1-800-4424-8802.
 - FOR SPILLS GREATER THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE GEORGIA EPD WILL BE CONTACTED WITHIN 24 HOURS.
 - FOR SPILLS LESS THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE SPILL WILL BE CLEANED UP AND LOCAL AGENCIES WILL BE CONTACTED AS REQUIRED.
 - THE CONTRACTOR SHALL NOTIFY THE LICENSED PROFESSIONAL WHO PREPARED THIS PLAN IF MORE THAN 1320 GALLONS OF PETROLEUM IS STORED ONSITE (THIS INCLUDES CAPACITIES OF EQUIPMENT) OR IF ANY ONE PIECE OF EQUIPMENT HAS A CAPACITY GREATER THAN 660 GALLONS. THE CONTRACTOR WILL NEED A SPILL PREVENTION CONTAINMENT AND COUNTERMEASURES PLAN PREPARED BY THAT LICENSED PROFESSIONAL AT THE CONTRACTOR'S EXPENSE.
17. MEASURES INSTALLED TO CONTROL POLLUTANTS IN STORM WATER AFTER CONSTRUCTION: ALL DISTURBED AREAS WILL BE RE-STABILIZED WITH PERMANENT GRASSING OR SOD TO LIMIT POLLUTANTS IN STORM WATER AFTER CONSTRUCTION OPERATIONS HAVE CEASED. ALL DRAINAGE PATTERNS WILL BE RETURNED TO PRE-CONSTRUCTION STATE.

SOIL EROSION NOTES, CONT.

18. DESCRIPTION OF PRACTICES THAT WILL BE USED TO REDUCE AND CONTROL POLLUTANTS IN STORM WATER DISCHARGES: POLLUTANTS OR POTENTIALLY HAZARDOUS MATERIALS, SUCH AS FUELS, LUBRICANTS, LEAD PAINT, CHEMICALS, OR BATTERIES, SHALL BE TRANSPORTED, STORED, AND UTILIZED IN A MANNER TO PREVENT LEAKAGE OR SPILLAGE INTO THE ENVIRONMENT. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR PROPER AND LEGAL DISPOSAL OF ALL SUCH MATERIALS. EQUIPMENT, ESPECIALLY CONCRETE OR ASPHALT TRUCKS, SHALL NOT BE WASHED OR CLEANED OUT ON THE PROJECT EXCEPT IN AREAS WHERE UNUSED PRODUCT CONTAMINANTS CAN BE PREVENTED FROM ENTERING WATERWAYS.

PETROLEUM BASED PRODUCTS - CONTAINERS FOR PRODUCTS SUCH AS FUELS, LUBRICANTS, AND TARS WILL BE INSPECTED DAILY FOR LEAKS AND SPILLS. THIS INCLUDES ONSITE VEHICLES AND MACHINERY DAILY INSPECTIONS AND REGULAR PREVENTATIVE MAINTENANCE OF SUCH EQUIPMENT. EQUIPMENT MAINTENANCE AREAS WILL BE LOCATED AWAY FROM STATE WATERS, NATURAL DRAINS, AND STORM WATER DRAINAGE INLETS. IN ADDITION, TEMPORARY FUELING TANKS SHALL HAVE A SECONDARY CONTAINMENT LINER TO PREVENT/MINIMIZE SITE CONTAMINATION. DISCHARGE OF OILS, FUELS, AND LUBRICANTS IS PROHIBITED. PROPER DISPOSAL METHODS WILL INCLUDE COLLECTION IN A SUITABLE CONTAINER AND DISPOSAL AS REQUIRED BY LOCAL AND STATE REGULATIONS.

PAINT/FINISHES/SOLVENTS - ALL PRODUCT WILL BE STORED IN TIGHTLY SEALED ORIGINAL CONTAINERS WHEN NOT IN USE. EXCESS PRODUCT WILL NOT BE DISCHARGED TO THE STORM WATER COLLECTION SYSTEM. EXCESS PRODUCT, MATERIALS USED WITH THESE PRODUCTS, AND PRODUCT CONTAINERS WILL BE DISPOSED OF ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

CONCRETE TRUCK WASHING - NO CONCRETE TRUCKS WILL BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ONSITE.

FERTILIZER/HERBICIDES - THESE PRODUCTS WILL BE APPLIED AT RATES THAT DO NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS OR ABOVE THE GUIDELINES SET FORTH IN THE CROP ESTABLISHMENT OR IN THE GSWCC MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA. ANY STORAGE OF THESE MATERIALS WILL BE UNDER ROOF IN SEALED CONTAINERS.

BUILDING MATERIALS - NO BUILDING OR CONSTRUCTION MATERIALS WILL BE BURIED OR DISPOSED OF ONSITE. ALL SUCH MATERIAL WILL BE DISPOSED OF IN PROPER WASTE DISPOSAL PROCEDURES.

PRACTICES TO PROVIDE COVER FOR BUILDING MATERIALS AND PRODUCTS ON SITE SHALL INCLUDE MEASURES SUCH AS PLASTIC SHEETING OR TEMPORARY ROOFS TO MINIMIZE EXPOSURE TO PRECIPITATION AND STORMWATER.

19. DESCRIPTION OF CONTROLS AND MEASURES FOR SEDIMENT CONTROL: AT A MINIMUM, THE FOLLOWING EROSION CONTROL MEASURES SHALL BE UTILIZED IN THE CONSTRUCTION OF THE PROJECT AS INDICATED ON THE ES&PC PLAN:

- A. SILT FENCE SHALL BE INSTALLED AT APPROPRIATE LOCATIONS TO PREVENT SEDIMENT FROM BEING WASHED OFF OF THE SITE.
- B. RIP RAP CHANNEL STABILIZATION WILL BE USED TO MINIMIZE THE TRANSFER OF DISTURBED SOIL IN EXISTING DITCHES CROSSING THE CONSTRUCTION AREAS.
- C. TEMPORARY AND PERMANENT GRASSING/SODDING AND MULCHING SHALL BE USED TO REESTABLISH VEGETATION ON THE DISTURBED AREAS AS CONSTRUCTION PROCEEDS.
- D. SURFACE ROUGHENING AND EROSION CONTROL MATTING WILL BE USED TO STABILIZE SOIL ON DISTURBED SLOPES.
- E. CONSTRUCTION EXITS SHALL BE USED TO PREVENT THE TRANSPORT OF MUD FROM MATERIAL, EQUIPMENT STORAGE AREAS AND CONSTRUCTION ROAD STABILIZATION WILL BE USED WHERE CONSTRUCTION TRAFFIC IS REQUIRED TO PREVENT EROSION FROM THESE AREAS.
- F. TEMPORARY SEDIMENT BASIN WILL BE CONSTRUCTED TO CAPTURE STORM WATER RUNOFF FROM DISTURBED AREAS.

20. AN ESTIMATE OF THE RUNOFF COEFFICIENT OF THE SITE PRIOR TO CONSTRUCTION ACTIVITIES IS 0.4 AND AFTER CONSTRUCTION ACTIVITIES IS 0.4.
21. JUSTIFICATION TO USE EQUIVALENT CONTROLS FOR SEDIMENT STORAGE ON LINEAR PORTIONS OF THE PROJECT: SEDIMENT STORAGE REQUIREMENT FOR THE SITE CANNOT BE ATTAINED BY INSTALLATION OF A TEMPORARY SEDIMENT BASIN. THEREFORE, A MINIMUM OF 67 CY/ACRE SEDIMENT STORAGE IS PROVIDED USING EQUIVALENT CONTROLS. AT 1/3-FULL (0.83' SEDIMENT DEPTH) AND AT MAXIMUM SLOPE OF 5:1, EACH LINEAR FOOT OF Sd1-S SILT FENCE HOLDS 1.74 CF OF SEDIMENT. APPROXIMATELY 449 LF OF SILT FENCE IS SHOWN ON THE PLANS FOR THE LINework WHICH CAN PROVIDE 29 CY OF STORAGE. AN ADDITIONAL 295 CY OF STORAGE IS PROVIDED BY A SEDIMENT TRAP. THE REQUIRED STORAGE IS (67 CY/ACRE x 1.26 ACRE) 84.14 CY TOTAL. AVAILABLE STORAGE EXCEEDS REQUIRED STORAGE.

SEDIMENT SUMMARY:
STORAGE REQUIRED - 28.9 CY
STORAGE PROVIDED - 29 CY (SILT FENCE) + 295 (SEDIMENT TRAP) = 324 CY

22. IT SHALL BE THE RESPONSIBILITY OF THE PERSON PERFORMING THE CONSTRUCTION OPERATIONS TO INSTALL AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES INDICATED ON THESE DRAWINGS OR TO PROVIDE ADDITIONAL MEASURES AS DEEMED NECESSARY BY SITE CONDITIONS.
23. ADDITIONAL MEASURES SHALL BE ADDED IF DETERMINED TO BE NECESSARY BY ON-SITE INSPECTIONS AND/OR BY THE GOVERNING AUTHORITY.
24. STANDARDS AND SPECIFICATIONS: ALL DESIGNS WILL CONFORM TO AND ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (LATEST EDITION), PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION.
25. SURVEY INFORMATION: TOPOGRAPHIC INFORMATION FROM SURVEY BY PRECISION PLANNING, INC. AND USGS TOPOGRAPHIC MAP.
26. SOILS INFORMATION: SOILS INFORMATION TAKEN FROM SOIL SURVEY OF BARROW COUNTY, GEORGIA BY USDA SOIL CONSERVATION SERVICE IN COOPERATION WITH UNIVERSITY OF GEORGIA COLLEGE OF AGRICULTURE AGRICULTURAL EXPERIMENT STATIONS.
27. TEMPORARY EROSION MEASURES: TEMPORARY EROSION CONTROL STRUCTURES, MEASURES, AND DEVICES SHALL BE INSTALLED AND OPERATIONAL PRIOR TO ANY LAND DISTURBING ACTIVITY. IF, DURING ANY STAGE OF CONSTRUCTION, ADDITIONAL MEASURES ARE DEEMED NECESSARY THEY SHALL BE INSTALLED AS SOON AS POSSIBLE AFTER NOTIFICATION.
28. MAINTENANCE OF TEMPORARY EROSION CONTROL MEASURES SHALL BE REQUIRED THROUGHOUT ALL STAGES OF CONSTRUCTION. MAINTENANCE SHALL BE IN ACCORDANCE WITH THE EROSION CONTROL MANUAL CHAPTER 6 AND THE EROSION CONTROL DETAILS INCLUDED ON THESE DRAWINGS. MAINTENANCE OF ALL EROSION CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE PERSON PERFORMING THE CONSTRUCTION.
29. PERMANENT EROSION MEASURES: PERMANENT EROSION CONTROL STRUCTURES SHALL BE INSTALLED AS CONSTRUCTION PROGRESSES. PERMANENT VEGETATIVE MEASURES SHALL BE PLACED IMMEDIATELY DURING THE VARIOUS STAGES OF CONSTRUCTION.
30. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL LAND DISTURBED DURING CONSTRUCTION HAS STABILIZED AND A STRONG STAND OF PERMANENT VEGETATION HAS BEEN ESTABLISHED. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE PROPERLY MAINTAINED UNTIL THE OWNER APPROVES REMOVAL.
31. TRENCH BACKFILL AND COMPACTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS. TRENCHES SHALL BE BACKFILLED AND COMPACTED TO MINIMIZE SETTLEMENT AND SCOURING. IT IS THE RESPONSIBILITY OF THE PERSON PERFORMING THE CONSTRUCTION TO CORRECT ANY SETTLED OR SCoured AREAS THROUGHOUT THE WARRANTY PERIOD.
32. WATER AND SEWER LINES ARE EXEMPT FROM 50- AND 75-FOOT BUFFERS. A 25-FOOT BUFFER SHALL BE MAINTAINED FOR ALL UTILITIES INCLUDING PERMANENT AND TEMPORARY CONSTRUCTION EASEMENTS.
33. ALL GRASSING/SODDING AND MULCHING SHALL TAKE PLACE AS SOON AS PRACTICAL AFTER BACKFILLING OF TRENCH EXCAVATIONS OR OTHER LAND DISTURBING ACTIVITIES.
34. CONSTRUCTION MATERIAL STORAGE AREA WILL REQUIRE THE INSTALLATION OF A CONSTRUCTION EXIT (Co) TO REDUCE OR ELIMINATE THE TRANSPORT OF MUD FROM THE AREA. SILT FENCE SHALL ALSO BE INSTALLED TO PREVENT SEDIMENT FROM LEAVING THE MATERIAL STORAGE AREA. AFTER DEMOBILIZATION, THE MATERIAL STORAGE AREA SHALL BE SEEDED AND MULCHED, AND THE SILT FENCE SHALL REMAIN UNTIL THE AREA IS PERMANENTLY STABILIZED.
35. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
36. THERE IS NO FLOODPLAIN ON THIS PROPERTY FROM A WATER COURSE WITH A DRAINAGE AREA EXCEEDING 100 ACRES OR FLOODPLAIN PER FIRM MAP NUMBER 13013C0050D DATED DECEMBER 1, 2022.

SOIL TYPES (FROM USDA SOIL SURVEY)		
SYMBOL	SOIL NAME	DESCRIPTION
ApB	APPLING	SANDY LOAM 2 TO 6% SLOPES
ApC	APPLING	SANDY LOAM 6 TO 10% SLOPES

ACTIVITY	ANTICIPATED ACTIVITY SCHEDULE											
	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
BARROW NW TANK	1	2	3	4	1	2	3	4	1	2	3	4
INSTALLATION OF EROSION CONTROL												
MAINTENANCE OF EROSION CONTROL												
TANK CONSTRUCTION												
WATER MAIN CONSTRUCTION												
FINAL CLEANUP AND GRASSING												

EROSION CONTROL LEGEND

	DESCRIPTION	SYMBOL									
	Ss SLOPE STABILIZATION	N.A.									
	Ch-2 RIP RAP CHANNEL STABILIZATION										
	Co CONSTRUCTION EXIT										
	Sd1-S SILT FENCE	— xx —									
	Su SURFACE ROUGHENING	N.A.									
	DISTURBED AREA LIMITS										
	Sd4-C TEMPORARY SEDIMENT TRAP	N.A.									
	Wa CONCRETE WASHOUT AREA										
Ds1	STABILIZE DISTURBED AREA (WITH MULCHING ONLY) - AS NECESSARY APPLIES TO DISTURBED AREAS WHERE SEEDING MAY NOT HAVE SUITABLE GROWING SEASON TO PRODUCE AN EROSION RETARDANT COVER.	<table><tr><th>SPECIES</th><th>RATE</th></tr><tr><td>STRAW OR HAY</td><td>2.5 TONS/AC.</td></tr></table>	SPECIES	RATE	STRAW OR HAY	2.5 TONS/AC.					
SPECIES	RATE										
STRAW OR HAY	2.5 TONS/AC.										
Ds2	TEMPORARY GRASSING - AS NECESSARY TEMPORARY GRASSING SHALL CONSIST OF SOWING A QUICK GRASS SUCH AS TOP MILLET, OR A GRASS SUITABLE TO THE AREA AND SEASON. LIME AND SHALL BE OMITTED.	<table><tr><th>SPECIES</th><th>RATE</th><th>PLAN</th></tr><tr><td>RYEGRASS, ANNUAL</td><td>40#/AC.</td><td>AUG</td></tr><tr><td>MILLET, BROWNTOP</td><td>40#/AC.</td><td>APRIL</td></tr></table>	SPECIES	RATE	PLAN	RYEGRASS, ANNUAL	40#/AC.	AUG	MILLET, BROWNTOP	40#/AC.	APRIL
SPECIES	RATE	PLAN									
RYEGRASS, ANNUAL	40#/AC.	AUG									
MILLET, BROWNTOP	40#/AC.	APRIL									
Ds3	PERMANENT GRASSING PERMANENT GRASSING SHALL CONSIST OF GROUND PREPARATION, LIMIN										

THE GROUND SHALL BE PREPARED BY PLOWING AND DISKING NOT LESS THAN 4". FERTILIZER AND LIME SHALL BE UNIFORMLY MIXED INTO THE GROUND - FERTILIZER AT A RATE OF 1500#/AC. AND LIME AT 1750#/AC. THE GROUND SHALL BE FINISHED OFF SMOOTH AND UNIFORM BEING FREE OF ROCKS, CLODS, ROOTS, ETC. FERTILIZER MIXED GRADE SHALL BE EITHER 4-12-12; 6-12-12 OR 10-10-10. SEEDING SHALL BE DONE WITHIN 24 HOURS OF THE FERTILIZER APPLICATION, WEATHER PERMITTING. SEED SHALL BE UNIFORMLY SPREAD AT THE RATE SHOWN BELOW. MULCHING IS REQUIRED AND SHALL BE DONE IMMEDIATELY AFTER SEEDING. MULCH SHALL BE UNIFORMLY APPLIED OVER THE AREA LEAVING APPROXIMATELY 25% OF THE GROUND SURFACE EXPOSED. MULCHING MATERIAL SHALL BE DRY STRAW OR DRY HAY OF GOOD QUALITY, FREE OF WEED SEEDS. APPLY AT A RATE OF 2.5 TONS PER ACRE. THE RATE OF APPLICATION SHALL BE DOUBLED ON SIDE SLOPES 4:1 AND STEEPER.

SPECIES	RATE	PLANTIN'S DATE
TALL FESCUE	30#/AC.	AUGUST THRU OCTOBER
COMMON BERMUDA (UNHULLED)	10#/AC.	OCTOBER THRU FEBRUARY
COMMON BERMUDA (HULLED)	10#/AC.	MARCH THRU JUNE
SERICEA LESPEDEZA	75#/AC.	ALL YEAR

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BARROW NORTHWEST
ELEVATED WATER
STORAGE TANK

EROSION CONTROL NOTES		SHEET TITLE		CHECKED
		DRAWN	DP	RC
		DESIGN	RC	

DATE	NO.	DESCRIPTION
8/6/25	0	ISSUED FOR BID

E23136
PPI PROJECT NO.

08

FILE PATH: W:\PROJECTS\2023\23136-MR-BARROW NW TANK\DWG\23136 EROSION CONTROL PLAN.DWG - 2025-08-05 - DYLAN PARKER
PLOT DATE: 8/5/2025 9:50 AM

NOTES:
1. SEE SHEET 8 FOR EROSION CONTROL NOTES AND LEGEND.
2. CONSTRUCTION OF ROCK OUTLET TEMP. SEDIMENT BASIN (SD4C) SHALL BE IN ACCORDANCE WITH THE GEORGIA STANDARD SPECIFICATIONS OF TRANSPORTATION SYSTEMS, LATEST EDITION.

- Ds1** MULCHING
Ds2 TEMPORARY GRASSING
Ds3 PERMANENT GRASSING TO BE APPLIED TO ALL DISTURBED AREAS
Du DUST CONTROL - AS NECESSARY
Ss PLACE EROSION CONTROL MATTING AFTER SEEDING ON ALL DISTURBED SLOPES 3:1 OR GREATER

SOIL TYPE AND DELINEATION (TYP.)

