114 North Commerce Street
Hinesville, Georgia 31313
(912) 368-5664 Office

TR LONG ENGINEERING, P.C.

302 South Zetterower Avenue
Statesboro, Georgia 30458
(912) 355-1046 Office

# SOUTH MACON STREET WATER AND SEWER EXTENSION
# FOR
# THE CITY OF JESUP

**BID DOCUMENTS**

**NOVEMBER 2026**

**PREPARED FOR**

**CITY OF JESUP**
**BILL SHUMAN**
**162 EAST CHERRY STREET**
**JESUP, GEORGIA 31546**

**2026-163**

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# ADVERTISEMENT FOR BIDS FOR

# SOUTH MACON STREET WATER AND SEWER EXTENSION
# FOR
# THE CITY OF JESUP

Sealed bids will be received by the City of Jesup at 162 East Cherry Street, Jesup, Georgia 31546 until 2:00 P.M. local time on January 7, 2027, at which time and place they will be publicly opened and read. No submitted bid may be withdrawn after the scheduled closing time for receipt of bids for a period of sixty (60) days.

The work shall consist of the construction of approximately 1435 feet of 8" PVC gravity sewer with manholes and appurtenances as well as the installation of approximately 775 feet of 8" PVC water main.

Bids for the complete work in one or more general contracts shall be made on the bid form provided and shall contain prices in words and figures for the work bid. All bids shall he accompanied by a Bid Bond drawn in favor of the City of Jesup, in the amount of at least five percent (5%) of the lump sum bid for the complete work; such Bid Bond representing that the Bidder, if awarded the contract will promptly enter into a contract and furnish Performance Bond and Payment Bond as provided by law and approved by the Attorney for the City of Jesup. Each bond shall be equal to one hundred percent (100%) of the contract amount. The Bid Bond shall be forfeited to the City of Jesup as liquidated damages if the Bidder fails to execute the contract and provide Performance and Payment Bonds within ten (10) days after being notified that he has been awarded the contract.

Drawings and Specifications are open to public inspection at the office of the City of Jesup and at the offices of T. R. Long Engineering, P.C. These documents are also available to view at trlongeng.com.

Copies of the plans and specifications must be obtained from T. R. Long Engineering, 114 North Commerce Street, Hinesville, Georgia, 31313, upon receipt of $150.00. Such fees represent reproduction cost and are non-refundable. Bidders must purchase a Bid Packet to be a registered bidder. Only bids from registered bidders will be opened.

The Owner reserves the right to reject any or all bids and to waive informalities.

**INSTRUCTIONS TO BIDDERS**

1. INTENTION: It is intended that the Project Documents shall cover the complete work to which they relate.

2. DEFINITION: Where the following words, or the pronouns used instead occur herein, they shall have the following meaning:

   “Owner” shall mean the City of Jesup party of the first part to the "Contract Agreement" or its authorized and legal representative.

   "Engineer" shall mean **T. R. Long Engineering, P.C** of 114 North Commerce Street, Hinesville, GA, 31313 acting for the Owner or other representative of such party.

   "Contractor" shall mean the party of the second part to the following agreement, or the legal authorized representatives of such party.

   WORK TO BE DONE: The work to be done consists of furnishing all materials, labor and equipment for construction of **South Macon Street Water and Sewer Extension for the City of Jesup** complete with appurtenances, all as set forth in the Bid, as specified herein, and as shown on the Drawings.

3. MATERIALS AND WORK BY THE OWNER: The Owner will neither furnish materials nor perform labor for construction of work under this contract, unless otherwise stipulated elsewhere in the Project Documents.

4. SITE EXAMINATION: The Bidder is expected and requested to examine the location of the work, and to inform himself fully as to the structural and mechanical conditions; the conformation of the ground; the character, quality, and quantity of the materials to be encountered; the character of equipment and facilities needed to execute the work; the general and local conditions; and all other matters which can in any way affect the work to be done under the contract.

   A sub-surface investigation has not been made on any portion of the work. The prospective bidder must form his own opinion of the character of the sub-surface materials to be encountered in excavating for and the construction of the various facilities

5. BIDS: All Bids must be made upon the Bid forms provided and shall be for materials and work called for in the specifications and shown for each item in the Bid. The total amount bid for the work in the Bid shall be given in words and figures in the spaces provided. Bid forms shall not be detached from these Specifications. All blank spaces in the bid form shall be filled in with black ink in words and figures. The Certification must be completed and executed when submitted.

   A. Unit Price Items: The itemized quantities given in the Bid for unit price work shall be considered by the Contractor as the quantities required to complete the work. Should the actual quantities required in the construction of the work be greater or less than the quantities shown in the items, an amount equal to the difference in quantities at the unit prices bid for the item will be added to or deducted from the contract price.

   B. Lump Sum Price: Where itemized prices are not given in the Bid, the Contractor shall consider the lump sum prices bid for the work shown on the Drawings and/or specified to be sufficient for completion of his Contract.

   C. Total Amount Bid: The correct total amount bid is defined as the correct sum total of the amount bid for the items in the Bid. The correct amount bid for each unit price item is defined as the product of the quantity listed in the Bid for the item, multiplied by the unit price bid.

   D. The bids must be enclosed in a sealed envelope addressed to the **City of Jesup and marked “South Macon Street Water and Sewer Extension for the City of Jesup”.** Bids may be submitted intact in this book or may be submitted detached from the book. The sealed

bid must contain items listed below if any item is missing the bid may be considered irregular and bid may not be considered.

1. Completed Proposal Form and Schedule of Items.
2. Completed and executed surety documents.
3. Executed Surety Requirement Form.
4. Completed Statement of Bidder's Qualifications with References.
5. Completed Corporate Certificate Form
6. Completed Illegal Immigration Reform Affidavit for contractor.
7. List of Subcontractors

6. RECEIPT AND OPENING OF BIDS: Bids must be filed with the Owner at or before the hour specified in the advertisement, and Bids filed after the specified time will not be considered. Bids sent by mail must be mailed with sufficient time allowed for the bid to reach the Owner prior to the opening of bids.

   The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within sixty (60) days after the actual date of the opening thereof.

   Conditional bids shall not be considered.

   Bidders are requested to be present at the opening of Bids, which will be in public.

7. BID SECURITY: Each Bid must be accompanied by a certified check or by a Bid Bond in an amount equal to not less than five percent (5%) of the amount of the Bid, to guarantee that the Successful Bidder will, within ten (10) days from the date of the notice of award of contract, enter into an Agreement with the Owner, and execute to the Owner a Performance Bond and Payment Bond, each equal to 100% of the contract amount, the agreement and bonds to be in the form set forth in this Book. If for any reason whatsoever the Bidder withdraws from the competition after the Bid opening time, or refuses to execute the required agreement and bonds, if his Bid is accepted, the Owner may retain the amount of the certified check, or proceed on the Bid Bond. The surety on the Performance Bond and the Payment Bond shall be a surety company authorized to do business in the State of Georgia and shall be countersigned by an agent residing in the State of Georgia. The bonds and surety thereon shall be subject to approval by the Attorney for the Owner.

8. RIGHT TO REJECT BIDS: The Owner reserves the right to reject all bids, and to waive informalities. No bids will be received after the Bid opening time. Unauthorized conditions, limitation, and provisions attached to the Bid, except as provided herein, will render it informal and cause its rejection. Unbalanced bids will be subject to rejection. Any Bidder may withdraw his bid, either personally or by telegraphic or written request, at any time prior to the Bid opening time.

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

10. DETERMINATION OF LOW BID: The contract will be awarded, if it is awarded, to the low, responsible, responsive bidder. The Owner will decide which is the low, responsible, responsive bidder. Responsiveness shall be defined by (a) the completeness and regularity of Bid Form, (b) a bid form without exclusions or special conditions, and (c) a bid form having no substitute bids for any items except as allowed under these Specifications. Responsibility will be based on whether the Bidder involved (a) maintains permanent place of business; (b) has adequate equipment to do

the work properly and within the time limit established; (c) has suitable financial status to meet obligations incident to the work; and (d) has appropriate technical experience.

A. The Bidder is requested to list prices of at least two manufacturers for each item of major equipment if listed on the Bid form. Use lowest price for base bid. If the make of any item listed in the base bid column does not meet specifications, the next lowest priced make listed for that item which does meet specifications will be used in determining the lowest bid price. If all of the listed makes of the item failed to meet specifications, the bid will be rejected on the grounds that it is nonresponsive.

B. The Owner has the right to apply any or all "Deductions or Additions" (if any), listed in the proposal by the Engineer, for the purpose of making an award.

11. RETURN OF BID SECURITY: Owner will, within ten (10) days following the Bid opening, return the Bid security of all Bidders, except the Security posted by the three lowest Bidders; upon the award and execution of the contract, the remaining Bid securities will be promptly returned.

12. INTERPRETATION OF DRAWINGS AND SPECIFICATIONS: If any person contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of -the Drawings, Construction Specifications and other documents, and as to the scope of any part of the work, he must submit to the Engineer a written request for an interpretation thereof The person submitting the request will be responsible for its prompt delivery in ample time for an interpretation to be issued before the Bid opening date. Interpretations of the Project Documents will be made only by Addendum; a copy of each Addendum will be mailed or delivered to each person receiving a set of the Project Documents. The Engineer will not be responsible for other interpretations of the Project Documents.

13. COMPLETE WORK REQUIRED: The Construction Specifications, Drawings and all other documents are essential parts of the contract; requirements occurring in one are as binding as though occurring in all. Documents are intended to be cooperative, and to describe and provide for a complete work. In case of discrepancies on the Drawings, figured dimensions shall govern. In case of omissions from the Construction Specifications as to items of equipment, and materials or quantities therefore, the Drawings shall govern. It shall be the responsibility of the Bidder to call to the attention of the Engineer obvious omissions of those magnitudes which would affect the strength, adequacy, function, completeness (and cost of any part of the work, and in ample time for amendment by Addendum prior to the Bid opening date).

14. SUBCONTRACTS: The Bidder's attention is directed to the General Conditions concerning subcontracts. The Bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this contract.

A. Must be acceptable to the Owner. Approval will not be given until the Contractor submits to the Owner a written statement concerning the proposed award to the subcontractor, which statement shall contain such as the Owner may require.

B. Must provide insurance equal to that of the bidding contractor. Approval of the proposed subcontract award cannot be given by the Owner unless and until the proposed subcontractor has submitted the Certification and or other evidence showing that it has fully complied with any reporting requirements to which it is or was subject.

Although the bidder is not required to attach such Certifications by proposed subcontractors to his bid, the bidder is here advised of this requirement so that appropriate action can be taken to prevent subsequent delay in subcontract awards.

15. DRAWINGS: The character, location, and essential details of the work are shown upon a set of Drawings, entitled:

**SOUTH MACON STREET WATER AND SEWER EXTENSION**
**FOR**

The Drawings and Specifications shall form a part of the contract for the work. The Drawings shall be supplemented by working drawings as necessary. All authorized alterations affecting the requirement and information given on the Drawings shall be in writing.

16. EXTRA WORK ITEMS IN BID: The Bid contains certain unit price items entitled "Extra Work If Ordered by Engineer". In each of those items, the estimated quantity is based upon the average amount of extra work encountered in a typical job. The stated quantities are not guaranteed to be required or not to be required, but are included in the Bid in order to determine, in advance of construction, the actual low bidder. No work described by those items will be approved for payment without advance authorization by the Engineer.