N/F
XX024 034
NELES, LLC
D.B. 2446, PG. 43
P.B. 13, PG. 214

Sd4-C
ROCK OUTLET TEMP.
SEDIMENT TRAP (TYP.)
 $V=0.4 \times A \times D$
 $=0.4 \times 4979 \text{ SF} \times 4 \text{ FT}$
 $= 7966 \text{ CF} = 295 \text{ CY}$

Ss SLOPE
STABILIZATION

STORM WATER
MONITORING POINT A1

ApC

ApB

N/F
XX024 035
BARROW COUNTY
D.B. 2189, PG. 233
P.B. 49, PG. 18
P.B. 16, PG. 142

Wa CONCRETE WASH
OUT AREA

0.19 AC ADDITIONAL SITE
AREA FOR ASPHALT REPAIR

HIGHWAY 124
80' RIGHT-OF-WAY
ASPHALT PAVING

0.81 AC DRAINAGE
AREA FOR SD4-C

1 STORY
BUILDING

CONSTRUCTION EXIT
CONTRACTOR TO DETERMINE ACTUAL
LOCATION BASED ON MATERIAL STORAGE
AREA LOCATION.
GPS COORDINATES:
LAT 34.0865° N
LONG 83.8189° W

N/F
XX024 035A
BARROW COUNTY
D.B. 2189, PG. 233
P.B. 49, PG. 18

N/F
XX024 036
RODRIGUEZ LUIS SR AND
RODRIGUEZ MARIA ISABEL
D.B. 2124, PG. 441
P.B. 6, PG. 40

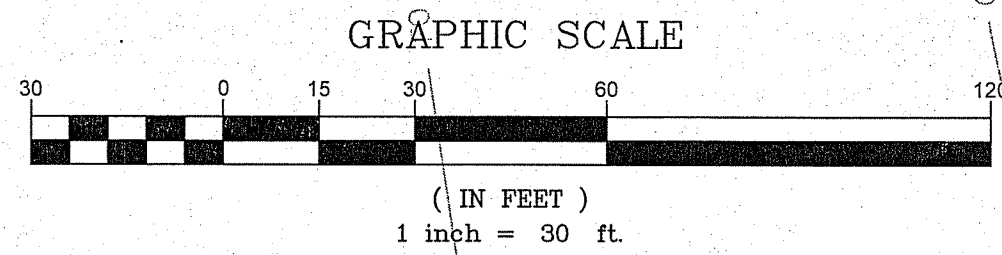
N/F
XX024 037
ERNIE R. STOVALL
D.B. 1958, PG. 741
P.B. 64, PG. 156
P.B. 14, PG. 95

Sd1-S
SILT FENCE
TYPE "S" (TYP.)

ApB

ApC

ApB



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REGISTERED
PROFESSIONAL
ENGINEER
NO. 28929
B. H. CROWDER
RICHARD H. CROWDER

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**BARROW NORTHWEST
ELEVATED WATER
STORAGE TANK**

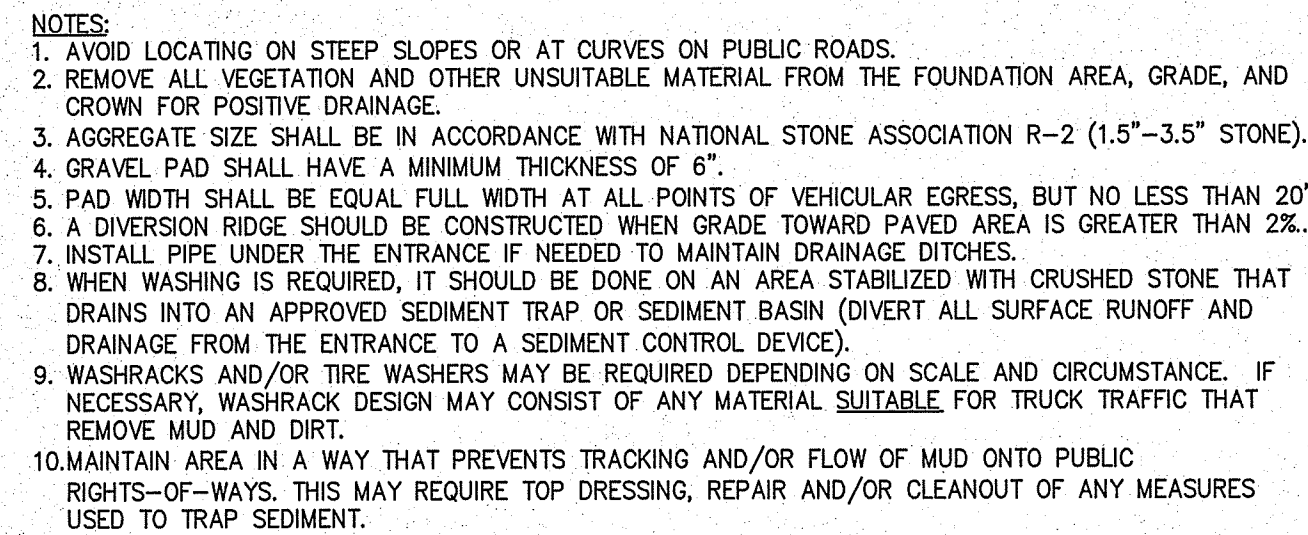
EROSION CONTROL
PLAN

SHEET TITLE		CHECKED	
DESIGN	RC	DRAWN	DP
RC		DP	

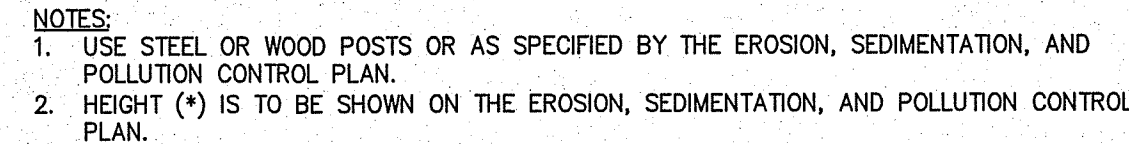
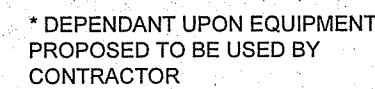
DATE		RELEASE	
NO.	DESCRIPTION	NO.	DESCRIPTION
080525	0 ISSUED FOR BID		

E23136
PPI PROJECT NO.

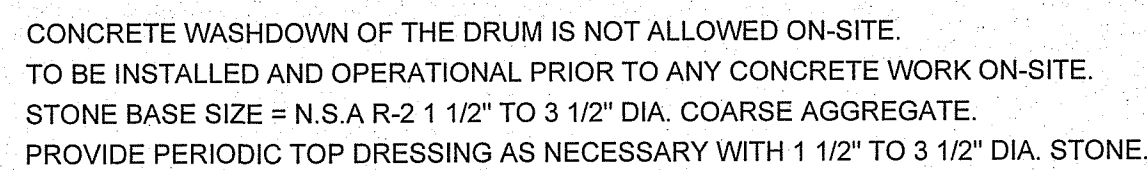
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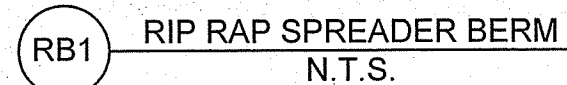
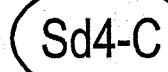
Cc


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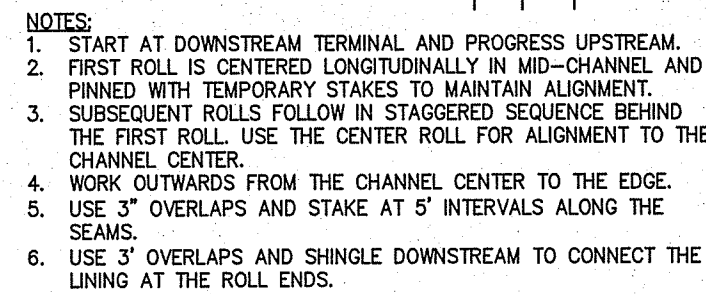
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(Wa



BLANKET AND MATTING CROSS-SECTIONS



55

TYPE (BLANKET AND MATTING)

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BARROW NORTHWEST ELEVATED WATER STORAGE TANK

DETAILS

DESIGN	DRAWN	CHECKED
RC	DP	RC

[illegible]

E23136
PROJECT NO.

0

The following statements are referenced from "Authorization to Discharge Under The National Pollutant Discharge Elimination System Storm Water Discharges Associated With Construction Activity for Infrastructure Construction" General Permit No. GAR 100002, Part IV. For the purposes of this plan the term Precision Planning, Inc. (PPI) is the Design Professional of these construction documents.

GAR 100002 PART IV.

D. Contents of Plan.

4. Inspections.

a. Permittee requirements.

(1) Each day when any type of construction activity has taken place at a primary permittee's site, certified personnel provided by the primary permittee shall inspect: (a) all areas at the primary permittee's site where petroleum products are stored, used, or handled for spills and leaks from vehicles and equipment and (b) all locations at the primary permittee's site where vehicles enter or exit the site for evidence of off-site sediment tracking. These inspections must be conducted until a Notice of Termination is submitted.

(2) Measure and record rainfall within disturbed areas of the site that have not met final stabilization once every 24 hours except any non-working Saturday, non-working Sunday and non-working Federal Holiday. The data collected for the purpose of compliance with this permit shall be representative of the monitored activity. Measurement of rainfall may be suspended if all areas of the site have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region.

(3) Certified personnel (provided by the Primary Permittee) shall inspect the following at least once every fourteen (14) calendar days: (a) disturbed areas of the Primary Permittee's construction site; (b) areas used by the Primary Permittee for storage of materials that are exposed to precipitation; and (c) structural control measures. Erosion and sediment control measures identified in the Plan applicable to the Primary Permittee's site shall be observed to ensure that they are operating correctly. Certified personnel shall also conduct inspections within 24 hours of the end of a storm that is 0.5 inches rainfall or greater (unless such storm ends after 5:00 PM on any Friday or on any non-working Saturday, non-working Sunday or any non-working Federal holiday in which case the inspection shall be Completed by the end of the next business day and/or working day, whichever occurs first). Post-rain inspections will reset the 14-day inspection frequency requirement. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s). For areas of a site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region, the permittee must comply with Part IV.D.4.a.(4). These inspections must be conducted until a Notice of Termination is submitted.

(4) Certified personnel (provided by the primary permittee) shall inspect at least once per month during the term of this permit (i.e., until a Notice of Termination is submitted to EPD) the areas of the site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region. These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and the receiving water(s). Erosion and sediment control measures identified in the Plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s).

(5) Based on the results of each inspection, the site description and the pollution prevention and control measures identified in the Erosion, Sedimentation and Pollution Control Plan, the Plan shall be revised as appropriate not later than seven (7) calendar days following each inspection. Implementation of such changes shall be made as soon as practical but in no case later than seven (7) calendar days following each inspection.

(6) A report of each inspection that includes the name(s) of certified personnel making each inspection, the date(s) of each inspection, construction phase (i.e., initial, intermediate or final), major observations relating to the implementation of the Erosion, Sedimentation and Pollution Control Plan, and actions taken in accordance with Part IV.D.4.a.(5), of the permit shall be made and retained at the site or be readily available at a designated alternate location until the entire site or that portion of a construction site that has been phased has undergone final stabilization and a Notice of Termination is submitted to EPD. Such reports shall be readily available by end of the second business day and/or working day and shall identify all incidents of best management practices that have not been properly installed and/or maintained as described in the Plan. Where the report does not identify any incidents, the inspection report shall contain a statement that the best management practices are in compliance with the Erosion, Sedimentation and Pollution Control Plan. The report shall be signed in accordance with Part V.G.2. of this permit.

5. Maintenance. The Plan shall include a description of procedures to ensure the timely maintenance of vegetation, erosion and sediment control measures and other protective measures identified in the site plan.

6. Sampling Requirements. This permit requires the monitoring of nephelometric turbidity in receiving water(s) or outfalls in accordance with this permit. The following procedures constitute EPD's guidelines for sampling turbidity.

a. Sampling Requirements shall include the following:

(1) A USGS topographic map, a topographic map or a drawing (referred to as a topographic map) that is a scale equal to or more detailed than a 1:24000 map showing the location of the infrastructure construction; (a) the location of all perennial and intermittent streams and other water bodies as shown on a USGS topographic map, and all other perennial and intermittent streams and other water bodies located during mandatory field verification, into which the stormwater is discharged and (b) the receiving water and/or outfall sampling locations for each representative stormwater outfall. When the permittee has chosen to use a USGS topographic map and the receiving water(s) is not shown on the USGS topographic map, the location of the receiving water(s) must be hand-drawn on the USGS topographic map from where the stormwater(s) enters the receiving water(s) to the point where the receiving water(s) combines with the first blue line stream shown on the USGS topographic map;

(2) A written narrative of site specific analytical methods used to collect and analyze the samples including quality control/quality assurance procedures. This narrative must include precise sampling methodology for each sampling location;

(3) When the permittee has determined that some or all outfalls will be sampled, a rationale must be included on the Plan for the NTU limit(s) selected from Appendix B. This rationale must include the size of the construction site, the calculation of the size of the surface water drainage area, and the type of receiving water(s) (i.e., trout stream or supporting warm water fisheries); and

(4) Any additional information EPD determines necessary to be part of the Plan. EPD will provide written notice to the permittee of the information necessary and the time line for submittal.

b. Sample Type. All sampling shall be collected by "grab samples" and the analysis of these samples must be conducted in accordance with methodology and test procedures established by 40 CFR Part 136 (unless other test procedures have been approved), the guidance document titled "NPDES Storm Water Sampling Guidance Document, EPA 833-B-92-001" and guidance documents that may be prepared by the EPD.

(1) Sample containers should be labeled prior to collecting the samples.

(2) Samples should be well mixed before transferring to a secondary container.

(3) Large mouth, well cleaned and rinsed glass or plastic jars should be used for collecting samples. The jars should be cleaned thoroughly to avoid contamination.

(4) Manual, automatic or rising stage sampling may be utilized. Samples required by this permit should be analyzed immediately, but in no case later than 48 hours after collection. However, samples from automatic samplers must be collected no later than the next business day after their accumulation, unless flow through automated analysis is utilized. If automatic sampling is utilized and the automatic sampler is not activated during the qualifying event, the permittee must utilize manual sampling or rising stage sampling during the next qualifying event. Dilution of samples is not required. Samples may be analyzed directly with a properly calibrated turbidimeter. Samples are not required to be cooled.

(5) Sampling and analysis of the receiving water(s) or outfalls beyond the minimum frequency stated in this permit must be reported to EPD as specified in Part IV.E.

c. Sampling Points.

(1) For construction activities the primary permittee must sample all perennial and intermittent streams and other water bodies shown on the USGS topographic map and all other field verified perennial and intermittent streams and other water bodies, or a combination thereof. However, provided for in and in accordance with Part IV.D.6.c.(2), of this permit, primary permittees on an infrastructure construction project may sample the representative perennial and intermittent streams, other water bodies or outfalls, or a combination thereof. Samples taken for the purpose of compliance with this permit shall be representative of the monitored activity and representative of the water quality of the receiving water(s) and/or the storm water outfalls using the following minimum guidelines:

(a) The upstream sample for each receiving water(s) must be taken immediately upstream of the confluence of the first stormwater discharge from the permitted activity (i.e., the discharge farthest upstream at the site) but downstream of any other stormwater discharges not associated with the permitted activity. Where appropriate, several upstream samples from across the receiving water(s) may need to be taken and the arithmetic average of the turbidity of these samples used for the upstream turbidity value.

(b) The downstream sample for each receiving water(s) must be taken downstream of the confluence of the last stormwater discharge from the permitted activity (i.e., the discharge farthest downstream at the site) but upstream of any other stormwater discharge not associated with the permitted activity. Where appropriate, several downstream samples from across the receiving water(s) may need to be taken and the arithmetic average of the turbidity of these samples used for the downstream turbidity value.

(c) Ideally the samples should be taken from the horizontal and vertical center of the receiving water(s) or the stormwater outfall channel(s).

(d) Care should be taken to avoid stirring the bottom sediments in the receiving water(s) or in the outfall stormwater channel.

(e) The sampling container should be held so that the opening faces upstream.

(f) The samples should be kept free from floating debris.

(g) Permittees do not have to sample sheetflow that flows onto undisturbed natural areas or areas stabilized by the project. For purposes of this section, stabilized shall mean, for unpaved areas and areas not covered by permanent structures, 100% of the soil surface is uniformly covered in permanent vegetation with a density of 70% or greater, or landscaped according to the Plan (uniformly covered with landscaping materials in planned landscape areas), or equivalent permanent stabilization measures as defined in the Manual (excluding a crop of annual vegetation and a seeding of target crop perennials appropriate for the region). For infrastructure construction projects on land used for agricultural or silvicultural purposes, final stabilization may be accomplished by stabilizing the disturbed land for its agricultural or silvicultural use.

(h) All sampling pursuant to this permit must be done in such a way (including generally accepted sampling methods, locations, timing, and frequency) as to accurately reflect whether stormwater runoff from the construction site is in compliance with the standard set forth in Parts III.D.3. or III.D.4., whichever is applicable.

(2) For infrastructure construction projects, the permittee is not required to sample a perennial or intermittent stream or other water bodies (or the associated outfall, if applicable) if the design professional preparing the Plan certifies that an increase in the turbidity of a specific identified receiving water to be sampled will be representative of the increase in the turbidity of a specific identified un-sampled receiving water. A written justification and detailed analysis shall be prepared by the design professional justifying such proposed sampling. A summary chart of the justification and analysis for the representative sampling must be included on the Plan. The justification and analysis shall include the location and description of the specified sampled and un-sampled receiving water and shall contain a detailed comparison and discussion of each such receiving water in the following areas:

(a) site land disturbances and characteristics;

(b) receiving water watershed sizes and characteristics; and

(c) site and watershed runoff characteristics utilizing the methods in Appendix A-1 (United States Department of Agriculture Soil Conservation Service's TR-55, Urban Hydrology for Small Watersheds) of the most recent version of the "Manual for Erosion and Sedimentation Control in Georgia" for the various precipitation events and any other such considerations necessary to show that the increase in the turbidity of a specific identified sampled receiving water will be representative of the increases in the turbidity of a specific identified un-sampled receiving water(s).

(3) For infrastructure construction projects, when the permittee determines that some receiving water(s) will not be sampled due to representative sampling, the design professional making this determination and preparing the Plan must include and sign the following certification in the Plan:

"I certify that the permittee's Erosion, Sedimentation and Pollution Control Plan provides for the monitoring of: (a) all perennial and intermittent streams and other water bodies shown on the USGS topographic map and all other field verified perennial and intermittent streams and other water bodies, or (b) where any such specific identified perennial or intermittent stream and other water body is not proposed to be sampled, I have determined in my professional judgment, utilizing the factors required in the General NPDES Permit No. GAR 100002, that the increase in the turbidity of each specific identified sampled receiving water will be representative of the increase in the turbidity of each specific identified sampled receiving water will be representative of the increase in the turbidity of a specific identified un-sampled receiving water."

(4) For infrastructure construction projects, if at any time during the life of the project a selected receiving water no longer represents another receiving water, then the permittee shall sample the latter receiving water until selection of an alternative representative receiving water.

(5) For infrastructure projects, if at any time during the life of the project a receiving water is determined not to be represented as certified in the Plan, the permittee shall sample that receiving water until a Notice of Termination is submitted or until the applicable phase is stabilized in accordance with this permit.

(6) For infrastructure construction projects, monitoring obligations shall cease for any phase of the project that has been stabilized in accordance with Part IV.D.6.c.(1).(g).

d. Sampling Frequency.

(1) The primary permittee must sample in accordance with the Plan at least once for each rainfall event described below. For a qualifying event, the permittee shall sample at the beginning of any stormwater discharge to a monitored receiving water and/or from a monitored outfall location within forty-five (45) minutes or as soon as possible.

(2) However, where manual and automatic sampling are impossible (as defined in this permit), or are beyond the permittee's control, the permittee shall take samples as soon as possible, but in no case more than twelve (12) hours after the beginning of the storm water discharge.