17. NOTICE OF SPECIAL CONDITIONS: Attention is particularly called to those parts of the Contract Documents and Specifications which deal with the following:

    A. Inspection and testing of material
    B. Insurance requirements

18. POWER OF ATTORNEY: Attorneys-in-fact who sign Bid Bonds or Contract Bonds must file with each bond a certified and effectively dated copy of their Power of Attorney.

19. AUTHORITY TO SIGN: If a Bid is made by an individual, his name and Post Office address must be shown. If made by a firm, or partnership, the name and Post Office address of each member of the firm or partnership must be shown. If made by a Corporation, the person, or persons, signing the Bid must show the name of the State under the laws of which the Corporation is chartered and his or their, authority for signing same, and the names, titles and addresses of the President Secretary and Treasurer, and the Corporate Authority for doing business in this state.

20. WORKING DRAWINGS: Working drawings for any structure shall consist of such detailed plans as may be required for the prosecution of the work but not included in the plans. All necessary working drawings shall be furnished by the Contractor. They shall include shop details, erection plans, masonry layout diagrams, and bending diagrams for reinforcing steel, approval of which by the Engineer must be obtained before any work involving these plans may be performed. Plans for false-work, centering and form work may also be required and such cases shall be likewise subject to approval by the Engineer.
    It is expressly understood, however, that approval by the Engineer of the Contractor's working drawings does not relieve the Contractor of any responsibility for accuracy of dimensions and details. The Contractor shall be responsible for agreement and conformity of his working drawings with the Drawings and Specifications.

    The contract price shall include the cost of furnishing all working drawings and the Contractor will be allowed no extra compensation for such drawings.

21. COOPERATION OF CONTRACTOR: The Contractor will be supplied with five (5) copies of the Drawings and Specifications. The Contractor shall have available on the work, at all times, one (1) copy of each of said Drawings and Specifications. He shall give the work the constant attention necessary to facilitate the progress thereof and shall cooperate with the Engineer and with other contractors in every way possible. The Contractor shall at all times have a Superintendent, satisfactory to the Engineer, capable of acting as his agent on the work, who shall receive instructions from the Engineer or his authorized representatives. The superintendent shall have full authority to execute the orders or directions of the Engineer without delay and to promptly supply such materials, tools, plant equipment and labor as may be required.

22. CONSTRUCTION STAKES: Subsidiary lines and grades shall be laid out by the Contractor from the controlling lines and bench marks furnished by the Engineer or from measurements shown on the Drawings. All lines and grades shall be subject to checking by the Engineer, but this checking shall in no way relieve the Contractor from responsibility for their correctness.

The Contractor shall provide such stakes, materials, and such labor and assistance as the Engineer may require in laying out work, establishing bench marks and checking and measuring the work.

23. AUTHORITY AND DUTIES OF INSPECTOR: Inspectors shall be authorized to inspect all work done and materials famished, including preparation, fabrication and manufacture of the materials to be used. The Inspector shall not be authorized to alter or waive any requirements of the Specifications. He shall call the attention of the Contractor to any failure of the work or materials to conform to the Specifications and Contract. He may reject materials or suspend the work until any questions at issue can be referred to and decided by the Engineer.

    The presence of the Inspector shall in no way lessen the responsibility of the Contractor. The Contractor in no way relieves himself of responsibility for adequacy of the work by following the directives of the Inspector.

24. INSPECTION: The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether or not the work performed and materials used are in accordance with the requirements and intent of the Specifications and Contract. No work shall be done or materials used without suitable supervision or inspection by the Engineer or his representative. Failure to reject any defective work or materials shall not in any way prevent later rejection when such defect is discovered, or obligate the Owner to final acceptance.

    All materials furnished and work done when not in accordance with the Specifications and Contract will be rejected and shall immediately be removed and other work done and materials furnished in accordance therewith. If the Contractor fails to remove the work and materials as above ordered, within forty-eight (48) hours, then the Engineer shall have the right and authority to stop the Contractor and his work at once and to supply men and material at the cost and expense of the Contractor to remove said work and materials.

25. DEFECTIVE WORK AND MATERIALS: The inspection of the work shall not relieve the Contractor of any of his obligations to fulfill his Contract and defective work shall be made good, notwithstanding that such work and materials have been previously inspected by the Engineer and accepted or estimated for payment. The failure of the Engineer to condemn improper materials or workmanship shall not be considered as a waiver of any defect which may be discovered later, or as preventing the Owner at any time subsequently from recovering damages for work actually defective. All work shall be guaranteed against defects in workmanship or materials for a period of one year after final acceptance.

26. CORRECTIONS: Should any portions of the Drawings and Specifications be obscure or in dispute, they shall be referred to the Engineer and he shall decide as to the true meaning and intent. He shall also have the right to correct any errors or omissions at any time when such corrections are necessary for the proper fulfillment of said Drawings and Specification.

27. DISAGREEMENT: Should any disagreement or difference arise as to the estimated quantities or classifications or as to the meaning of the Drawings or Specifications, on any point concerning the character, acceptability and nature of the several kinds of work, any materials and construction thereof, the decisions of the Engineer shall be final and conclusive and binding upon all parties to the Contract.

28. WEATHER: During unseasonable weather, all work must stop when the Engineer so directs and all work must be suitably protected.