(3) Sampling by the permittee shall occur for the following qualifying events:

(a) For each area of the site that discharges to a receiving water or from an outfall, the first rain event that reaches or exceeds 0.5 inch with a stormwater discharge that occurs during normal business hours after all clearing and grubbing operations have been completed, but prior to completion of mass grading operations, in the drainage area of the location selected as the representative sampling location;

(b) In addition to (a) above, for each area of the site that discharges to a receiving water or from an outfall, the first rain event that reaches or exceeds 0.5 inch with a stormwater discharge that occurs during normal business hours either 90 days after the first sampling event or after all mass grading operations have been completed, but prior to submittal of a NOT, in the drainage area of the location selected as the representative sampling location, whichever comes first;

(c) At the time of sampling performed pursuant to (a) and (b) above, if BMPs in any area of the site that discharges to a receiving water or from an outfall are not properly designed, installed and maintained, corrective action shall be defined and implemented within two (2) business days, and turbidity samples shall be taken from discharges from that area of the site for each subsequent rain event that reaches or exceeds 0.5 inch during normal business hours* until the selected turbidity standard is attained, or until post-rain event inspections determine that BMPs are properly designed, installed and maintained;

(d) Where sampling pursuant to (a), (b) or (c) above is required but not possible (or not required because there was no discharge), the permittee, in accordance with Part IV.D.4.a.(6)., must include a written justification in the inspection report of why sampling was not performed. Providing this justification does not relieve the permittee of any subsequent sampling obligations under (a), (b) or (c) above; and

(e) Existing construction activities, i.e., those that are occurring on or before the effective date of this permit, that have met the sampling required by (a) above shall sample in accordance with (b) those existing construction activities that have met the sampling required by (b) above shall not be required to conduct additional sampling other than as required by (c) above.

*Note that the Permittee may choose to meet the requirements of (a) and (b) above by collecting turbidity samples from any rain event that reaches or exceeds 0.5 inch and allows for sampling at any time of the day or week.

7. Non-stormwater discharges. Except for flows from fire fighting activities, sources of non-stormwater listed in Part III.A.2. of this permit that are combined with stormwater discharges associated with construction activity must be identified in the Plan. The Plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge.

E. Reporting.

(1) The applicable permittees are required to submit the sampling results to the EPD by the fifteenth day of the month following the reporting period. Reporting periods are months during which samples are taken in accordance with this permit. Sampling results shall be in a clearly legible format. Upon written notification, EPD may require the applicable permittee to submit the sampling results on a more frequent basis. Sampling and analysis of any storm water discharge(s) or the receiving water(s) beyond the minimum frequency stated in this permit must be reported in a similar manner to the EPD. Sampling reports must be submitted to EPD using the electronic submittal service provided by EPD. Sampling reports must be submitted to EPD until such time as a NOT is submitted in accordance with Part VI.

(2) All sampling reports shall include the following information:

a. The rainfall amount, date, exact place, and time of sampling or measurements;

b. The name(s) of the certified personnel who performed the sampling and measurements;

c. The date(s) analyses were performed;

d. The time(s) analyses were initiated;

e. The name(s) of the certified personnel who performed the analyses;

f. References and written procedures, when available, for the analytical techniques or methods used;

g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results;

h. Results which exceed 1000 NTU shall be reported as "exceeds 1000 NTU"; and

i. Certification statement that sampling was conducted as per the Plan.

(3) All written correspondence required by this permit shall be submitted by return receipt certified mail (or similar service) to the appropriate EPD District Office or delivery receipt email to the appropriate EPD District Office resource mailbox according to the schedule in Appendix A of this permit. The permittee shall retain a copy of the proof of submittal at the construction site or the proof of submittal shall be readily available at a designated location from commencement of construction until such time as a NOT is submitted in accordance with Part VI.

F. Retention of Records.

(1) The Primary Permittee shall retain the following records at the construction site or the records shall be readily available at a designated alternate location from commencement of construction until such time as a NOT is submitted in accordance with Part VI:

a. A copy of all Notices of Intent submitted to EPD;

b. A copy of the Erosion, Sedimentation and Pollution Control Plan required by this permit;

c. The design professional's report of the results of the inspection conducted in accordance with Part IV.A.5. of this permit;

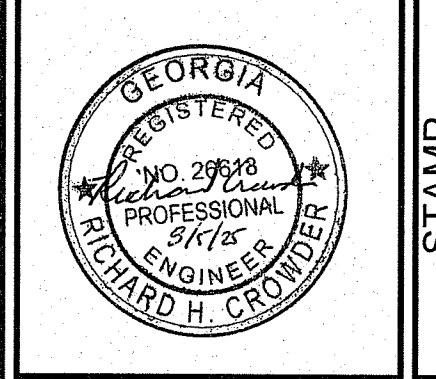
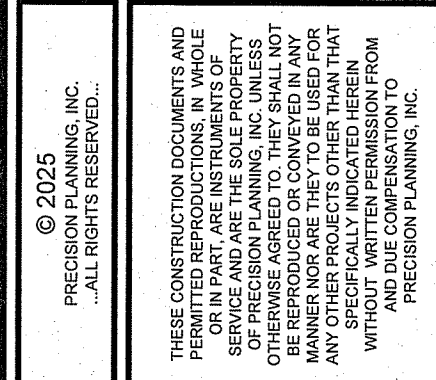
d. A copy of all monitoring information, results, and reports required by this permit;

e. A copy of all inspection reports generated in accordance with Part IV.D.4.a. of this permit;

f. A copy of all violation summaries and violation summary reports generated in accordance with Part III.D.2. of this permit; and

g. Daily rainfall information collected in accordance with Part IV.D.4.a.(2) of this permit.

(2) Copies of all Notices of Intent, Notices of Termination, inspection reports, sampling reports (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), or other reports requested by the EPD, Erosion, Sedimentation and Pollution Control Plans, records of all data used to complete the Notice of Intent to be covered by this permit and all other records required by this permit shall be retained by the permittee who either produced or used it for a period of at least three years from the date that the the NOT is submitted in accordance with Part VI of this permit. These records must be maintained at the permittee's primary place of business or at a designated alternative location once the construction activity has ceased at the permitted site. This period may be extended by request of the EPD at any time upon written notification to the permittee.



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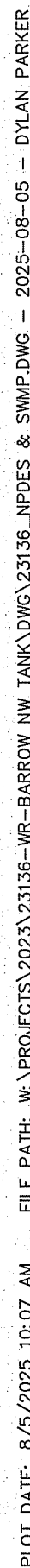
**BARROW NORTHWEST
ELEVATED WATER
STORAGE TANK**

NPDES NOTES			
SHEET TITLE			
DESIGN	DRAWN	CHECKED	RC

DATE	NO	DESCRIPTION
08/05/25	0	ISSUED FOR BID

E23136
PPI PROJECT NO.

11



CONTRACTOR SHALL PERFORM MONITORING OF STORM WATER LEAVING THE CONSTRUCTION SITE IN ACCORDANCE WITH THE REQUIREMENTS OF GENERAL PERMIT NO. GAR100002. THE MONITORING POINTS FOR STORM WATER SAMPLING FOR THIS PROJECT ARE DESCRIBED AS FOLLOWS:

NTU SELECTION

CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING, SUBMITTING, AND MAINTAINING ALL FORMS, MONITORING DATA REPORTS, INSPECTION REPORTS, ETC. ON A TIMELY BASIS IN ACCORDANCE WITH THE REQUIREMENTS OF GENERAL PERMIT NO. GAR100002.

MONITORING POINT A1: 34.085575° N LATITUDE
83.819028° W LONGITUDE

SAMPLING POINT	NTU Limit Selected	Drainage Area	Type of Receiving Water
A1	75 NTU	0-4.9 SQ MI	WARM

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST INFRASTRUCTURE CONSTRUCTION PROJECTS

Project Name: Barrow Northwest Elevated Water Storage Tank Address: 1172 SR 124, Hoschton, GA 30548
Local Issuing Authority: Barrow County Date on Plans: 8/5/25

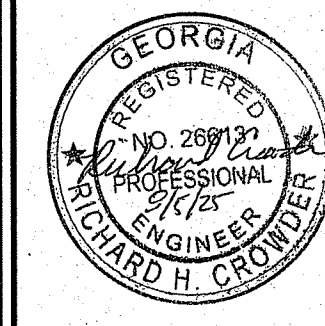
Plan	Included	TO BE SHOWN ON ES&PC PLAN

Page #	Y/N	
8-12	Y	1 The application for Erosion, Sedimentation and Pollution Control Plan Checklist established by the Commission as of January 1 of the year of which the land-disturbance activity was permitted. The completed Checklist must be submitted with the ES&PC Plan or the Plan will not be reviewed. Permit IV.D.1, pg 28
8-12	Y	2 Level II certification number issued by the Commission, signature and seal of the certified design professional. Signature, seal and Level II number must be on each sheet pertaining to ES&PC Plan or the Plan will not be reviewed. The Level II certification must be issued to the Design Professional, after completion of a GSWCC approved course, and whose signature and seal are on the Plan.
8	Y	3 The name and phone number of the 24-hour contact responsible for erosion, sedimentation and pollution controls.
8	Y	4 Provide the name, address, email address, and phone number of Primary Permittee.
8	Y	5 Note total and disturbed acreages of the project or phase under construction.
8	Y	6 Provide the GPS locations of the beginning and end of the infrastructure project. Give the Latitudes and Longitudes in decimal degrees.
ALL	Y	7 Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisions.
8	Y	8 Descriptions of the nature of construction activity and existing site conditions.
3,12	Y	9 Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary.
8	Y	10 Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential areas, wetlands, marshlands, etc. which may be affected.
8	Y	11 Design professional's certification statement and signature that the site was visited prior to development of the ES&PC Plan as stated on Part IV page 21 of the permit.
8	Y	12 Design professional's certification statement and signature that the Permittee's ES&PC Plan provides for an appropriate and comprehensive system of BMPs and sampling to meet permit requirements as stated on Part IV page 21 of the permit. *
8	Y	13 Design professional's certification statement and signature that the Permittee's ES&PC Plan provides for representative sampling as stated on Part IV D.6.c.(3), page 37 of the permit as applicable. *
8	Y	14 Clearly note the statement that "The design professional who prepared the ES&PC Plan is to inspect and certify the installation of the initial sediment storage requirements and perimeter control BMPs within 7 days after installation." *
8	Y	15 Clearly note the statement that "Non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed stream buffers as measured from the point of westered vegetation or within 25-feet of the coastal marshland buffer as measured from the Jurisdictional Determination Line without first acquiring the necessary variances and permits." *
8	Y	16 Provide a description of any buffer encroachments and indicate whether a buffer variance is required.
8	Y	17 Clearly note the statement that "Amendments/revisions to the ES&PC Plan which have a significant effect on BMPs with a hydraulic component must be certified by the design professional." *
8	Y	18 Clearly note the statement that "Waste materials shall not be discharged to waters of the State, except as authorized by a Section 404 permit." *
8	Y	19 Clearly note statement that "The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to land disturbing activities." *
8	Y	20 Clearly note statement that "Erosion control measures will be maintained at all times. If full implementation of the approved Plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source." *
8	Y	21 Clearly note the statement "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding." *
N/A	N/A	22 Any construction activity which discharges storm water into a Biotreated Stream Segment, or within 1 linear mile upstream of and within the same watershed as any portion of a Biotreated Stream Segment, must comply with Part III.C. of the permit. Include the completed Appendix 1 of this checklist with at least 4 of the chosen BMPs that will be used for those areas of the site which discharge to the Biotreated Stream Segment. *
N/A	N/A	23 If a TMDL Implementation Plan for sediment has been finalized for the Biotreated Stream Segment (identified in Item 22 above) at least six months prior to submittal of NOI, the ES&PC Plan must address any site-specific conditions or requirements included in the TMDL Implementation Plan. *
8	Y	24 BMPs for concrete washdown of tools, concrete mixer chutes, hoppers and the rear of the vehicles. Include statement that washout of the drum at the construction site is prohibited. *
8	Y	25 Provide BMPs for the remediation of all petroleum spills and leaks.
8	Y	26 Description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed. *
8	Y	27 Description of practices to provide cover for building materials and building products on site. *
8	Y	28 Description of the practices that will be used to reduce the pollutants in storm water discharges. *
8	Y	29 Description and chart or timeline of the intended sequence of major activities which disturbs soils for the major portions of the site (i.e., initial perimeter and sediment storage BMPs, clearing and grubbing activities, excavation activities, utility activities, grading, infrastructure, temporary and final stabilization). *
8,11	Y	30 Provide complete requirements of Inspections and record keeping by the Primary Permittee. *
11	Y	31 Provide complete requirements of Sampling Frequency and Reporting of sampling results. *
11	Y	32 Provide complete details for Retention of Records as per Part I.V.F. of the permit. *
11	Y	33 Description of analytical methods to be used to collect and analyze the samples from each location. *
N/A	N/A	34 Appendix B reference for NTU values at all outfall sampling points where applicable. *
11-12	Y	35 Delineate all sampling locations on all phases of the Plan, and perennial and intermittent streams and other water bodies into which storm water is discharged. *
8	Y	36 A description of appropriate controls and measures that will be implemented at the construction site including: (1) Initial sediment storage requirements and perimeter control BMPs, (2) Intermediate grading and drainage BMPs, and (3) final BMPs. For construction sites where there will be no mass grading and the initial sediment storage requirements and initial perimeter control BMPs, intermediate grading and drainage BMPs, and final BMPs are the same, the Plan may combine all BMPs into a single phase plan. *
3-4,9,12	Y	37 Graphic scale and North arrow.
3-4,9	Y	38 Existing and proposed contour lines with contour lines drawn at an interval in accordance with the following: Existing Contours USGS 1" : 2000' Topographic Sheets Proposed Contours 1" : 400' Contourline Profile
N/A	N/A	39 Use of Alternative BMPs whose performance has been documented to be equivalent to or superior to conventional BMPs as certified by a Design Professional (unless disapproved by GAEPD or the Georgia Soil and Water Conservation Commission). Refer to the Alternative BMP Guidance Document found at www.gswcc.georgia.gov .
N/A	N/A	40 Use of Alternative BMP for application to the Equivalent BMP List. Refer to Appendix A-2 of the Manual for Erosion & Sediment Control in Georgia 2016 Edition. *
N/A	N/A	41 Delineation of the applicable 25-foot or 50-foot undisturbed buffers adjacent to State Waters and any additional buffers as required by the Local Issuing Authority. Clearly note delineate all areas of impact.
N/A	N/A	42 Delineation of all State Waters and wetlands located on or within 200 feet of the project site.
12	Y	43 Delineation and acreage of contributing drainage basins on the project site.
12	Y	44 Delineate on-site drainage and off-site watersheds using USGS 1" : 2000' topographical sheets.
12	Y	45 Estimate of the runoff coefficient or peak discharge flow of the site prior to and after construction activities are completed.
N/A	N/A	46 Storm-drain pipe and vent velocities with appropriate outlet protection to accommodate discharges without erosion. Identify/Delineate all at storm water discharge points.
8-9	Y	47 Soil series for the project site and their delineation.
9	Y	48 The limits of disturbance for each phase of construction.
8	Y	49 Provide a minimum of 67 cubic yards of sediment storage per acre drained using a temporary sediment basin, retrofitted detention pond, and/or excavated inlet sediment traps for each common drainage location. Sediment storage volume must be in place prior to and during all land disturbance activities until final stabilization of the site has been achieved. A written justification explaining the decision to use equivalent controls when a sediment basin is not attainable must be included in the Plan for each common drainage location in which a sediment basin is not provided. A written justification as to why 67 cubic yards of storage is not attainable must also be given. Worksheets from the Manual mustural detail final stabilization of the site has been achieved. A written justification explaining the decision to use equivalent controls when a sediment basin is not attainable must be included in the Plan for each common drainage location in which a sediment basin is not provided. 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* If using this checklist for a project that is less than 1 acre and not part of a common development but within 200 ft of a perennial stream the * checklist items would be N/A.

Effective January 1, 2025

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BARROW NORTHWEST ELEVATED WATER STORAGE TANK

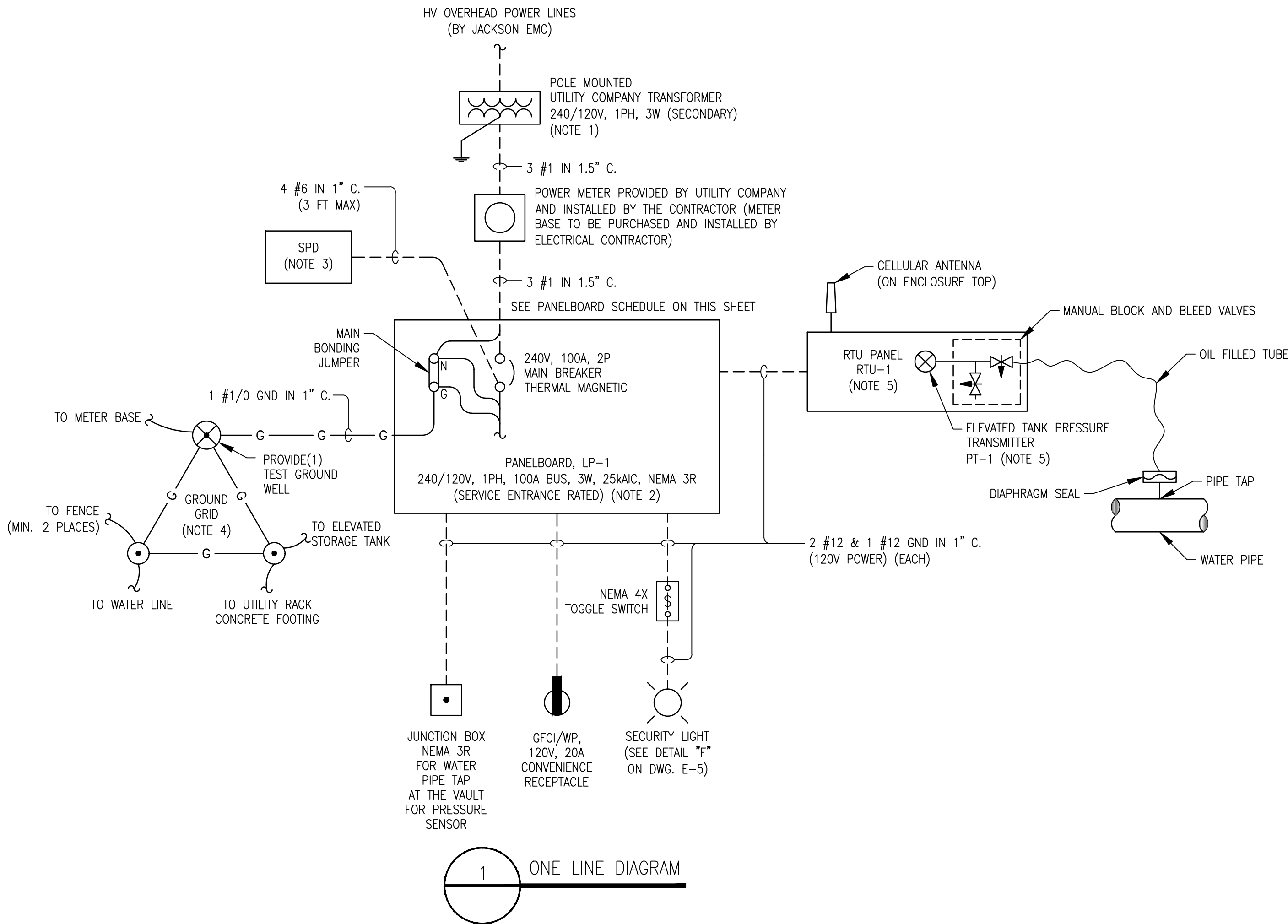
NPDES CHECKLIST & STORMWATER MONITORING PLAN