29. RIGHT OF WAY: The necessary land for the construction of the work will be furnished by the Owner. The Contractor is directed to the Owner for right-of-way actually acquired. The Owner will provide no right-of-way over other property. The contractor shall take every possible precaution to inconvenience as little as possible the owners and tenants of adjacent property. Public highways shall not be obstructed in such a way as to cut off traffic. The Contractor shall, at his own expense, repair any damage or injury to either public or private property during the progress of the work. Wholesale cutting of trees on the right-of-way will not be permitted except as necessary for construction.

30. CONSTRUCTION SCHEDULE: A construction schedule showing the work in the order proposed by the Contractor and the time required to complete each phase will be required and shall be submitted to the Engineer for approval. Approval of the construction schedule is required prior to receipt of the notice to proceed. This schedule shall include the dates for beginning and completion of all phases of the work. If, in the opinion of the Engineer, the Contractor falls behind in his schedule or will not be able to complete the project in the time limits, he may require the Contractor to revise his schedule and put additional equipment on the job as so ordered.

31. ORDER OF WORK: The order or sequence of the work shall be as provided herein or as approved by the Engineer, which approval shall in no way affect the responsibility of the Contractor.

32. COMPETENT LABOR: The Contractor shall employ only competent and skilled personnel on the work. The Contractor shall at all times have a Superintendent satisfactory to the Engineer, capable of acting as the Contractor's agent on the work and who shall receive instructions from the Engineer or his authorized representative. The Superintendent shall have full authority to execute the orders and directions of the Engineer without delay, and to promptly supply the materials, tools, plant equipment, and labor as may be required. The Contractor shall upon demand by the Engineer, immediately remove that Superintendent, Foreman, and Workman whom the Engineer may consider to be incompetent or undesirable, or both.

33. LAWS AND REGULATIONS: The Contractor shall keep himself fully informed of all laws, ordinances, and regulations of State 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, he shall forthwith report the same in writing to the Owner. He shall at all times himself 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 claims or liability arising from or based on the violation of any such law, ordinance, regulation, order of decree, whether by himself or by his employees.

34. PROTECTIVE WORKS: The Contractor shall furnish and install all necessary temporary works for the protection of the work, including barricades, warning signs, and lights at night.

35. SAFETY AND OSHA REGULATIONS: The performance of work under this Contract shall comply with safety regulations prescribed by the Owner, those of the National Occupational Safety and Health Act of 1970. (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-054), and the requirements of the State where project is located. Each bidder shall satisfy himself as to the character and extent of such regulations.

36. SANITARY REGULATIONS: Necessary sanitary conveniences for the use of the laborers on the work shall be erected and maintained by the Contractor in such a manner and at such points as shall be approved by the Engineer. Their use shall be strictly enforced.

37. STORAGE FACILITIES: Should the Contractor so desire, he may build storage facilities or other structures for housing men, tools, machinery and supplies, but they will be permitted only at approved places, and their surroundings shall be maintained at all times in a sanitary and satisfactory manner. On or before the completion of the work, all such structures shall be removed, together with all rubbish and trash, at the expense of the Contractor.

38. WATER SUPPLY: The water for the Contractor's use shall be supplied by the Contractor. The Contractor shall make his own arrangements for obtaining a water supply for his construction operations.

39. ELECTRIC POWER: The Contractor shall make his own arrangements for electrical power supply for his construction operations.

40. SOIL EROSION: The Contractor shall be required to take the necessary steps to minimize siltation and soil erosion during construction.

41. ACCESS ROADS: Streets, roads and drives used by the Contractor for access to and from the site of his work shall be protected from damage in connection with construction work. Any such damage done shall be repaired immediately and left in good condition at the end of the construction period.

42. PROGRESS PAYMENT: On or before the 15th day of each calendar month the Owner shall make progress payments to the Contractor on the basis of a duly certified and approved estimate of work performed during the preceding calendar month by the Contractor, including materials delivered to the site and undelivered specifically manufactured equipment, less retainage as per Paragraph 19 of the General Conditions which is to be retained by the Owner until all work has been performed strictly in accordance with the Contract Documents and until such work has been accepted by the Owner. Progress payment requests from the Contractor shall be submitted to the Engineer for approval on or before the 1st day of each calendar month.

43. ALLOWABLE TIME FOR COMPLETION: The time allowed for completion on all work to be done under this contract shall begin after notification by the Engineer to proceed with the work. Such notification will be issued upon completion of the contract arrangements, and in accordance with approved construction schedule, arranged to be within the contract time for completion. The time allowed for completion of the work is for 90 calendar days.

44. LIQUIDATED DAMAGES: The Contractor shall pay to the Owner as liquidated damages the sum of **ONE THOUSAND ($1,000.00)** dollars for each calendar day that he shall be in default of completing the work in his Contract within the time limit named therein.

45. SALES TAX AND/OR USE TAX: Bidders shall include in amounts bid in the Bid an allowance for payment of state Sales Tax and/or Use Tax on 0 taxable materials specified to be furnished by the Contractor and incorporated into the work under this Contract.
46. CONTRACTOR'S LOCAL OFFICE: The Contractor shall maintain a local office with a telephone in the general area of the work, and will be required to have a responsible representative on call at all times.

47. MUTUAL RESPONSIBILITY OF CONTRACTORS: If, through acts of neglect of the part of the Contractor, any other Contractor or any subcontractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other Contractor or subcontractor by agreement of arbitration if such other Contractor or subcontractor shall assert any claims against the Owner, on account of any damage alleged to have been so sustained, the Owner shall notify the Contractor who shall indemnify and save harmless the Owner against such claim.

48. EMERGENCY WORK: The Contractor shall at all times (nights, weekends or holidays) have a responsible man available to act in case of emergency repairs who the Owner may contact. Upon notification of emergency work necessary, the Contractor's representative shall immediately take steps to make such repairs.

49. INSURANCE REQUIREMENTS: The Contractor's attention is directed to requirements for insurance coverage as set forth in the General Conditions.