DATE	NO.	DESCRIPTION
08/05/25	0	ISSUED FOR BID

F23136

PPI PROJECT NC

12



PANELBOARD						LP-1					
VOLTAGE (L-N):			120V			ENCLOSURE TYPE:			NEMA 3R		
VOLTAGE (L-L):			240V			MOUNTING:			SURFACE		
PHASE, WIRES:			1 ϕ , 3 W			AIC RATING (A):			25,000 AIC		
MINIMUM BUS CAPACITY (A):			100A			NOTES:					
MAIN O.C. DEVICE (A):			100A, 2P MAIN BREAKER								
CKT NO	DESCRIPTION	TRIP AMPS	POLE	PHASE LOADS (AMP)				POLE	TRIP AMPS	DESCRIPTION	CKT NO
				A	0.5	B					
1	DUPLEX RECEPTACLE	20	1	1.5	0.5			1	20	RTU PANEL (RTU-1)	2
3	SECURITY POLE LIGHT	20	1			1.0	1.0	1	20 (*)	HEAT TRACE	4
5	SPARE	20	1	0.0	0.0			1	20	SPARE	6
7	SPARE	20	1			0.0	0.0	1	20	SPARE	8
9	SPACE			0.0	0.0					SPACE	10
11	SPACE					0.0	0.0			SPACE	12
13	SPACE			0.0	0.0					SPACE	14
15	SPACE					0.0	0.0			SPACE	16
17	SPACE			0.0	0.0					SPACE	18
USE THE FOLLOWING CONDUCTORS FOR PANELBOARD CIRCUITS:				CONNECTED LOAD PHASE TOTALS (AMP)				(*) - 30mA, EGFP CIRCUIT BREAKER			
20A - #12AWG.				2.0		2.0					

2 LP-1 - PANELBOARD SCHEDULE

LEGEND:
○ - CONTROL TERMINAL
△ - LOW VOLTAGE POWER TERMINAL

- NOTES:
- THE CONTRACTOR SHALL COORDINATE THE LOCATION OF THE POLE MOUNTED UTILITY TRANSFORMER WITH JACKSON EMC - JACKOB HOGAN, (EMAIL: JHOGAN@JACKSONEMC.COM; TEL: 706-367-6286). THE CONTRACTOR IS RESPONSIBLE FOR PAYING ALL COSTS ASSOCIATED WITH BRINGING POWER SERVICE TO THE SITE AND PROVIDING METER INSTALLATION AND ASSOCIATED HARDWARE AS REQUIRED BY UTILITY COMPANY.
 - THE CONTRACTOR SHALL PROVIDE AND INSTALL 100A, 240/120V, 1PH, 3W, 18 CKT. PANELBOARD IN NEMA 3R ENCLOSURE. SEE PANELBOARD SCHEDULE ON THIS SHEET.
 - THE CONTRACTOR SHALL PROVIDE SURGE PROTECTION DEVICE (SPD) IN NEMA 4 ENCLOSURE. SPD SHALL BE EATON CAT#: SPD-120-240S-3-0 WITH INTEGRAL DISCONNECT SWITCH OR APPROVED EQUAL.
 - THE CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE GROUND GRID AND MAKE CONNECTIONS AS SHOWN ON THE ELECTRICAL PLANS. GRID SHALL CONSIST OF #1/0 BARE COPPER GROUND CONDUCTOR, 3/4" DIAMETER 10' GROUND RODS AND CADWELD CONNECTIONS TO GROUND RODS.
 - THE CONTRACTOR SHALL PROVIDE AND INSTALL CELLULAR BASED REMOTE TELEMTRY UNIT (RTU) PANEL. THE PANEL SHALL INCLUDE AS A MINIMUM THE FOLLOWING COMPONENTS:
 - A. CONTROL PANEL SCCR SHALL BE 10KAIC MINIMUM.
 - B. ENCLOSURE: 3-POINT LATCHING WALL MOUNTED NEMA 3R.
 - C. MAIN DEVICE: THERMAL MAGNETIC CIRCUIT BREAKER 20A, 120V, 1P.
 - D. 120V, 1PH SURGE PROTECTION DEVICE.
 - E. 24VDC POWER SUPPLY UNIT.
 - F. BATTERY BACKUP UNIT SIZED FOR 6 HOURS OF UNINTERRUPTIBLE POWER SUPPLY.
 - G. CONTROLLER: ALLEN - BRADLEY MICRO 850 SERIES WITH I/O MODULES AS REQUIRED.
 - H. OIT: NONE.
 - I. WIRELESS CELLULAR MODEM.
 - J. STRIP HEATER WITH THERMOSTAT.
 - K. INCLUDE AT LEAST 20% OF SPARE I/O's OF EACH TYPE.
 - L. RELAYS, FUSES, TERMINALS AND ALL OTHER COMPONENTS AS REQUIRED FOR PROPER RTU OPERATION.
 - M. 4-20mA SURGE SUPPRESSOR FOR PRESSURE TRANSDUCER.
 - N. PRESSURE TRANSMITTER: LOOP POWERED WITH 4-20mA OUTPUT, BY WIKA, KELLER OR APPROVED EQUAL.
 - O. PRESSURE GAUGE (BY ASHCROFF OR APPROVED EQUAL).
 - P. BLOCK AND BLEED VALVES.
- THE FOLLOWING I/O's SHALL BE PROVIDED:
A. ANALOG INPUTS:
A.1. TANK LEVEL.
- THE SCHEMATIC WIRING DIAGRAM IS CONCEPTUAL IN NATURE. CONTROL PANEL SHALL BE UL508A LISTED AND LABELED. CONTRACTOR SHALL SUBMIT DETAILED WIRING DIAGRAM AND BOM FOR THE PANEL TO ENGINEER FOR APPROVAL, PRIOR TO FABRICATION. INCLUDE ALL ASSOCIATED PROGRAMMING, FACTORY TESTING AND OPERATORS TRAINING AND START-UP ASSISTANCE AS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM INCLUDING MODIFICATIONS AS NEEDED AT THE CITY'S MASTER SCADA. RTU SHALL BE PROVIDED BY ZILE TECHNOLOGY COMPANY (JOHN ZILE, JOHNZ@ZILETECHNOLOGY.COM).

EDEC, INC.
4120 CHATTAHOOCHEE TRACE
SUITE A
DULUTH, GEORGIA 30097
TEL. (770) 493-8685

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REGISTERED PROFESSIONAL ENGINEER
NO. 50137
DENNIS VYSTROPOV

STAMP

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BARROW NORTHWEST
ELEVATED WATER
STORAGE TANK

ONE LINE
DIAGRAM

SHEET TITLE

DESIGN DV
DRAWN DV
CHECKED DV

RELEASE

E23136
PPI PROJECT NO.

E-3

NOTES:

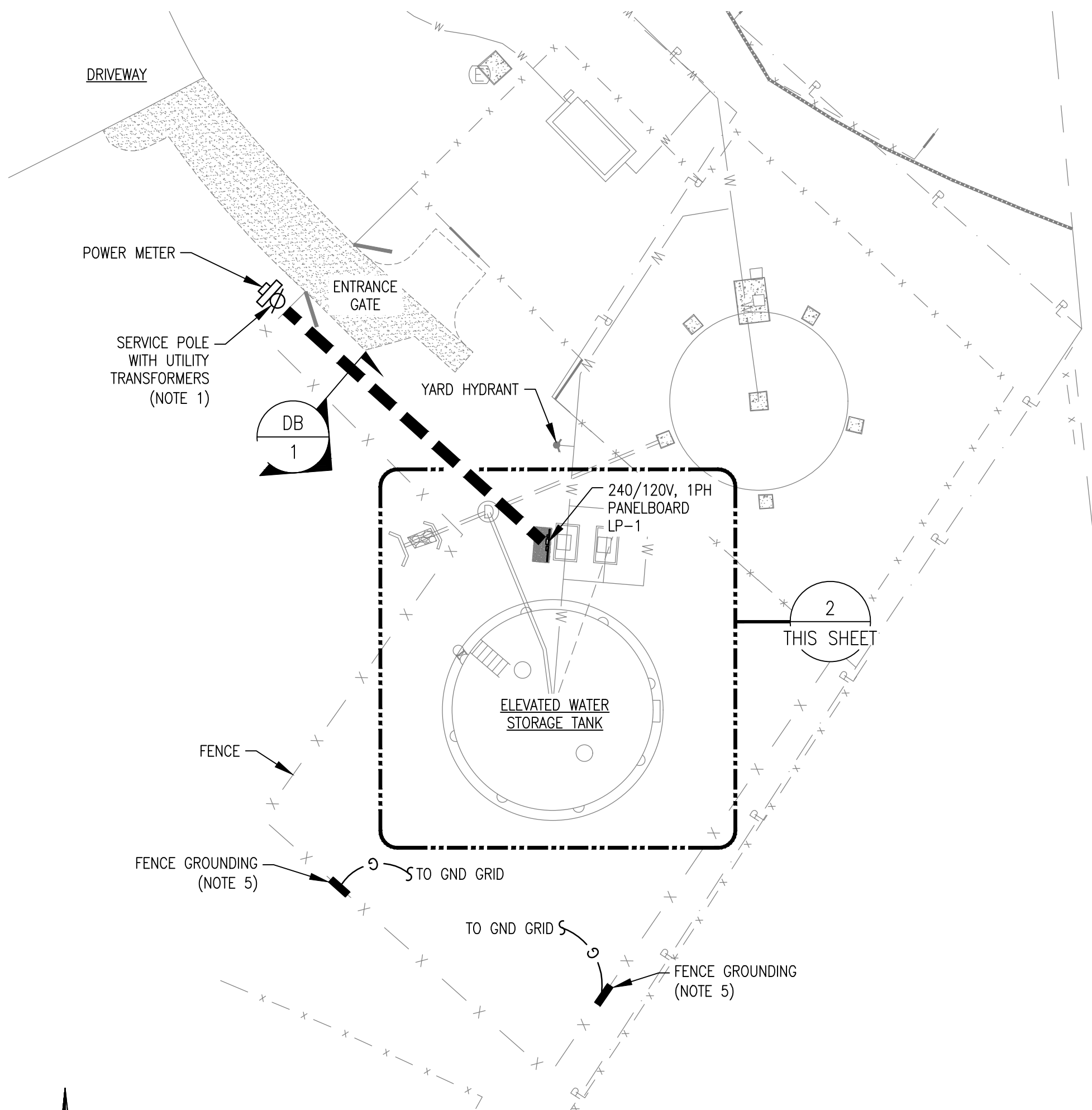
1. THE CONTRACTOR SHALL COORDINATE ACTUAL UTILITY TRANSFORMER LOCATION IN THE FIELD AND ADJUST SECONDARY CABLES/CONDUITS ROUTING ACCORDINGLY. UTILITY COMPANY SHALL PROVIDE AND INSTALL HIGH VOLTAGE PRIMARIES FROM POINT OF SERVICE TO NEW TRANSFORMER.
2. THE CONTRACTOR SHALL PROVIDE AND INSTALL EQUIPMENT RACK SUPPORT AS SHOWN. THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY EXACT LOCATION OF EQUIPMENT RACK TO PROVIDE ADEQUATE CLEARANCES FOR ALL EQUIPMENT. SEE DETAIL "A" AND "B" ON DWG. E-5 FOR INSTALLATION DETAILS. 8" CONCRETE PAD SHALL BE UNDER ELECTRICAL EQUIPMENT AND SHALL EXTEND 3 FEET IN FRONT OF THE EQUIPMENT.
3. ALL EXPOSED PIPING 2" AND SMALLER SHALL BE HEAT TRACED.
4. THE CONTRACTOR SHALL PROVIDE A GROUND GRID CONSISTING OF 3/4" DIAMETER x 10' LONG COPPER CLAD GROUND RODS. THE RODS SHALL BE DRIVEN IN GROUND CONNECTED TOGETHER WITH #1/0 AWG BARE STRANDED COPPER CONDUCTORS. PROVIDE A GROUND WELL FOR ONE ROD. SEE DETAIL "D" AND "E" ON DWG. E-5 AND DETAIL "A" ON DWG. E-6 FOR GROUND WELL INSTALLATION DETAILS.
5. THE CONTRACTOR SHALL GROUND FENCE AT TWO (2) PLACES AS REQUIRED BY NEC ARTICLE 250.194.
6. THE CONTRACTOR SHALL PROVIDE AND INSTALL NEMA 3R JUNCTION BOX FOR WATER PRESSURE TAP TUBE HEAT TRACING SYSTEM. THE CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE HEAT TRACING SYSTEM INCLUDING, BUT NOT LIMITED TO SELF-REGULATING CABLE, THERMOSTAT (FOR AUTOMATIC OPERATION, INSULATION, ETC).
7. ONLY MAJOR UNDERGROUND CONDUITS ARE SHOWN FOR CLARITY. CONTRACTOR SHALL COORDINATE ALL UNDERGROUND CONDUIT RUNS WITH OTHER UNDERGROUND UTILITIES. SEE DETAIL "C" ON DRAWING E-5.
8. THE CONTRACTOR SHALL PROVIDE AND INSTALL SITE LIGHTING POLE AND LIGHT FIXTURE. SEE DETAIL "F" AND "G" ON DWG. E-5 FOR INSTALLATION DETAILS.

UNDERGROUND DUCTBANKS:

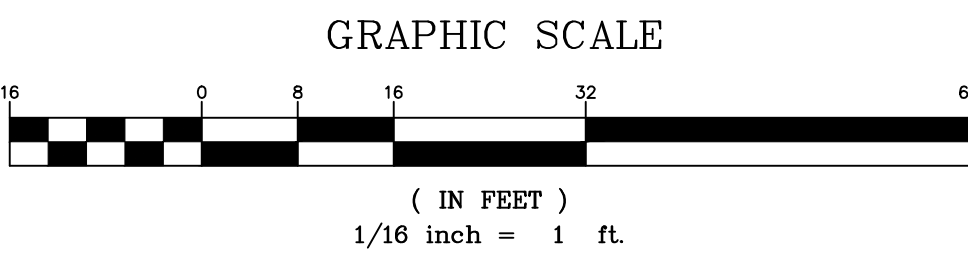


DB-1

1 - 1.5" C. (240/120V POWER FROM UTILITY TRANSFORMER)

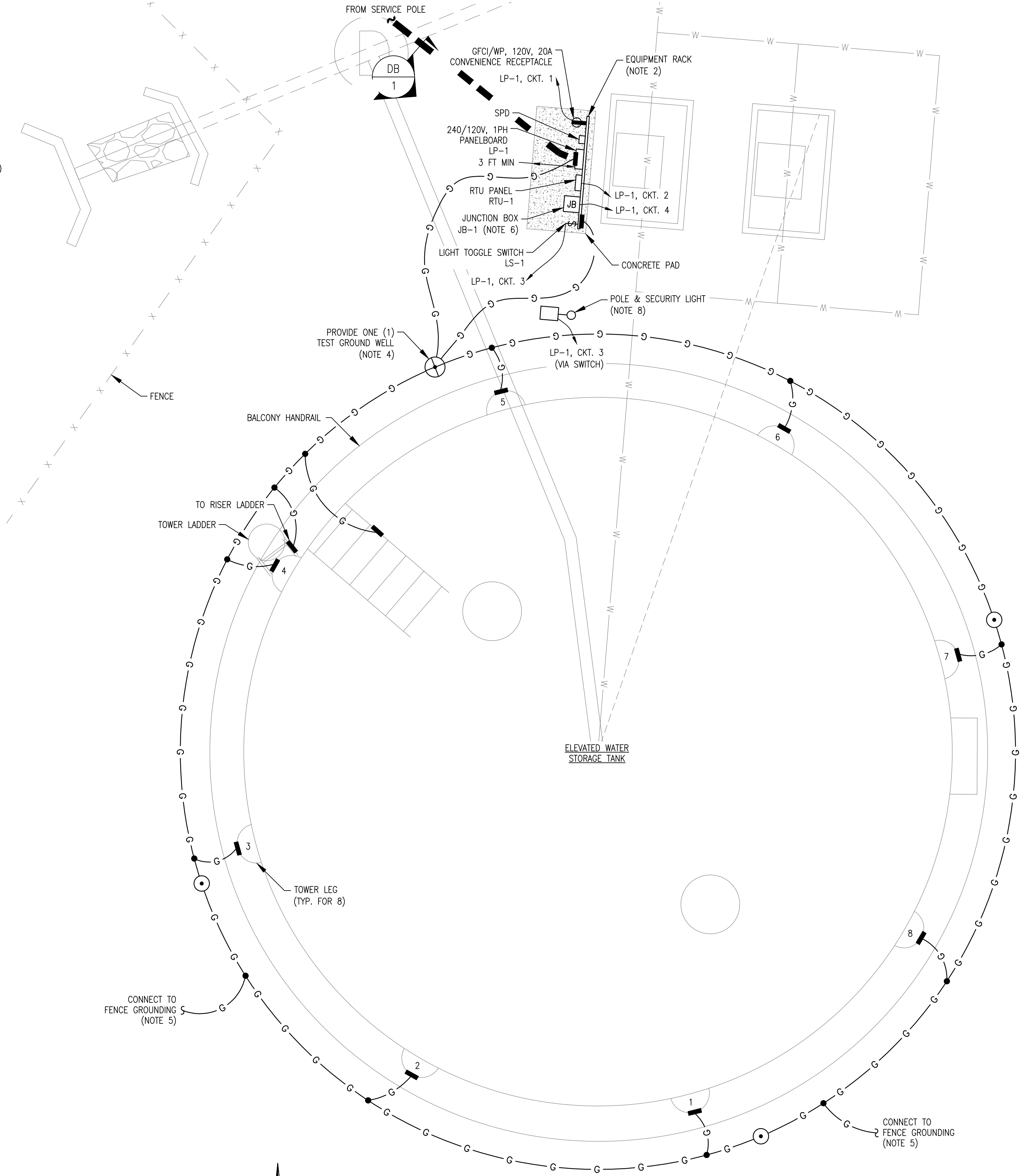


1 OVERALL ELECTRICAL SITE PLAN
SCALE: 1/32" = 1'-0"

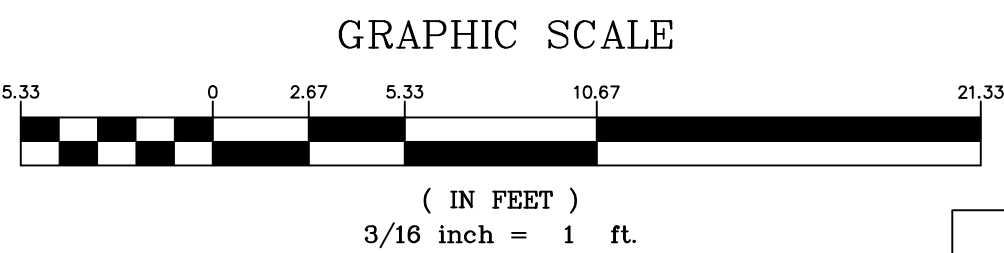


LEGEND:

— DIRECT BURIED UNDERGROUND DUCTBANK



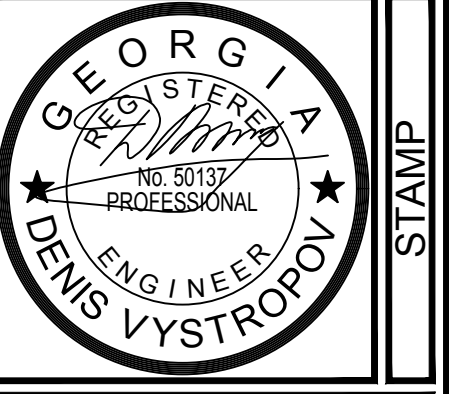
2 STORAGE TANK ELECTRICAL PLAN
SCALE: 3/16" = 1'-0"



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**BARROW NORTHWEST
ELEVATED WATER
STORAGE TANK**

ELECTRICAL
SITE PLAN

SHEET TITLE

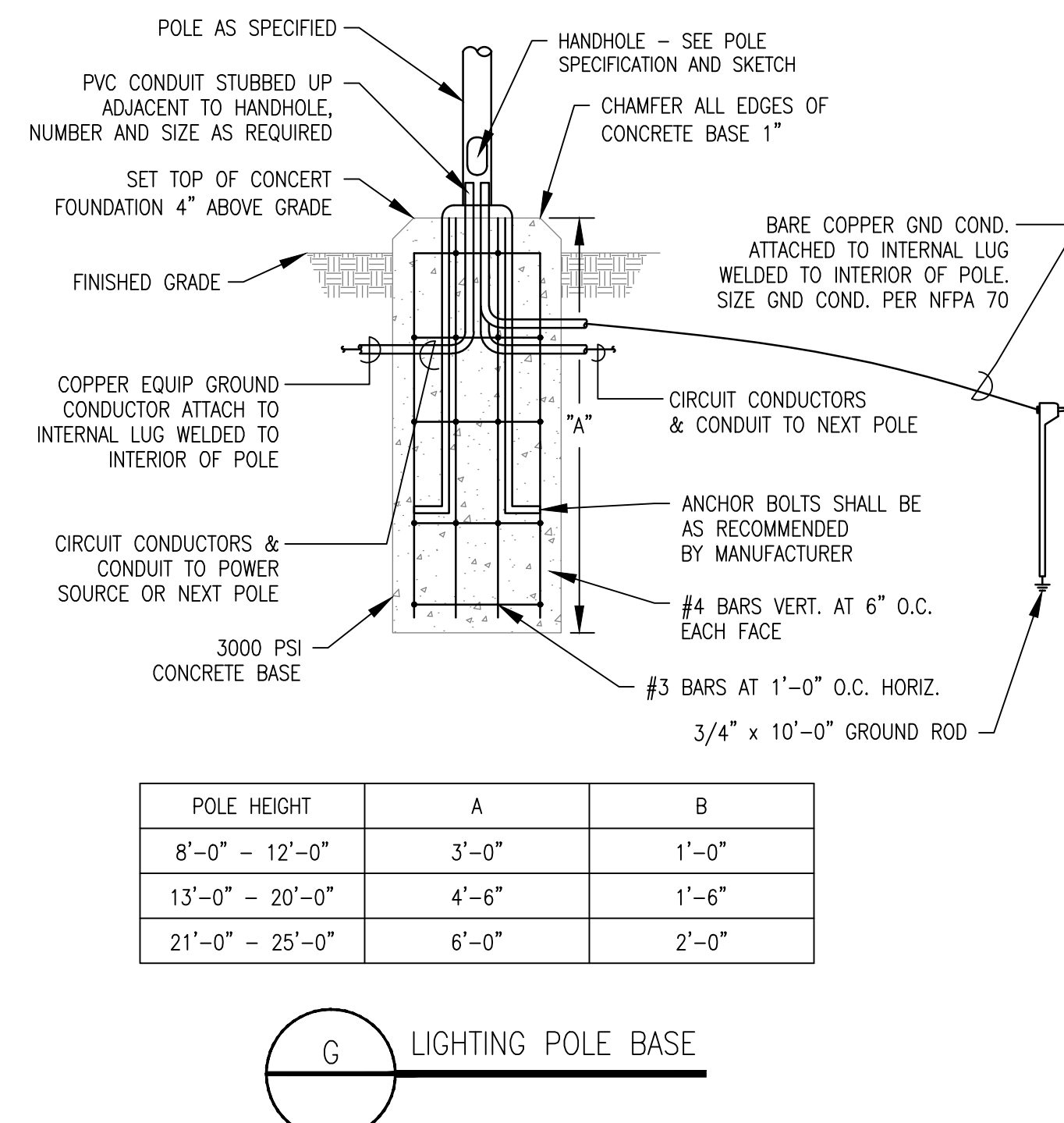
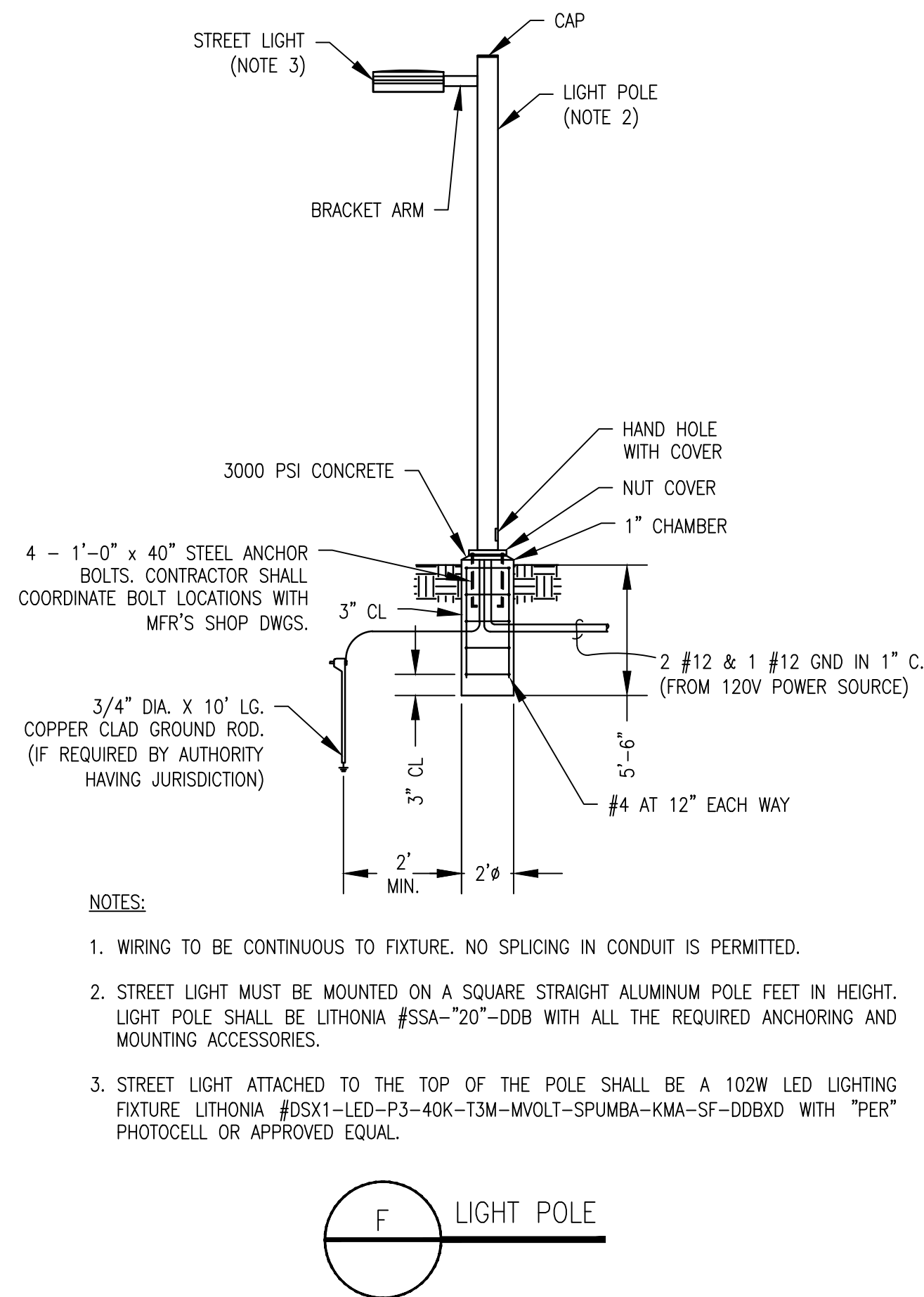
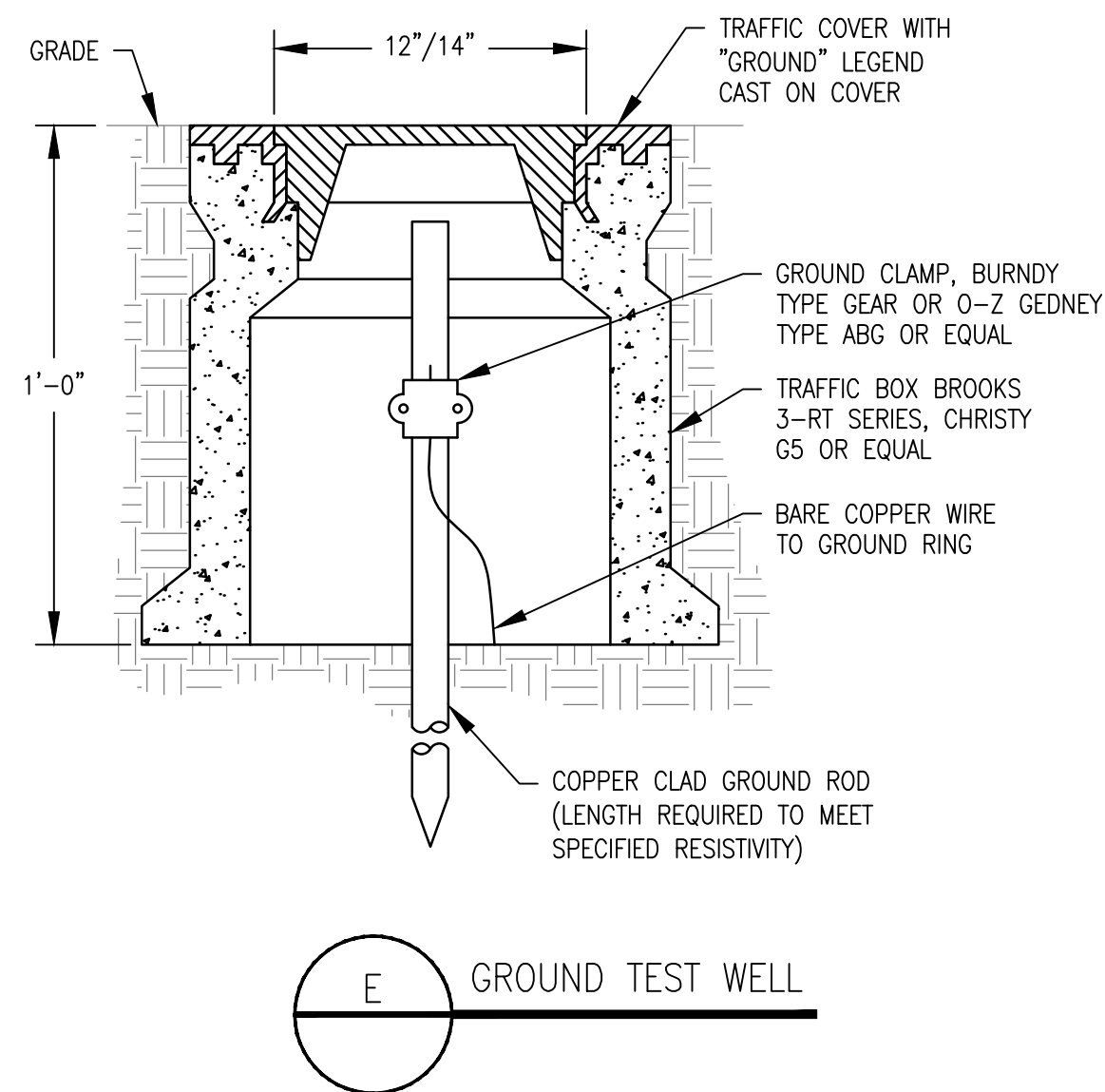
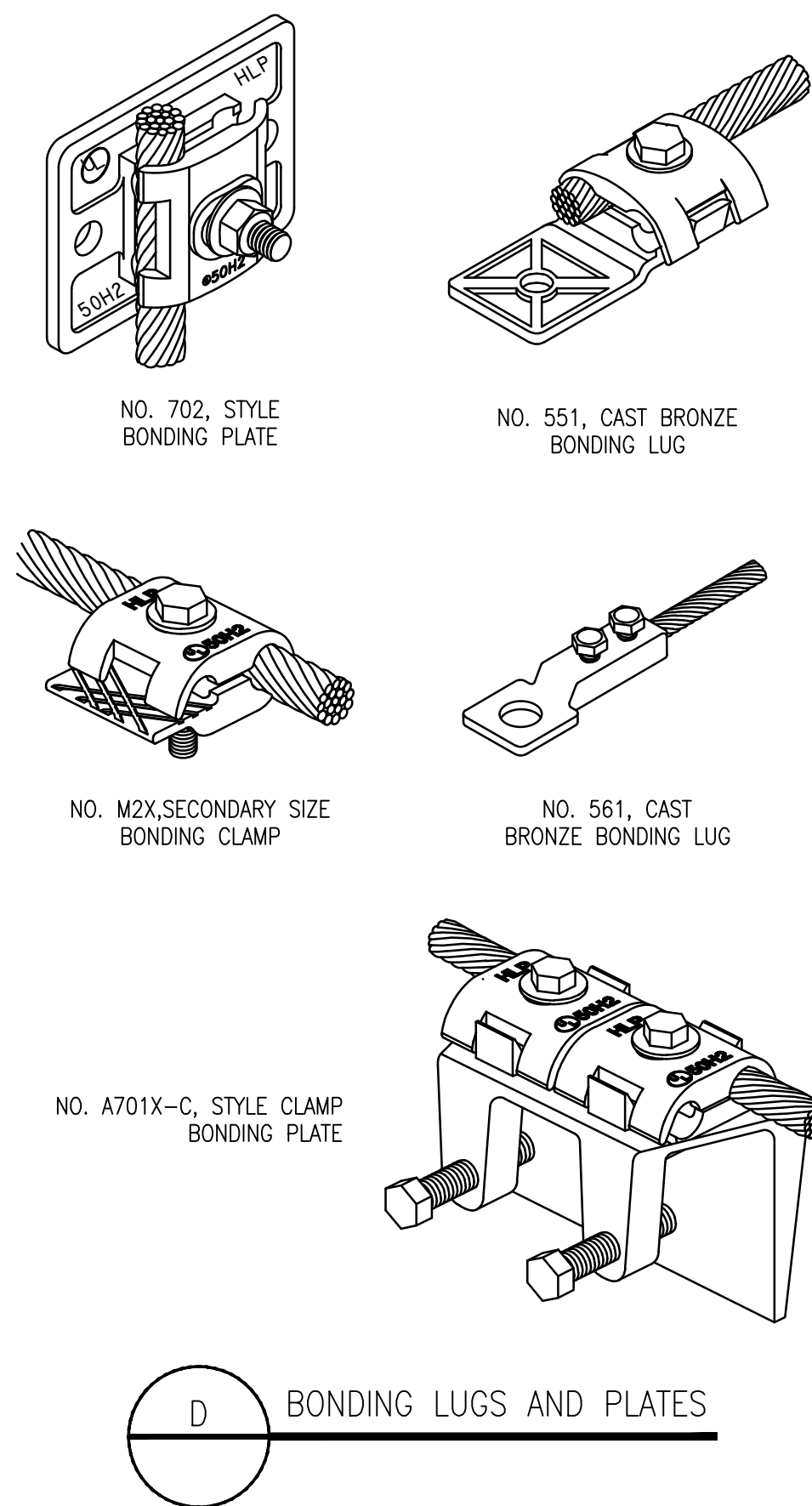
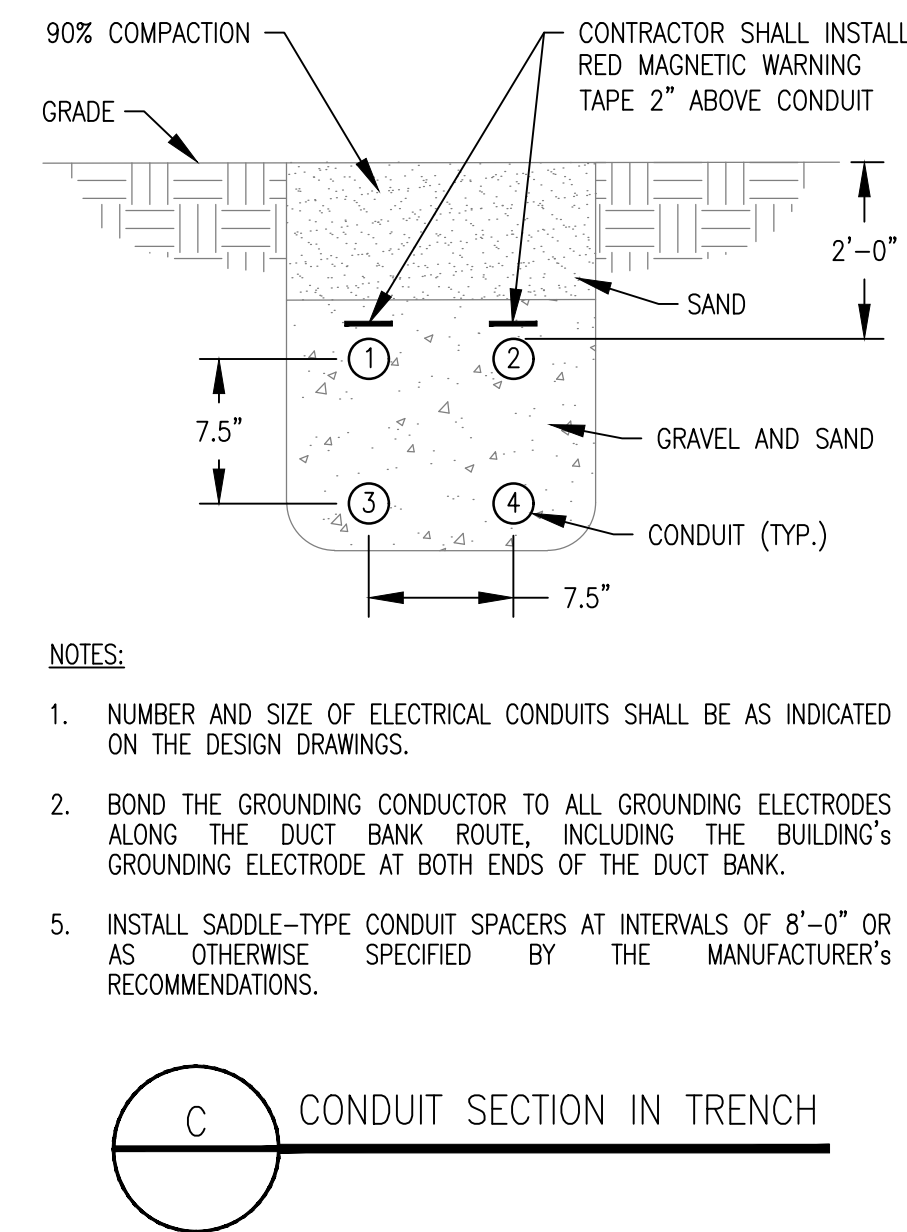
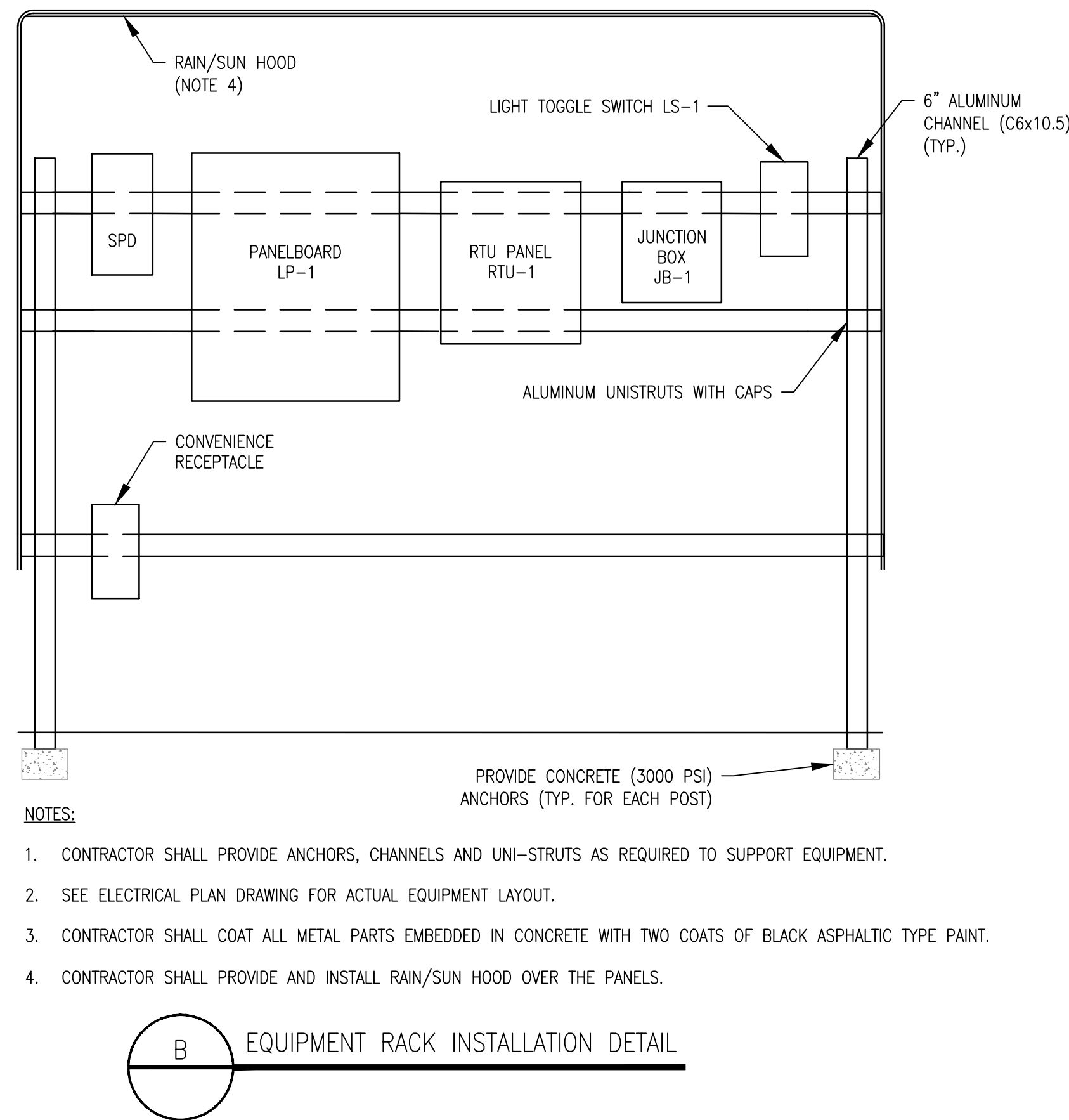
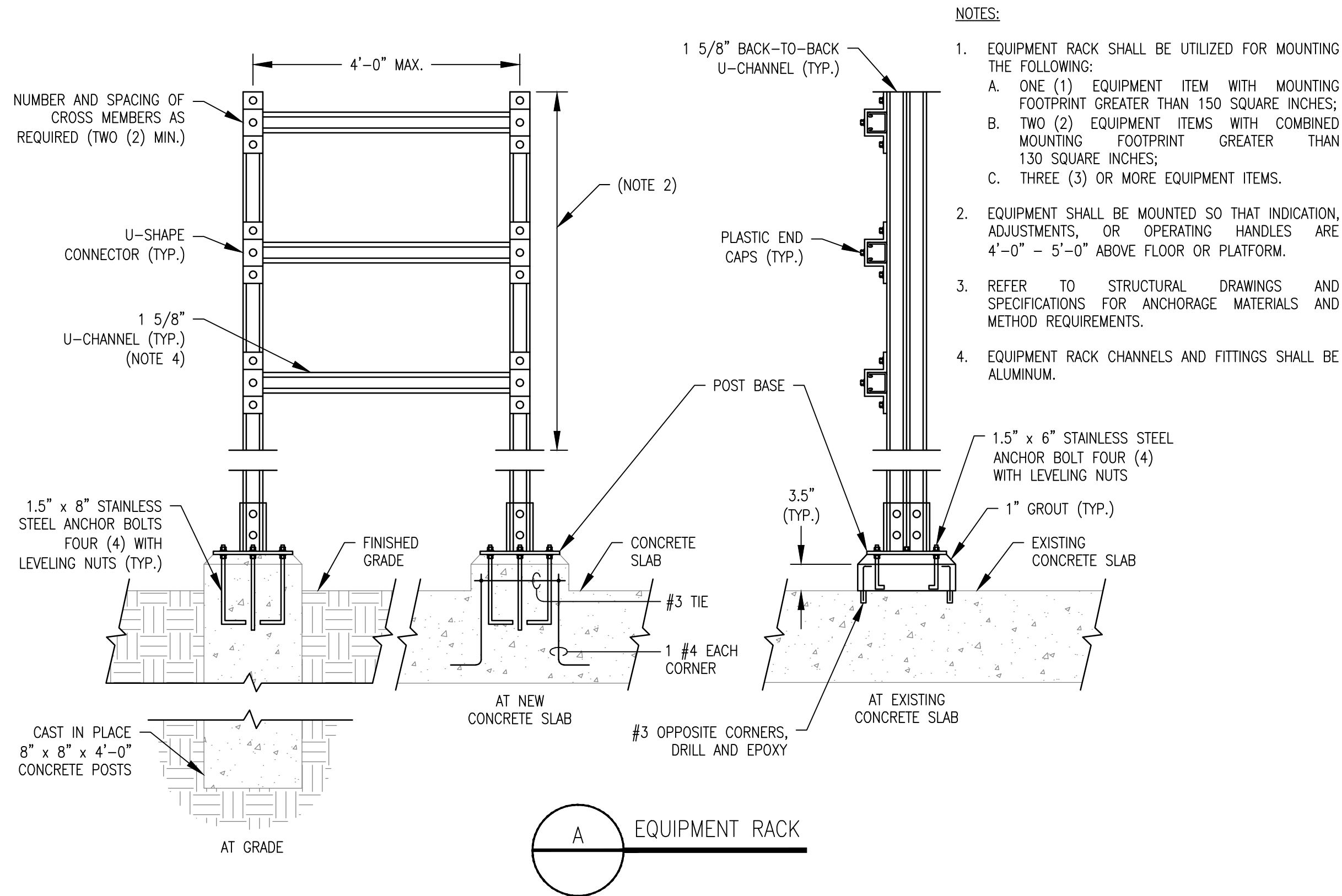
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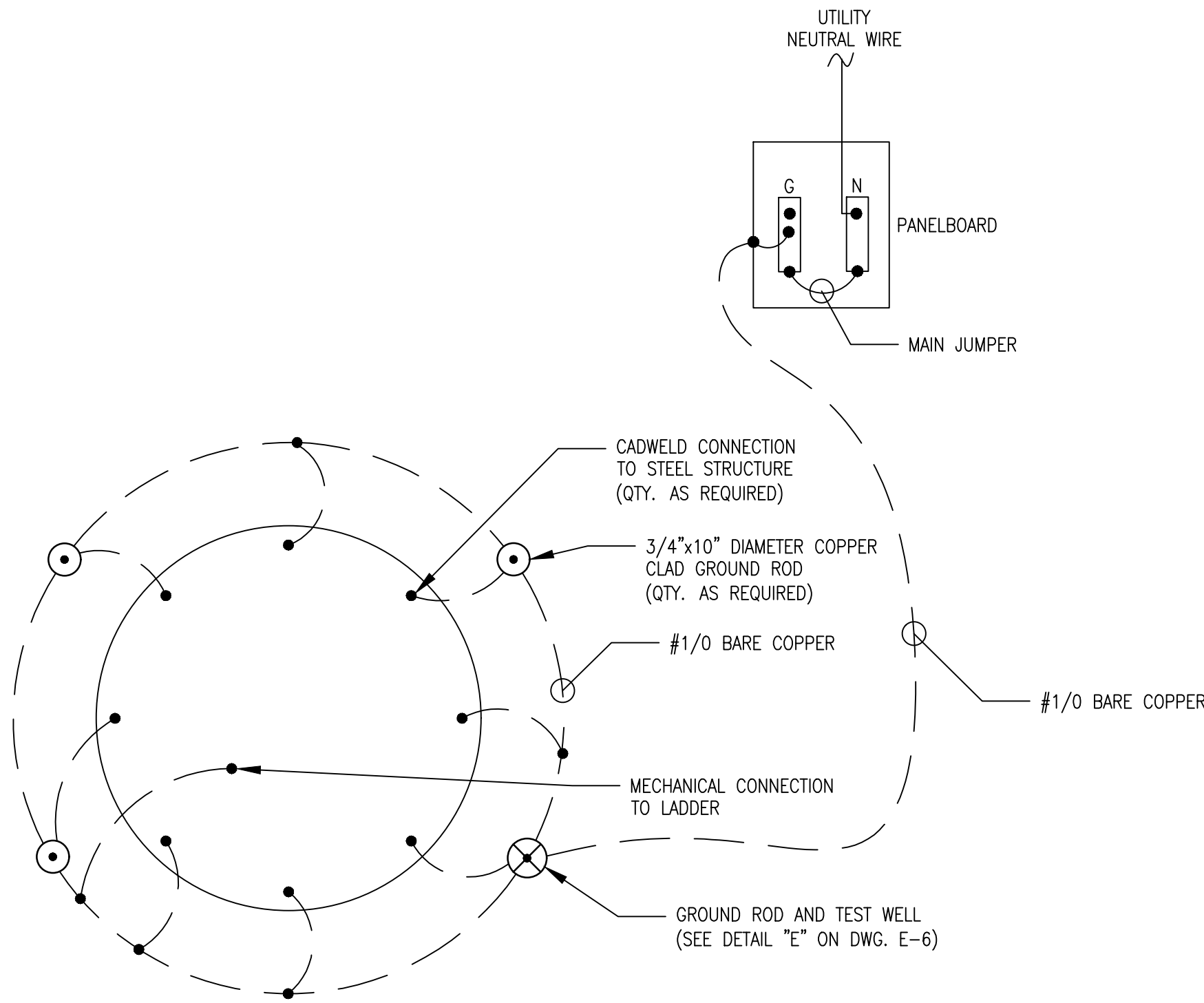
DESIGN DV