50. FLOOD HAZARD INSURANCE: The Contractor will be required to acquire and maintain during the life of the contract any flood insurance made available under the National Flood Insurance Act of 1968, as amended. The insurance shall be in an amount at least equal to the contract amount costs, excluding cost of uninsurable improvements, or to the maximum limit of coverage made available under the National Flood Insurance Act of 1968, as amended, whichever is less.

51. BUILDING PERMITS AND BUSINESS LICENSE: The Contractor shall be required to obtain applicable Building Permits and Business Licenses as required by the City of Jesup, Georgia**.**

52. PAVEMENT MARKINGS: All pavement markings will be completed in accordance with the "Standard Specifications for Construction of Roads and Bridges; as published by The Georgia

Department of Transportation. All paint will be in accordance with section 652-High Build Standard and wet weather paint traffic stripe.

53. OPTIONAL ITEMS: Anything that is listed as an optional item within the Schedule of Items may be removed from the contract by the owner or the engineer.

WAYNE COUNTY, GEORGIA

**BID FORM**

TO: City of Jesup
162 East Cherry Street
Jesup, Georgia 31546

Gentlemen:

In compliance with your Notice To Contractors, the undersigned, hereinafter termed the Bidder, proposes to enter into a Contract with City of Jesup to provide the necessary machinery, tools, apparatus, and other means of construction, and all materials and labor specified in the Contract, necessary to complete the work in the manner therein specified within the time specified, as therein set forth, for:

**SOUTH MACON STREET WATER AND SEWER EXTENSION**
**FOR**
**THE CITY OF JESUP**

The Bidder has carefully examined and fully understands the Contract, Plans and Specifications, and other Contractual Documents hereto attached, and has made a personal examination of the Site of the proposed Work, and has satisfied himself as to the actual conditions and requirements of the Work, and hereby proposes and agrees that if his bid is accepted, he will contract with the City of Jesup in full conformance with the Contract Documents.

It is the intent of this Bid to include all items of construction and all Work indicated on the Drawings and called for in the Specifications.

In accordance with the foregoing, the undersigned proposes to furnish and construct the items listed in the attached Schedule of Items for the unit prices stated.

The Bidder agrees that the cost of any work performed, materials furnished, services provided or expenses incurred, which are not specifically delineated in the Contract Documents but which are incidental to the scope, intent, and completion of the Contract, shall be deemed to have been included in the prices bid for the various items scheduled.

The bidder further proposes and agrees hereby to promptly commence the Work with adequate force and equipment within ten (10) calendar days from receipt of Notice to Proceed, and to complete the Work within 120 calendar days.

The Bidder declares that he understands that the quantities shown for unit price items, are approximate only, are valid only upon written authorization of the County Engineer, and are subject to either increase or decrease and that should the quantities of any items of work be increased, the Bidder proposes to do the additional at the unit prices stated herein; and should the quantities be decreased, the Bidder also understands that payment will be made on the basis of actual quantities at the unit price bid and will make no claim for anticipated profits for any decrease in quantities, and that actual quantities will be determined upon completion of the work, at which time adjustment will be made to the Contract amount by direct increase or decrease.

Attached hereto is an executed Bid Bond or certified check on the (Bank) _____ of (City, State) _____ for _____ Dollars. ($_____) (Five Percent of Amount of Bid).

If this Bid shall be accepted by the City of Jesup and the undersigned shall fail to execute a satisfactory contract in the form of said proposed Contract, and give satisfactory Performance and Payment Bonds, or furnish satisfactory proof of carriage of the insurance required, within fifteen days from the date of Notice

of Award of the Contract, then the City of Jesup may at its option, determine that the undersigned abandoned the Contract and thereupon this Bid shall be null and void, and the sum stipulated in that attached Bid Bond or certificate check shall be forfeited to the City of Jesup as liquidated damages.

Bidder acknowledges receipt of the following addenda:

| Addendum No. | Date Received |
|---|---|
| _____ | _____ |
| _____ | _____ |

Bidder further declares that the full name and resident address of all persons and parties interested in the foregoing bid as principals are as follows:

---

_____
By (Signature)

Printed Name _____

Title _____

Signed, sealed, and dated this _____ day of _____, 20__.

Bidder: _____ (Seal)
(Company Name)

Bidder Mailing Address:
_____

_____

_____

Phone #_____

By: _____

Title: _____

**SCHEDULE OF ITEMS**
**FOR**
**SOUTH MACON STREET WATER AND SEWER EXTENSION**
**TRL JOB #: 2026-163**

| ITEM | DESCRIPTION | QUANTITY | | COST | |
|---|---|---|---|---|---|
| | | NUMBER OF UNITS | UNIT MEASURE | PER UNIT | TOTAL COST |
| 1 | Clearing and Grubbing | 1.0 | AC | | |
| 2 | Connect to Existing Manhole | 1 | EA | | |
| 3 | 8" PVC Gravity Sewer | | | | |
| a | 0'-6' Depth | 865 | LF | | |
| b | 6' - 8' Depth | 570 | LF | | |
| 4 | Standard Manhole | 2 | EA | | |
| 5 | Lined Manhole | 2 | EA | | |
| 6 | Verticle Risers (Lined) | 2 | VF | | |
| 7 | 8" x 4" WYE | 1 | EA | | |
| 8 | 4" PVC Sewer Service | 20 | LF | | |
| 9 | Remove and Replace Chain Link Fence | 50 | LF | | |
| 10 | Pavement Removal and Replacement (Pavement) | 31 | SY | | |
| 11 | Remove and Replace Concrete Walkways (4" concrete) | 24 | SY | | |
| 12 | Connect to Existing 8" PVC Watermain | 1 | EA | | |
| 13 | 8" PVC Watermain | 775 | LF | | |
| 14 | 6" PVC Water Service | 10 | LF | | |
| 15 | Fittings | 0.5 | TON | | |
| 16 | Fire Hydrants | 2 | EA | | |
| 17 | 6" GV with Valve Box | 3 | EA | | |
| 18 | 8" GV with Valve Box | 2 | EA | | |
| 19 | Hay Bale Check Dam | 1 | EA | | |
| 20 | Mulching | 1.0 | AC | | |
| 21 | Temporary Grassing | 1.0 | AC | | |
| 22 | Permanent Grassing | 1.0 | AC | | |
| 23 | Mobilization (Max 3%) | 1 | SUM | | |
| | **GRAND TOTAL** | | | | |
| **GRAND TOTAL IN WORDS:** | | | | | |