DATE	NO.	DESCRIPTION
05/30/25	A	ISSUED FOR BID

E23136
PPI PROJECT NO.

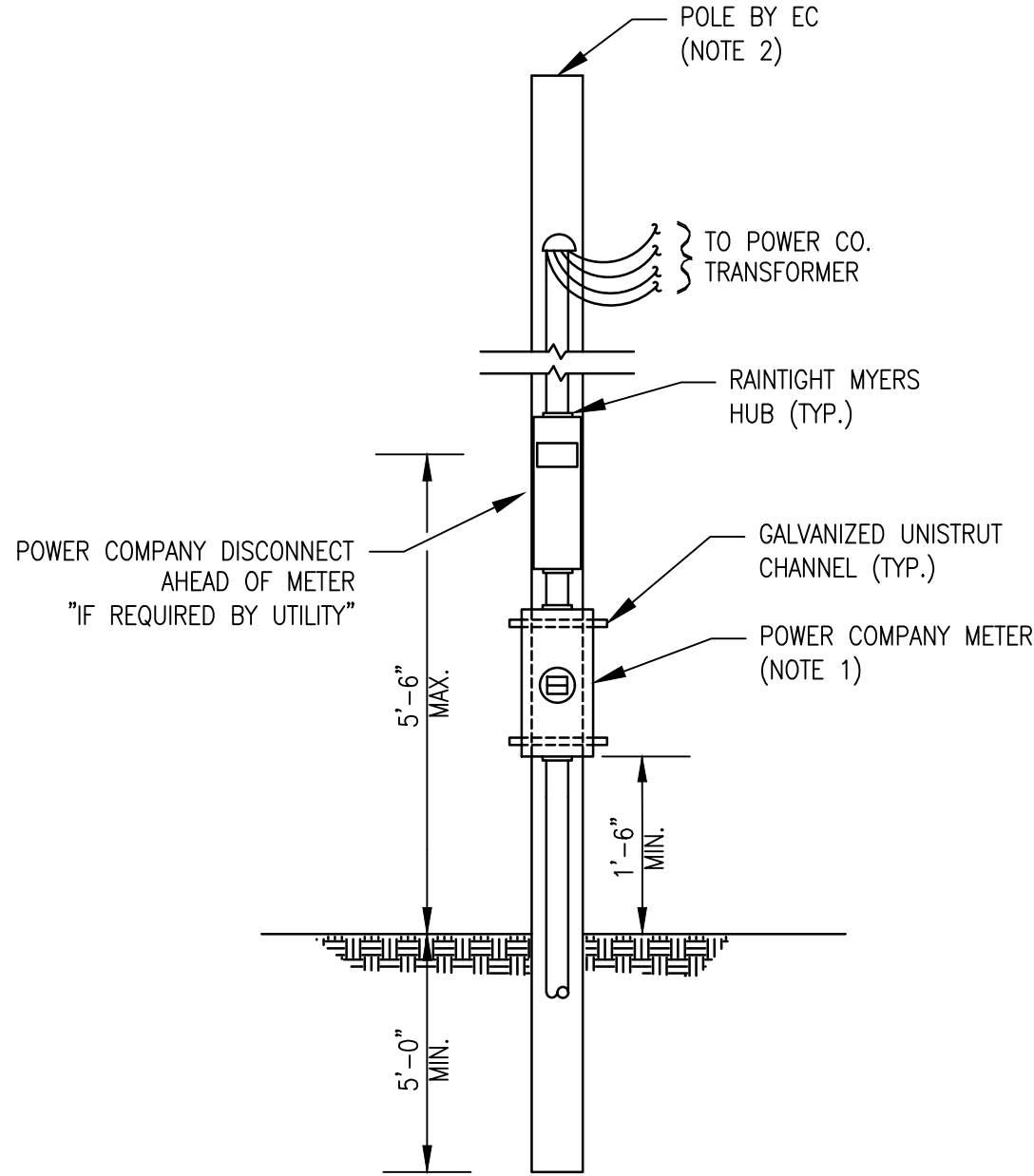
E-4





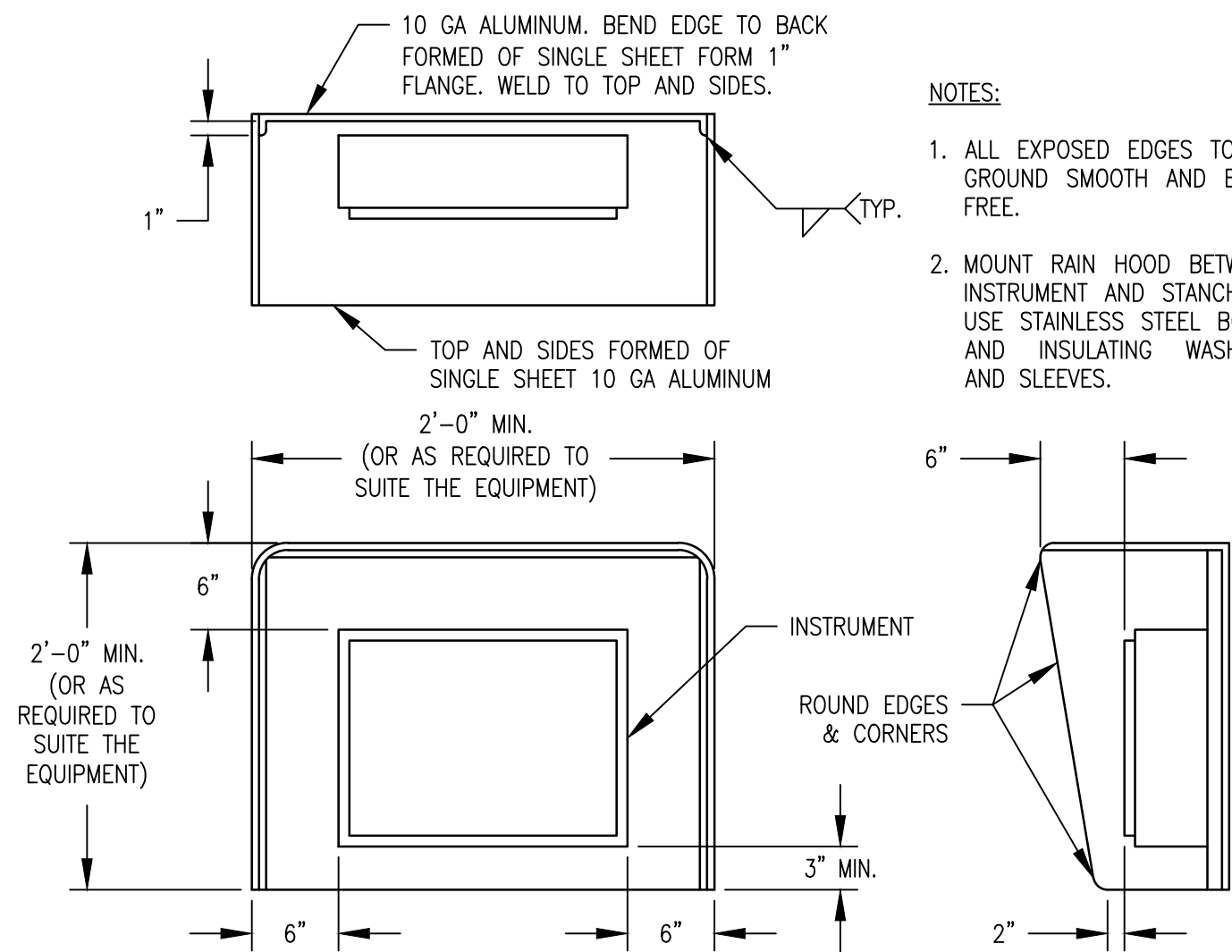
- NOTE:
1. CONTRACTOR SHALL PROVIDE A GROUND RING CONSISTING OF 3/4" DIAMETER x 10' LONG COPPERWELD GROUND RODS AND ONE (1) GROUND TEST WELL. THE RODS SHALL BE DRIVEN IN GROUND CONNECTED TOGETHER WITH #1/0 AWG BARE STRANDED COPPER CONDUCTORS. THE GROUND CONDUCTORS TO PANELBOARD AND ELEVATED TANK STEEL SHALL BE CADWELDED. PROVIDE A GROUND WELL FOR ONE (1) ROD.