**STATEMENT OF BIDDER'S QUALIFICATIONS**

To accompany bid submitted for construction of **South Macon Street Water and Sewer Extension for the City of Jesup.**

Full legal name of Bidder: _____

Business Address: _____

Business Phone Number: _____

Bidder is a (check one) Corporation ___ Partnership ___ Individual Proprietorship ___

Other ___ (Specify) _____

Year Organized: _____ Year Incorporated: _____

If Bidder is a partnership, list all names of all partners: _____

_____

How many years have you been in the contracting business under the present firm name?

_____

Credit available for this contract: $_____

Contracts now in hand, Gross Amount: $_____

Have you ever refused to sign a contract at your original bid? _____

Have you ever defaulted on a contract? _____

Remarks: _____

(The above statements must be subscribed and sworn to before a Notary Public)

Sworn to and subscribed before me,

This _____ day of _____ , 20__.

_____

(Notary Public)

Date: _____

Firm Name: _____

_____

By: _____

Title: _____

REFERENCES:

Provide references for work completed, minimum of six, three within the last 12 months of similar size and nature. References will afford the owner opportunity to judge as to capabilities and performance of the contractor.

Provide name, brief description, address, phone number and contact person for each project listed. Failure to complete this section in its entirety will be grounds for rejection.

WAYNE COUNTY, GEORGIA

**CORPORATE CERTIFICATE**

I, _____, certify that I am the Secretary of the Corporation named as Contractor in the foregoing bid; that _____ _____, who signed said bid in behalf of the Contractor, was then (Title)_____of said Corporation; that said bid was duly signed for and in behalf of said Corporation by authority of its Board of Directors, and is within the scope of its corporate powers, that said Corporations organized under the laws of the State of _____.

This _____day of _____, 20__.

_____ (SEAL)
Signature

WAYNE COUNTY, GEORGIA

## SURETY REQUIREMENTS

A Bid Bond for five percent (5%) of the amount of the bid is required to be submitted with each bid.

A Performance Bond for one hundred percent (100%) of the bid will be required of the successful bidder.

The Bidder certifies that he/she has examined all documents contained in this bid package, and is familiar with all aspects of the Bid and understands fully all that is required of the successful bidder. The Bidder further certifies that his/her bid shall not be withdrawn for ninety (90) days from the date on which the bid is publicly opened and read.

The Bidder agrees, if awarded this bid, he/she will:

A. Furnish, upon receipt of an authorized City of Jesup Purchase Order or Notice of Award, all items indicated thereon as specified in this bid proposal for the bid amount, or;

B. Enter a contract with the City of Jesup to do and/or furnish everything necessary to provide the service and/or accomplish the work as stated and/or specified in this bid proposal for the bid amount, and;

C. Furnish, if required, a Performance Bond, and acknowledges the right of the City of Jesup to require a Performance Bond of a specific kind and origin, and;

D. Forfeit the amount of the Bid Bond as liquidated damages if he/she fails to enter a contract with the City of Jesup as stated in (B) above, within ten (10) days of the date on which he/she is awarded the bid, and/or;

E. Forfeit the amount of the Performance Bond as liquidated damages if he/she fails to execute and fulfill the terms of the contract entered. The amount of forfeiture shall be:

1. The difference between his/her bid and the next lowest, responsible bid that has not expired or been withdrawn, or;

2. The difference between his/her bid and the amount of the lowest, responsible bid received as a result of re-bidding, including all costs related to re-bidding.

COMPANY_____ DATE_____

SIGNATURE_____ TITLE_____

TELEPHONE NUMBER_____

WAYNE COUNTY, GEORGIA

**BID BOND**

KNOW ALL MEN BY THESE PRESENTS, THAT WE _____ (hereinafter called the Principal) and _____ (hereinafter called the Surety), a Corporation chartered and existing under the laws of the State of Georgia with its principal offices in _____ and authorized to do business in the State of Georgia, are held and firmly bound unto the CITY OF JESUP, GEORGIA in the full and just sum of_____ Dollars ($_____) good and lawful money of the United States of America, to be paid upon demand of the CITY OF JESUP, GEORGIA, to which payment well and truly to be made, we bind ourselves, our heirs, executors, administrators, and assigns jointly and severally and firmly by these presents.

WHEREAS, the Principal is about to submit, or has submitted, the CITY OF JESUP, GEORGIA, a Bid for furnishing materials, labor and equipment for:

**SOUTH MACON STREET WATER AND SEWER EXTENSION**
**FOR**
**THE CITY OF JESUP**

WHEREAS, the Principal desires to file this Bond in accordance with law in lieu of a certified Bidder's check otherwise required to accompany this Bid.

NOW, THEREFORE, the conditions of this obligation are such that if the Bid be accepted, the Principal shall within ten (10) days after receipt of notification of the acceptance, execute a Contract in accordance with the Bid and upon the terms, conditions, and prices set forth in the form and manner required by the CITY OF JESUP, GEORGIA, and execute a sufficient and satisfactory Performance Bond and Payment Bond payable to the CITY OF JESUP, GEORGIA, each in an amount of 100% of the total contract price, in form and with security satisfactory to said the CITY OF JESUP, GEORGIA, and otherwise, to be and remain in full force and virtue in law; and the Surety shall, upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above, immediately pay to the CITY OF JESUP, GEORGIA, upon demand, the amount hereof in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

IN TESTIMONY THEREOF, the Principal and Surety have caused these presents to be duly signed and sealed this _____ day of _____, 20__.

_____ (SEAL)
Surety

_____ (SEAL)
Principal

BY: _____

BY: _____

OCCUPATIONAL TAX CERTIFICATE - Vendors/Contractors whose Business is located within the unincorporated area of WAYNE COUNTY, GEORGIA, or within any of the incorporated areas of the WAYNE COUNTY, GEORGIA are to submit a copy of the appropriate Business License.

CURRENT OCCUPATIONAL TAX CERTIFICATE NUMBER _____

CITY NUMBER _____

COUNTY NUMBER _____

OTHER _____

SIGNATURE _____ DATE _____

PRINTED NAME _____

WAYNE COUNTY, GEORGIA

**OATH OF SUCCESSFUL BIDDER**

Personally appeared before the undersigned officer duly authorized by law to administer oaths and _____ who, after being first duly sworn, depose and say that they are all the officers, agents, persons, or employees who have acted for or represented (Company Name)_____in bidding or procuring a Contract with the CITY OF JESUP, GEORGIA on the following project:

**SOUTH MACON STREET WATER AND SEWER EXTENSION**
**FOR**
**THE CITY OF JESUP**

and that said _____ has not by (himself, themselves) or through any persons, officers, agents, or employees prevented or attempted to prevent by any means whatsoever competition in such bidding; or by any means whatsoever prevented or endeavored to prevent anyone from making a bid therefore, or induces or attempted to induce another to withdraw a bid for said work.

BY: _____
Signature of Successful Bidder

_____
Name - Printed

_____
Title

Sworn to and subscribed before me this
_____Day of _____, 20__.

_____
Notary Public

SEAL

**CONTRACT AGREEMENT**

THIS AGREEMENT made and entered into as of the (Date) _____, 2026, by and between the CITY OF JESUP, GEORGIA, (Party of the First Part, Hereinafter called the County) and _____ (Contractor Name) (Party of the Second Part, Hereinafter called the Contractor).

WITNESSETH: That the said Contractor has agreed, and by these presents does agree with the said city, for and in consideration of _____ ($_____) and other good and valuable consideration, and under the penalty expressed in Bonds hereto attached, to furnish all equipment, tools, materials skill, and labor of every description necessary to carry out and complete in good, firm, and substantial, and workmanlike manner, the Work specified, in strict conformity with the Drawings and the Specifications hereinafter set forth, which Drawings and Specifications together with the base bid pproposal made by the Contractor, General Conditions, Special Provisions, Detailed Specifications, and this Agreement, shall all form essential parts of this Contract. The Work covered by this Contract includes all Work indicated on Plans and Specifications and listed in the Bid entitled:

**SOUTH MACON STREET WATER AND SEWER EXTENSION**
**FOR**
**THE CITY OF JESUP**

The Contractor shall commence the Work with adequate force and equipment within (10) ten days from receipt of Notice to Proceed from the City Of Jesup, and shall complete the Work within 90 calendar days.

The Contractor hereby assumes the entire responsibility and liability for any and all injury to or death of any and all persons, including the Contractor's agents, servants, and employees, and in addition thereto, for any and all damages to property caused by or resulting from or arising out of any act or omission in connection with this Contract or the prosecution of Work hereunder, whether caused by the Contractor or the Contractor's agents, servants, or employees, or by any of the Contractor's subcontractors or suppliers.

This Contract, executed in triplicate, constitutes the full agreement between the parties, and the Contractor shall not sublet, assign, transfer, pledge, convey, sell or otherwise dispose of the whole or any part of this Contract or his right, title, or interest therein to any person, firm or corporation without the previous consent of the City of Jesup in writing.

**CONTRACT AGREEMENT**

IN WITNESS WHEREOF, the Parties hereto, acting through their duly authorized agents, have signed and sealed this agreement.

Executed this _____day of _____, 2026.

CITY OF JESUP, GEORGIA

ATTEST: _____ BY: _____
(SEAL) Administrator, City of Jesup Mayor, City of Jesup

**CONTRACTOR**

ATTEST:_____ BY: _____
(SEAL)

TITLE: _____ TITLE:_____

**APPROVED AS TO FORM:**

BY: _____
Attorney
City of Jesup, Georgia

Executed in Triplicate

**CONTRACT PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS, THAT WE_____
(hereinafter called the Principal) and _____
(hereinafter called the Surety) are held and firmly bound unto the CITY OF JESUP,GEORGIA (hereinafter known as the Owner), for the use of said oblige and all persons doing work or furnishing skill, tools, machinery, supplies, or material under or for the purpose of the Contract hereinafter referred to, in the full and just sum of _____($_____) lawful money of the United States of America, to be paid to said Owner, its successors, and assigns to which payment well and truly to made we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severely, firmly by these presents.

WHEREAS, the above bound Principal has entered into a contract or contracts with the said OWNER, bearing date of_____, 20__, for furnishing material, labor and equipment for:

**SOUTH MACON STREET WATER AND SEWER EXTENSION**
**FOR**
**THE CITY OF JESUP**

WHEREAS, it was one of the conditions of the award by said Owner pursuant to which said Contract was entered into, that these presents shall be executed.