A ELEVATED STORAGE TANK GROUNDING SYSTEM



- NOTES:
1. INSTALL THE METER SO THE METER READINGS CAN BE TAKEN WITHOUT ENTERING THE GATE.
 2. UTILITY POLE SHALL BE CLASS 5, 20FT. PRESSURE SALT TREATED SOUTHERN PINE UTILITY GRADE POLE, STRAIGHT AND TRUE WITH NO KNOTS, SPLITS OR OFFSETS, CANTED TOP, STAMPED AND DATED, AND SET IN GROUND PLUMB TO UTILITY STANDARDS.

B POWER POLE



- NOTES:
1. ALL EXPOSED EDGES TO BE GROUND SMOOTH AND BURR FREE.
 2. MOUNT RAIN HOOD BETWEEN INSTRUMENT AND STANCHION. USE STAINLESS STEEL BOLTS AND INSULATING WASHERS AND SLEEVES.

C SUN/RAIN HOOD

© 2023 PRECISION PLANNING, INC. ALL RIGHTS RESERVED.		STAMP	
PRECISION Planning Inc. planners • engineers • architects • surveyors Georgia Engineering Firm CCA # PEF000029 400 Pike Boulevard, Lawrenceville, GA 30046 770.338.8000 • www.ppi.us			
BARROW NORTHWEST ELEVATED WATER STORAGE TANK			
ELECTRICAL INSTALLATION DETAILS		SHEET TITLE DESIGN DV DRAWN DV CHECKED DV	
DATE	NO.	DESCRIPTION	RELEASE
05/30/25	A	ISSUED FOR BID	
E23136 PPI PROJECT NO.			
E-6			

COUNTY OF BARROW

STATE OF GEORGIA

BARROW COUNTY ETHICS ORDINANCE

AN ORDINANCE TO AMEND THE CODE OF ORDINANCES OF BARROW COUNTY, TO ESTABLISH THE CODE OF ETHICS FOR BARROW COUNTY; TO FURTHER AND INCORPORATE THE POLICIES AND LAWS OF THE STATE OF GEORGIA RELATING TO ETHICAL STANDARDS; TO CREATE THE BOARD OF ETHICS AND PROVIDE FOR ITS CONSTITUENT MEMBERSHIP, DUTIES, AND RESPONSIBILITIES; TO PROVIDE FOR THE INVESTIGATION OF ETHICS COMPLAINTS; TO PROVIDE FOR THE ENFORCEMENT OF ETHICAL STANDARDS; TO PROVIDE FOR SEVERABILITY; TO PROVIDE FOR AN EFFECTIVE DATE; AND FOR OTHER PURPOSES.

WHEREAS, the Constitution of the State of Georgia, approved by the voters of the State in November of 1982, and effective July 1, 1983, provides in Article IX, Section II, Paragraph I thereof, that the governing authority of the county may adopt clearly reasonable ordinances, resolutions, and regulations;

WHEREAS, O.C.G.A. § 36-1-20 authorizes counties to enact ordinances for protecting and preserving the public health, safety, and welfare of the population of the unincorporated areas of the County;

WHEREAS, the governing authority of Barrow County, to wit, the Board of Commissioners, desires to exercise its authority in adopting this Ordinance;

WHEREAS, it is essential to the proper operation of democratic government that public officials be independent and impartial, that governmental decisions and policy be made in the proper channels of the governmental structure, that public office not be used for private gain other than the remuneration provided by law, and that there be public confidence in the integrity of government;

WHEREAS, the attainment of one or more of these ends is impaired whenever there exists a conflict between the private interests of an elected official or a governmental employee and his duties as such;

WHEREAS, the public interest, therefore, requires that the law protect against such conflicts of interest and establish appropriate ethical standards with respect to the conduct of elected officials and government employees in situations where conflicts exist;

WHEREAS, it is also essential to the proper operation of government that those best qualified be encouraged to serve the government. Accordingly, legal safeguards against conflicts of interest must be so designed as not unnecessarily or unreasonably to impede the recruitment and retention by the government of those men and women who are best qualified to serve it;

WHEREAS, an essential principle underlying the staffing of our government structure is that its elected officials and employees should not be denied the opportunity, available to all other citizens, to acquire and retain private economic and other interests, except where conflicts with the responsibility of such elected officials and employees to the public cannot be avoided;

WHEREAS, in recognition of these goals and principles, it is the policy of the Board of Commissioners to institute, establish, promote, and enforce standards of ethical conduct for all of Barrow County's officers and employees; and

WHEREAS, it is a further policy of the Board of Commissioners that the proper administration of Barrow County's government and the promotion and enforcement of standards of ethical conduct for Barrow County's officers and employees would be best served by the creation of a Barrow County Board of Ethics for the investigation of complaints related to ethical standards;

NOW, THEREFORE, BE IT ORDAINED AND RESOLVED BY THE BOARD OF COMMISSIONERS OF BARROW COUNTY, GEORGIA AS FOLLOWS:

ARTICLE ONE: GENERAL PROVISIONS

Section One.

Short Title.

This Ordinance shall be known as "The Barrow County Ethics Ordinance," and may be cited and referred to as such.

Section Two.

Definitions.

For the purposes of this Ordinance, the following terms, phrases, words, and their derivations shall have the meaning provided herein. When not inconsistent with the context, words used in the present tense include the future, words in the plural number include the singular number, and words in the singular number include the plural number.

- (A) **"Board"** means the Barrow County Board of Commissioners.
- (B) **"Board of Ethics"** means the Barrow County Board of Ethics as formed and described herein.
- (C) **"Business Entity"** means any business of whatever nature regardless of how designated or formed, whether a sole proprietorship, partnership, joint venture, association, trust, corporation, limited liability company, or any other type of business enterprise, and whether a person acting on behalf of, or as a representative or agent of, the business entity.
- (D) **"Confidential Information"** means any information that, by law or practice, is not reasonably available to the public.
- (E) **"County Official"** means the Barrow County Board of Commissioners, any member of a board, commission, or authority appointed by the Board, the Chief of

Operations or his/her equivalent, and any other elected or appointed officer or employee of Barrow County, including those employees who are exempt from the Barrow County Civil Service System, except to the extent prohibited by law.

- (F) **"Employee"** means all those persons employed on a regular or part-time basis by the County, as well as those persons whose services are retained under the terms of a contract with the County, including those employees who are exempt from the Barrow County Civil Service System, except to the extent prohibited by law.
- (G) **"Family"** means the spouse, parents, children, brothers and sisters, related by blood or marriage, of a county official or employee.
- (H) **"Interest"** means direct or indirect pecuniary or material benefit accruing to a County Official or Employee as a result of a contract or transaction which is or may be the subject of an official act or action by or with the County, except for such contracts or transactions which, by their terms and by the substance of their provisions, confer the opportunity and right to realize the accrual of similar benefits to all other persons and/or property similarly situated. The term "interest" shall not include any remote interest. For purposes of this Ordinance, a County Official or Employee shall be deemed to have an interest in the affairs of:
 - (1) His or her family;
 - (2) Any business entity in which the county official or employee is a member, officer, director, employee, or prospective employee;
 - (3) Any business entity as to which the stock, legal ownership, or beneficial ownership of a county official or employee is in excess of five percent (5%) of the total stock or total legal and beneficial ownership, or which is

controlled or owned directly or indirectly by the county official or employee.

- (I) "Official Act" or "Official Duties" means any legislative, administrative, appointive, or discretionary act of any County Official or Employee of the County or any agency, board, authority, or commission thereof.

ARTICLE TWO: CODE OF ETHICS FOR COUNTY SERVICE GENERALLY AND FOR EMPLOYEES

This Article Two is intended to adopt and incorporate herein for local enforcement the ethical standards of O.C.G.A. § 45-10-1, as it may be amended from time to time.

Any person in County service shall:

Section One.

Put loyalty to the highest moral principles and to country above loyalty to persons, party, or government department.

Section Two.

Uphold the Constitution, laws, and legal regulations of the United States and the State of Georgia and of all governments therein and never be a party to their evasion.

Section Three.

Give a full day's labor for a full day's pay and give to the performance of his duties his earnest effort and best thought.

Section Four.

Seek to find and employ more efficient and economical ways of getting tasks accomplished.

Section Five.

Never discriminate unfairly by the dispensing of special favors or privileges to anyone, whether for remuneration or not, and never accept, for himself or his family, favors or benefits under circumstances which might be construed by reasonable persons as influencing the performance of his governmental duties.

Section Six.

Make no private promises of any kind binding upon the duties of office, since a government employee has no private word that can be binding on public duty.

Section Seven.

Engage in no business with the government, either directly or indirectly, which is inconsistent with the conscientious performance of his governmental duties.

Section Eight.

Never use any information coming to him confidentially in the performance of governmental duties as a means for making private profit.

Section Nine.

Expose corruption wherever discovered.

Section Ten.

Uphold these principles, ever conscious that public office is a public trust.

**ARTICLE THREE: CODE OF ETHICS FOR COUNTY OFFICIALS AND
DEPARTMENT DIRECTORS**

This Article Three is intended to adopt and incorporate herein for local enforcement the ethical standards of O.C.G.A. § 45-10-3, as it may be amended from time to time.

All County Officials and Department Directors shall:

Section One.

Uphold the Constitution, laws, and regulations of the United States, the State of Georgia, the County of Barrow, and all governments therein and never be a party to their evasion.

Section Two.

Never discriminate by the dispensing of special favors or privileges to anyone, whether or not for remuneration.

Section Three.

Not engage in any business with the government, either directly or indirectly, which is inconsistent with the conscientious performance of his governmental duties.

Section Four.

Never use any information coming to him confidentially in the performance of governmental duties as a means for making private profit.

Section Five.

Expose corruption wherever discovered.

Section Six.

Never solicit, accept, or agree to accept gifts, loans, gratuities, discounts, favors, hospitality, or services from any person, association or corporation under circumstances from which it could reasonably be inferred that a major purpose of the donor is to influence the performance of the member's official duties.

Section Seven.

Never accept any economic opportunity under circumstances where he knows or should know that there is a substantial possibility that the opportunity is being afforded him with intent to influence his conduct in the performance of his official duties.

Section Eight.

Never engage in other conduct which is unbecoming to a member or which constitutes a breach of public trust.

Section Nine.

Never take any official action with regard to any matter under circumstances in which he knows or should know that he has a direct or indirect monetary interest in the subject matter of such matter or in the outcome of such official action.

**ARTICLE FOUR: SPECIFIC PROVISIONS RELATED TO CONFLICT OF
INTEREST TRANSACTIONS AND DISCLOSURES**

The following provisions related to conflict of interest transactions and disclosures are intended to supplement and elaborate upon the Code of Ethics set forth in Articles Two and Three above, and all such provisions shall be read and interpreted in accordance therewith.

Section One. **Compliance with Applicable Law.**

No County Official or Employee shall engage in any activity or transaction that is prohibited by law, now existing or hereafter enacted, which is applicable to him or her by virtue of his or her office or employment. Other provisions of law or regulations shall apply when any provisions of this Ordinance shall conflict with the laws of the State of Georgia or the United States, except to the extent that this Ordinance permissibly sets forth a more stringent standard of conduct. The laws of the State of Georgia or the United States shall apply when this Ordinance is silent.

Section Two. **Conflict of Interest Transactions.**

- (A) No County Official or Employee shall acquire or maintain an interest in any contract or transaction if a reasonable basis exists that such an interest will be

affected directly by his or her official act or action or by official acts or actions of the County, which the County Official or Employee has a reasonable opportunity to influence, except consistent with the disclosure and abstention provisions set forth herein.

(B) Barrow County shall not enter into any contract involving services or property with a County Official or Employee or with a business entity in which the County Official or an Employee has an interest. Provided that the disclosure and abstention provisions set forth herein are followed, this paragraph shall not apply to the following:

- (1) The designation of a bank or trust company as a depository for county funds;
- (2) The borrowing of funds from any bank or lending institution which offers competitive rates for such loans;
- (3) Contracts entered into with a business which employs a consultant, provided that the consultant's employment with the business is not incompatible with this Ordinance;
- (4) Contracts for services entered into with a business which is the only available source for such goods or services; and
- (5) Contracts entered into under circumstances that constitute an emergency situation, provided that a record explaining the emergency is prepared by the Board and submitted to the Chief of Operations (or his/her equivalent) to be kept on file.

Section Three. **Financial Disclosures.**

Financial disclosures shall be governed by federal and state law as it may be amended from time to time, and this Ordinance shall not require any additional financial disclosure reports to be filed other than those required by federal and state law.

Section Four. **Zoning Application Disclosures.**

All disclosures with regard to zoning applications shall be governed in their entirety by the Conflict of Interest in Zoning Actions provisions contained in O.C.G.A. § 36-67A-1, et seq., as it may be amended from time to time.

Section Five. **Disclosures Related to Submission of Bids or Proposals for County Work or Contract.**

Persons submitting bids or proposals for county work who have contributed \$250.00 or more to a County Official must disclose on their bid or proposal the name of the County Official(s) to whom the contribution was made and the amount contributed. Such a disclosure must also be made prior to a request for any change order or extension of any contract awarded to the person who submitted the successful bid or proposal.

Section Six. **Withholding of Information.**

No County Official or Employee shall knowingly withhold any information that would impair the proper decision making of the Board or any of the County's boards, agencies, authorities, or departments.

Section Seven. **Incompatible Service.**

No County Official or Employee shall engage in or accept private or public employment or render service for any private or public entity, when such employment or service is incompatible with the proper discharge of his or her official duties or would tend to impair his or her independence of judgment or action in the performance of his or her official duties, unless

otherwise permitted by law and unless public disclosure is made.

Section Eight. **Unauthorized Use of Public Property.**

No County Official or Employee shall request or permit the unauthorized use of county-owned vehicles, and equipment, including but not limited to computers, pagers, and cellular telephones, materials or property for personal convenience or profit.

Section Nine. **Political Recrimination and Activity.**

- (A) No County Official or Employee, whether elected or appointed, shall either cause the dismissal or threaten the dismissal from any county position as a reward or punishment for any political activity. No County Official or Employee shall direct any person employed by the County to undertake political activity on behalf of such County Official or Employee, any other County Official or Employee, or any other individual, political party, group, or business organization, during such time that the Employee is required to conduct county business. This section does not prohibit incidental telephone calls made for the purpose of scheduling a County Official's daily county business.
- (B) Employees of the county are encouraged to exercise their right to vote, but no employee shall make use of government time or equipment to aid a political candidate, party, or cause; or use a government position to influence, coerce, or intimidate any person in the interest of a political candidate, party, or cause. No employee shall be hired, promoted, favored, or discriminated against with respect to employment because of his or her political opinions or affiliations.
 - (1) *Seeking elective office.* A government employee seeking elective office within the county may, upon declaring candidacy, either resign or submit a

request in writing to the Chief of Operations (or his/her equivalent) for a leave of absence without pay from the date of his or her announcement through the duration of the campaign or announcement of the election results. In the alternative, the government employee seeking elective office within the County may continue to work for the County, provided, however, that the employee shall not engage in election activities during his or her County working hours or with use of County equipment. If elected to office, the employee shall immediately, upon the date of election, be separated from employment with the county upon written request and approval of the Chief of Operations (or his/her equivalent).

- (2) *Political campaign involvement.* A government employee may not be involved in any political activity which would constitute a conflict of interest; including participation in any aspect of any political campaign for any office in Barrow County Government.
- (3) *Solicitation of contributions.* A government employee may not knowingly solicit, accept, or receive political contributions from any person, to be used in support of or opposition to any candidate for office in the county.

Section Ten. **Appearance Before County Entities.**

No County Official or Employee shall appear on behalf of any private person other than himself or herself, his or her spouse, or his or her minor children, before any county agency, authority or board. However, a member of the Board of Commissioners may appear before such groups on behalf of his constituents in the course of his duties as a representative of the electorate or in the performance of public or civic obligations.

Section Eleven. **Timely Payment of Debts to the County and Fiscal Responsibility.**

All County Officials and Employees shall pay and settle, in a timely and prompt fashion, all accounts between them and Barrow County, including the prompt payment of all taxes and shall otherwise demonstrate personal fiscal responsibility.

Section Twelve. **Solicitation or Acceptance of Gifts.**

- (A) County Officials and Employees shall not accept gifts, gratuities, or loans from organizations, business concerns, or individuals with whom he or she has official relationships on business of the county government. These limitations are not intended to prohibit the acceptance of articles of negligible value which are distributed generally, nor to prohibit employees from accepting social courtesies which promote good public relations, or to prohibit employees from obtaining loans from regular lending institutions. It is particularly important that inspectors, contracting officers, and enforcement officers guard against relationships which might be construed as evidence of favoritism, coercion, unfair advantage, or collusion.
- (B) Consistent with the provisions set forth in Articles Two and Three and Section 12(A) above, there shall be no violation of this Ordinance in the following circumstances:
 - (1) Meals and beverages given in the usual course of entertaining associated with normal and customary business or social functions.
 - (2) An occasional gift from a single source of \$101.00 or less in any calendar year.
 - (3) Ceremonial gifts or awards.

- (4) Gifts of advertising value only or promotional items generally distributed to public officials.
- (5) Awards presented in recognition of public service.
- (6) Reasonable expenses of food, travel, lodging and scheduled entertainment for a meeting that is given in return for participation in a panel or speaking engagement at the meeting.
- (7) Courtesy tickets or free admission extended for an event as a courtesy or for ceremonial purposes, given on an occasional basis, and not to include season tickets of any nature.
- (8) Gifts from relatives or members of the County Official or Employee's household.
- (9) Honorariums or awards for professional achievement.
- (10) Courtesy tickets or free admission to educational seminars, educational or information conventions, or other similar events.

Section Thirteen. Disclosure of Interest.

Any member of the Board who has a financial or personal interest in any proposed legislation or action before the Board shall immediately disclose publicly the nature and extent of such interest.

Any other County Official or Employee who has a financial or personal interest in any proposed legislation or action before the Board and who participates in discussion with or gives an official opinion or recommendation to the Board in connection with such proposed legislation or action shall disclose publicly the nature and extent of such interest.

Section Fourteen. Abstention to Avoid Conflicts of Interest.

- (A) Except as otherwise provided by law, no County Official or Employee shall participate in the discussion, debate, deliberation, vote, or otherwise take part in the decision-making process on any item before him in which the County Official or Employee has a conflict of interest as set forth above.
- (B) To avoid the appearance of impropriety, if any County Official or Employee has a conflict of interest or has an interest that he or she has reason to believe either violates this Ordinance or may affect his or her official acts or actions in any matter, the County Official or Employee shall immediately leave the meeting room, except that if the matter is being considered at a public meeting, the County Official or Employee may remain in the meeting room.
- (C) In the event of a conflict of interest, the County Official or Employee shall announce his or her intent to abstain prior to the beginning of the discussion, debate, deliberation, or vote on the item, shall not participate in any way, and shall abstain from casting a vote.

ARTICLE FIVE: THE BOARD OF ETHICS

Section One. Creation and Composition of Board of Ethics.

There is hereby created a five-member Barrow County Board of Ethics, which shall consist of the following members:

- (A) One appointee of the Barrow County Bar Association;
- (B) One appointee selected by a majority of the voting County elected officials (not including the members of the Board of Commissioners) who shall each have one vote for such appointee;

- (C) One appointee selected by a majority of the voting employees of Barrow County (not including the County elected officials or the members of the Board of Commissioners) who are in the employ of Barrow County on a full-time basis on the effective date of the vote, which vote shall be conducted by the Director of Human Resources or his/her designee;
- (D) One appointee of the Barrow County Personnel Review Board; and
- (E) One appointee of the Barrow County Board of Commissioners, which appointee shall be selected by a majority vote of the Board of Commissioners.

Section Two. **Appointment Procedures.**

The initial appointments of the members of the Board of Ethics shall be accomplished as follows: Within five (5) business days of the effective date of this Ordinance, the Barrow County Chief of Operations (or his/her equivalent) or his/her designee shall notify the respective appointing body or individuals of the duty to appoint or vote upon a member for placement on the Board of Ethics. The body or individuals so notified shall have thirty (30) days in which to conduct their appointment process and provide the Chief of Operations (or his/her equivalent) with the name of the appointment, or the name of the individual for whom he or she is voting as the appointee in the case of the elected officials. Within five (5) business days of receipt of the appointment information, or calculation of the votes as the case may be, the Chief of Operations (or his/her equivalent) shall thereafter provide the names of the appointees to the Board of Commissioners. The Board of Commissioners shall appoint the five persons so identified at the next regular meeting of the Board of Commissioners following receipt of the names of the appointees from the Chief of Operations (or his/her equivalent).

All appointments following the expiration of the initial terms and all appointments made

in the cases of vacancies created during a particular term shall be made by the applicable body or individuals as indicated in Section One of this Article. The Chief of Operations (or his/her equivalent) or his/her designee shall notify the applicable body or individuals responsible for making an appointment at least forty-five (45) days prior to the expiration of the respective term or immediately upon knowledge of a vacancy created during a term. Upon such notification, the appointment process shall proceed as set forth above in this Section.

Section Three. **Qualifications of Members of Board of Ethics.**

A person is eligible to be appointed as a member of the Board of Ethics if the person, while serving:

- (A) Resides in the County and is a registered voter;
- (B) Is not an Employee or County Official and has not been an Employee or County Official during the three (3) months immediately preceding his or her appointment, or be the spouse, parent, child or sibling of an Employee or County Official;
- (C) Is not an officer or employee of any political party;
- (D) Does not hold any elected or appointed office and is not a candidate for office of the United States, this State or the County, and has not held any elected or appointed office during the three (3) months immediately preceding his or her appointment.

Section Four. **Terms; Vacancies.**

Members of the Board of Ethics shall each serve a two (2) year term without compensation, and shall continue to serve until their successors are appointed and qualified. The Board positions appointed pursuant to sub-sections (A), (B), and (C) of Section One of this

Article shall serve an initial full two-year term, and shall thereafter serve two-year terms upon appointment. The Board positions appointed pursuant to sub-sections (D) and (E) of Section One of this Article shall serve an initial one-year term, and shall thereafter serve two-year terms upon appointment. If any vacancy occurs during a term, the remaining members shall at that time choose an alternate member mutually agreed upon to temporarily serve until the position is filled by appointment as provided in Section One and Section Two to fulfill the remainder of the then existing term.

Section Five. **Removal of Member.**

The Board of Commissioners may remove a member of the Board of Ethics on the grounds of neglect of duty, misconduct in office, or engagement in political activity in violation of this Ordinance. Before initiating the removal of a member from the Board of Ethics, the Board of Commissioners shall give the member written notice of the reason for the intended action, and the member shall have the opportunity to reply. Thereafter, the Board of Commissioners shall afford such member an opportunity for a hearing before the Board of Commissioners.

Section Six. **Organization and Internal Operating Regulations.**

- (A) Members of the Board of Ethics shall not be compensated.
- (B) The Board of Ethics shall elect one of its members to act as Chairperson for a term of one year, or until a successor is duly elected. The Board of Ethics shall also elect one of its members to act as Vice-Chairperson for the same term and to act for the Chairperson in his or her absence, because of disqualification, or vacancy.
- (C) There shall be no regularly scheduled monthly or bimonthly meetings of the

Board of Ethics, however, the Board of Ethics shall have semi-annual meetings. By majority vote, or by call of the Chairperson, the Board of Ethics may call a special meeting, if necessary. The Board of Ethics shall, however, have semi-annual meetings with the first meeting commencing at 7:00 p.m. on the fourth Thursday of the month following the appointment of the initial members of the Board of Ethics by the Board of Commissioners, and with the second meeting commencing at 7:00 p.m. on the fourth Thursday of the month six months subsequent to the first meeting. The semi-annual meetings shall continue thereafter on the fourth Thursday of the month in six-month intervals. The meetings of the Board of Ethics shall be conducted in the public hearing room utilized by the Board of Commissioners, shall be duly publicized, and shall be otherwise conducted in accordance with the Open Meetings requirements under state law. The dates and times of the meetings may be altered by a majority vote of the Board of Ethics.

- (D) Three members of the Board of Ethics shall constitute a quorum for the transaction of business. The Chairperson shall be entitled to the same voting rights as the other members of the Board of Ethics.
- (E) No official action concerning complaints shall be taken by the Board of Ethics, except by the affirmative vote of at least four (4) members of the Board of Ethics.

Section Seven. **Duties and Powers.**

The Board of Ethics shall have the following duties and powers:

- (A) To establish any procedures, rules and regulations governing its internal organization and conduct of its affairs, provided that such procedures, rules and

regulations do not conflict with any provision contained herein.

- (B) To receive and hear complaints of violations of standards required by this Ordinance.
- (C) To make investigations as it deems necessary to determine whether any person has violated this Ordinance, but only after at least four (4) members of the Board of Ethics have voted affirmatively to conduct the investigation.
- (D) To take such action as provided in this Ordinance as deemed appropriate because of any violation of this Ordinance.
- (E) To perform any other function authorized by this Ordinance.
- (F) To issue advisory opinions as provided in this Ordinance.

Section Eight. **Staffing and Expenses.**

The Board of Ethics shall be provided sufficient meeting space and other reasonable supportive services to carry out its duties required under this Ordinance. The Chief of Operations (or his/her equivalent) shall designate an administration employee who shall serve as the filing clerk for the Board of Ethics and who shall be authorized to receive all filings before the Board of Ethics, to publish notices of all meetings upon request of the Board of Ethics' Chairperson, and to serve as the recording clerk for the Board of Ethics.

Section Nine. **Counsel.**

The Board of Ethics may petition the Barrow County Board of Commissioners for appointment of counsel on a case-by-case basis to assist it in carrying out its responsibilities or to act as a hearing officer. Any such appointed counsel shall be approved by the Board of Commissioners, shall perform services at an approved hourly rate, and shall serve at the joint pleasure of the Board of Ethics and the Board of Commissioners.

Section Ten. **Adherence to Ethics Ordinance.**

The Board of Ethics shall be governed by and subject to this Ordinance, except as to any requirements related to financial disclosures. If a member of the Board of Ethics has a conflict of interest or must disqualify himself under this Ethics Code or by law, the remaining members shall at that time choose an alternate person mutually agreed upon to hear that matter.

Section Eleven. **Prohibition Against Certain Conflicting Political Activity.**

(A) **Definitions.** The following words, terms, and phrases, when used in this section, shall have the meanings ascribed to them, except where the context clearly indicates a different meaning:

- (1) **"Member of the Board of Ethics"** means an individual who occupies the position of a member of the Board of Ethics or a prospective member of the Board of Ethics.
- (2) **"Political Party"** means a national political party, a state political party, a political action committee, and/or any affiliated organization.
- (3) **"Election"** includes a primary, special, and general election.
- (4) **"Nonpartisan Election"** means:
 - (a) An election at which none of the candidates is to be nominated or elected as representing a political party, any of whose candidates for presidential elector received votes in the last preceding election at which presidential electors were selected; and
 - (b) An election involving a question or issue which is not specifically identified with a political party, such as a constitutional amendment, referendum, approval of a governmental ordinance, or

any question or issue of similar character.

- (5) **"Partisan"** when used as an adjective, refers to a political party.
- (6) **"Political Fund"** means any fund, organization, political action committee or other entity that, for purposes of influencing in any way the outcome of any partisan election, receives or expends money or anything of value or transfers money or anything of value to any other fund, political party, candidate, organization, political action committee or other entity.
- (7) **"Contribution"** means any gift, subscription, loan, advance, deposit of money, allotment of money, or anything of value given or transferred by one person to another, including in cash, by check, by draft, through a payroll deduction or allotment plan, by pledge or promise, whether or not enforceable, or otherwise.

(B) **Permissible Activities.** All members of the Board of Ethics are free to engage in political activity to the widest extent consistent with the restrictions imposed in this Section, which restrictions are imposed for the sole purpose of ensuring neutrality and the appearance of neutrality of the Board of Ethics. Each member of the Board of Ethics retains the right to:

- (1) Register and vote in any election;
- (2) Participate in the nonpartisan activities of a civic, community, social, labor, or professional organization or of a similar organization;
- (3) Be a member of a political party or other political organization and participate in its activities to the extent consistent with law;

- (4) Attend a political convention, rally, fundraising function, or other political gathering;
- (5) Sign a political petition as an individual;
- (6) Make a financial contribution to a political party or organization;
- (7) Take an active part, as a candidate or in support of a candidate, in a nonpartisan election;
- (8) Be politically active in connection with a question which is not specifically identified with a political party, such as a constitutional amendment, referendum, approval of a governmental ordinance or any other question or issue of a similar character;
- (9) Serve as an election judge or clerk or in a similar position to perform nonpartisan duties as prescribed by state or local law; and
- (10) Otherwise participate fully in public affairs in a manner which does not materially compromise his or her efficiency or integrity as a member of the Board of Ethics or the neutrality, efficiency or integrity of the Board of Ethics.

(C) **Prohibited Activities.**

- (1) A member of the Board of Ethics may not take an active part in political management or in a political campaign, except as permitted by subsection (B) of this section.
- (2) A member of the Board of Ethics shall not take part in or be permitted to do any of the following activities:
 - (a) Serve as an officer of a political party, a member of a national,

state, or local committee of a political party, an officer or member of a committee of a partisan political club, or be a candidate for any of these positions;

- (b) Organize or reorganize a political party organization or political club;
- (c) Directly or indirectly solicit, receive, collect, handle, disburse, or account for assessments, contributions or other funds for a partisan political purpose;
- (d) Organize, sell tickets to, promote or actively participate in a fundraising activity of a candidate in a partisan election or of a political party or political club;
- (e) Take an active part in managing the political campaign of a candidate for public office in a partisan election or a candidate for political party office;
- (f) Become a candidate for, or campaign for, an elective public office in a partisan election;
- (g) Solicit votes in support of or in opposition to a candidate for public office in a partisan election or a candidate for political party office;
- (h) Act as recorder, watcher, challenger or similar officer at the polls on behalf of a political party or a candidate in a partisan election;
- (i) Drive voters to the polls on behalf of a political party or a candidate in a partisan election;
- (j) Endorse or oppose a candidate for public office in a partisan

- election or a candidate for political party office in a political advertisement, broadcast, campaign literature, or similar material;
- (k) Serve as a delegate, alternate or proxy to a political party convention;
 - (l) Address a convention, caucus, rally or similar gathering of a political party in support of or in opposition to a partisan candidate for public office or political party office;
 - (m) Initiate or circulate a partisan nominating position.
- (3) Nothing contained in this section shall prohibit activity in political management or in a political campaign by any member of the Board of Ethics connected with a nonpartisan election or a nonpartisan issue of any type.

Section Twelve. **Limitation of Liability.**

No member of the Board of Ethics, or any person acting on behalf of the Board of Ethics, shall be liable to any person for any damages arising out of the enforcement or operation of this Ethics Ordinance, except in the case of willful or wanton conduct. This limitation of liability shall apply to the County, the members of the Board of Ethics, the employees of the Board of Ethics, and any person acting under the direction of the Board of Ethics.

Section Thirteen. **Advisory Opinion.**

The Board of Ethics shall render an advisory opinion based on a real or hypothetical set of circumstances when requested to do so in writing by a County Official or Employee related to that County Official's or Employee's conduct or transaction of business. Such advisory opinions shall be rendered pursuant only to a written request, fully setting forth the circumstances to be

reviewed by the Ethics Board. The proceedings of the Ethics Board pursuant to this section shall be held in public to the extent consistent with state law, and the opinions of the Ethics Board shall be made available to the public.

Section Fourteen. Complaints.

The Board of Ethics shall be responsible for hearing and deciding any complaints filed regarding alleged violations of this Ordinance by any person. The following procedures shall be followed when filing a complaint:

- (A) Any person may file a complaint alleging a violation of any of the provisions of this Ordinance by submitting it to the Chief of Operations (or his/her equivalent), who shall immediately deliver such complaint to the Chairman of the Board of Ethics or his or her designee. A copy of such complaint shall immediately be forwarded by registered mail to the County Official or Employee against whom the complaint was filed. The complaint must be supported by affidavits based on personal knowledge, shall set forth such facts as would be admissible in evidence, and shall show affirmatively that the affiant is competent to testify to the matters stated therein. All documents referred to in an affidavit(s) should be attached to the affidavit(s). The person filing the complaint shall verify the complaint by his or her signature thereon. A complaint must be filed within six (6) months of the date the alleged violation is said to have occurred, or in case of concealment or nondisclosure within six (6) months of the date the alleged violation should have been discovered after due diligence. In the event the Board of Ethics makes an initial determination that a complaint is technically deficient, the Board of Ethics shall submit a list of deficiencies to the complainant and offer the complainant the

opportunity to correct the deficiencies within seven (7) days prior to the complaint being dismissed for technical deficiencies.

- (B) Upon receipt of a complaint alleging misconduct, the County Official or Employee against whom the complaint was filed may reply to the complaint within thirty (30) days, unless such time for reply is extended by the Board of Ethics upon good cause shown. The response of the County Official or Employee must be supported by affidavits based on personal knowledge, must set forth such facts as would be admissible in evidence, and must show affirmatively that the affiant is competent to testify to the matters stated therein. All documents referred to in an affidavit(s) should be attached to the affidavit(s).
- (C) Within sixty (60) days of receipt of a complaint, the Board of Ethics shall conduct an investigatory review to determine whether specific substantiated evidence from a credible source(s) exists to support a reasonable belief that there has been a violation of this Ordinance. If after reviewing the complaint the Board of Ethics by vote determines that no specific, substantiated evidence from a credible source(s) exists to support a reasonable belief that there has been a violation of this Ordinance or determines that no violation occurred, it may dismiss the complaint without further proceedings. In the event a complaint is dismissed based upon the merits of the complaint, the complaint may not be re-filed.
- (D) If the Board of Ethics determines that specific, substantiated evidence from a credible sources(s) exists to support a reasonable belief that there has been a violation of this Ordinance, certified written notice of a hearing, containing the time, date and place of such hearing, shall be given to each party by the Board of

Ethics, and a formal public hearing shall be conducted and both parties afforded an opportunity to be heard. Any formal public hearing shall be conducted in accordance with the requirements of due process. The Board of Ethics is authorized to swear witnesses.

- (E) Any final determination resulting from the hearing shall include written findings of fact and conclusions of law. The Board of Ethics shall determine if clear and convincing evidence shows any violation of this Ordinance.
- (F) Nothing in this section shall be considered to limit or encumber the right of the Board of Ethics to initiate an investigation on its own cognizance as it deems necessary to fulfill its obligations under this Ordinance.

Section Fifteen. **Disciplinary Action.**

- (A) Upon a determination that an employee has violated this Ordinance, the Board of Ethics may recommend the following penalties and actions:
 - (1) Written warning or reprimand;
 - (2) Suspension without pay;
 - (3) Termination of employment; and
 - (4) Repayment to the County of any unjust enrichment.
- (B) Upon a determination that a County Official has violated this Ordinance, the Board of Ethics may recommend the following penalties and actions:
 - (1) Written warning, censure, or reprimand;
 - (2) Removal from office to the extent provided by Georgia law; and
 - (3) Repayment to the County of any unjust enrichment.
- (C) Upon direction of the Board of Ethics, a petition may be filed for injunctive relief,

or any other appropriate relief, in the county superior court, or in any other court having proper venue and jurisdiction, for the purpose of requiring compliance with the provisions of this Ordinance. In addition, the court may issue an order to cease and desist from the violation of the Ordinance. The court also may void an official action that is the subject of the violation, provided that the legal action to void the matter was brought within ninety (90) days of the occurrence of the official action, if the court deems voiding the action to be in the best interest of the public. The court, after hearing and considering all the circumstances in the case, may grant all or part of the relief sought. However, the court may not void any official action appropriating public funds, levying taxes or providing for the issuance of bonds, notes or other evidences of public obligation under this Ordinance.

- (D) In addition to any other remedy provided herein, upon determination of a violation of this Ordinance, the Board of Ethics may recommend to the Board of Commissioners in writing that any contract, bid, or change order that was the subject of the violation should be cancelled or rescinded. The Board of Commissioners, however, shall retain the discretion to determine whether such a cancellation or rescission would be in the best interest of the County and shall not be bound in any way by a recommendation of the Board of Ethics.
- (E) The Ethics Board may also forward its findings of fact and conclusions of law to the Barrow County District Attorney's Office and/or the Office of the Governor for appropriate action.

Section Sixteen. **Judicial review.**

- (A) Any party against whom a decision of the Board of Ethics is rendered may obtain

judicial review of the decision by writ of certiorari to the superior court of the County. The application for the writ must be filed within thirty (30) days from the date of the written decision. Judicial review shall be based upon the record. No party shall be entitled to a de novo appeal.

- (B) Upon failure to timely request judicial review of the decision by writ of certiorari as provided in this section, the decision shall be binding and final upon all parties.
- (C) The appellate rights afforded hereunder shall be in lieu of any right to appeal an adverse employment action under the Barrow County Civil Service System, to the extent the County Official or Employee may be subject to the Civil Service System.

ARTICLE SIX: MISCELLANEOUS

Section One. Severability.

If any provision of this Ordinance is found by a court of competent jurisdiction to be invalid or unconstitutional, or if the application of this Ordinance to any person or circumstances is found to be invalid or unconstitutional, such invalidity or unconstitutionality shall not affect other provisions or applications of this Ordinance which can be given effect without the invalid or unconstitutional provision or application.

Section Two. Repealer.

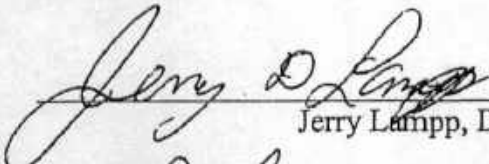
All laws, resolutions, or ordinances or parts thereof that conflict with the provisions of this Ordinance are hereby repealed.

Section Three. Effective Date.

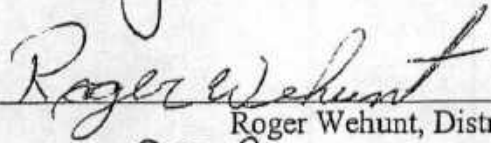
The effective date of this Ordinance shall be July 1, 2004.

PASSED AND ADOPTED THIS 13th DAY OF June, 2004.

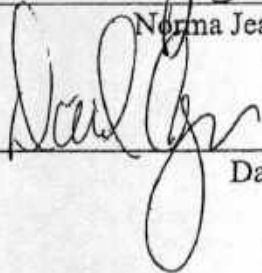
BARROW COUNTY BOARD OF COMMISSIONERS


Jerry Lampp, District 1


William Brown, District 2

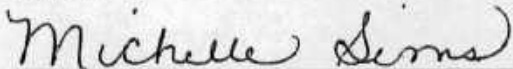

Roger Wehunt, District 3


Norma Jean Brown, District 4


David Dyer, District 5


Thad Brasfield, District 7

Attest:


Michelle Sims, Clerk
Barrow County Board of Commissioners