NOW THEREFORE, the conditions of this obligation are such that if the above bound Principal shall in all respects fully comply with the terms and conditions of said Contract and his obligation thereunder, including the Specifications and Bid, therein referred to and made a part thereof, and such alterations as may be made in said Specifications as therein provided for, and including one-year guarantee period from date of final acceptance, and shall indemnify and save harmless the Owner against and from all costs, expenses, damages, injury or loss, to which the said Owner may be subjected by reason of any wrongdoing, misconduct, want of care or skill, negligence, or default, including patent infringement, on part of said Principal, his agents, or employees, in the execution or performance of said Contract, and shall promptly pay all just claims for damages or injury to property and for all work done, or skills, tools, and machinery, supplies, labor, and materials furnished and debts incurred by said Principal in our about the construction or improvement contracted for this obligation to be void; otherwise, in full force and effect.

And the said Surety to this Bond, for value received, hereby stipulates and agrees that no change, extensions of time, alterations, or additions to the terms of the Contract or to the Work to be performed thereunder or the Specifications accompanying same shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alterations, or additions to the terms of the Contract or to the Work or the Specifications.

## CONTRACT PERFORMANCE BOND

This Bond shall be for the use of all persons doing Work or furnishing skill, tools, machinery, or materials under or for the purpose of this Contract, in accordance with the provisions of the Official Code of the State of Georgia, as amended, and is intended to be and shall be construed to be a bond in compliance with the requirements thereof.

The life of this Bond extends through the life of the Contract including the sixty-day maintenance period, and until one year after the final acceptance of the Work by the Owner.

IN TESTIMONY THEREOF, the Principal and Surety have caused these presents to be duly signed and sealed in triplicate, this _____day of _____, 20__.

**CONTRACTOR**

_____
(Company Name)

Attest: _____ By: _____
(Seal)

Title: _____ Title: _____

**SURETY**

_____
(Company Name)

Attest: _____ By: _____
(Seal)

Title: _____ Title: _____

BY: _____
(Local Agent's Signature)

_____
(Name - Printed or Typed)

_____
(Company Name)

_____
(Address)

Executed in Triplicate

**PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS, THAT WE _____
(hereinafter called the Principal) and _____
(hereinafter called the Surety) are held and firmly bound unto the CITY OF JESUP, GEORGIA (hereinafter known as the Owner), in the full sum of _____ ($ _____)
for the use and protection of said Owner and all subcontractors and all persons supplying labor, materials, and machinery, and equipment for the performance of the Work provided for in the contract hereinafter referred to, for the payment of which well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally by these presents.

WHEREAS, the above bound Principal has entered into a Contract or Contracts with the said OWNER, bearing date of _____, 2026, for furnishing material, labor and equipment for:

**SOUTH MACON STREET WATER AND SEWER EXTENSION**
**FOR**
**THE CITY OF JESUP**

WHEREAS, it was one of the conditions of the award by the City of Jesup pursuant to which said Contract was entered into, that these presents shall be executed.

NOW, THEREFORE, the conditions of this obligation are such that if the above bound Principal shall promptly pay all subcontractors and all other persons supplying labor, materials, machinery, and equipment furnished for the performance of the Work provided for by said Contract, and such alterations or additions as may be made therein or in the Plans and Specifications, then this bond to be void; otherwise, in full force and effect, and

The surety to this bond, for value received, agrees that no change, extensions of time, alterations or additions to the terms of the Contract or the Work to be performed thereunder of the Specifications accompanying the same shall in any way affect its obligation on this bond, and alterations or additions to the terms of the Contract or the Work or to the Specifications. It is agreed that this bond is executed pursuant to and in accordance with the provisions of the Official Code of the State of Georgia, as amended, and is intended to be and shall be construed to be a bond in compliance with the requirements thereof.

**PAYMENT BOND**

IN WITNESS WHEREOF, the Principal and Surety have caused these presents to be duly signed and sealed in triplicate, this _____day of_____, 20__.

**CONTRACTOR**

_____
(Company Name)

Attest: _____ By: _____
(Seal)

Title: _____ Title: _____

**SURETY**

_____
(Company Name)

Attest: _____ By: _____
(Seal)

Title: _____ Title: _____

BY: _____
(Local Agent's Signature)

_____
(Name - Printed or Typed)

_____
(Company Name)

_____
(Address)

Executed in Triplicate
**Illegal Immigration Reform and Enforcement Act of 2011**

House Bill 87, also known as the Illegal Immigration Reform and Enforcement Act of 2011, was passed during the 2011 session of the Georgia General Assembly and was signed by Governor Nathan Deal on May 13, 2011. The bill, status history, votes, and sponsors, can be viewed on the Georgia General Assembly's website:

**http://www.legis.ga.gov**

All bidders are strongly encouraged to review the contents of this law.

O.C.G.A. §13-10-91(b) (1) states, in part, "A public employer shall not enter into a contract … for the physical performance of services unless the contractor registers and participates in the federal work authorization program. Before a bid for any such service is considered by a public employer, the bid shall include a signed, notarized affidavit from the contractor attesting to the following:

A. The affiant has registered with and is authorized to use, and uses the federal work authorization program;
B. The user identification number and date of authorization for the affiant;
C. The affiant will continue to use the federal work authorization program throughout the contract period; and
D. The affiant 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 same information required by subparagraphs (A), (B) and (C) of this paragraph."

O.C.G.A. §13-10-91(b) (2) states, in part, "A contractor shall not enter into any contract with a public employer for the physical performance of services unless the contractor registers and participates in the federal work authorization program."

A subcontractor shall not enter into any contract with a contractor unless such subcontractor registers and participates in the federal work authorization program. A subcontractor shall submit, at the time of such contract, an affidavit to the contractor in the same manner and with the same information required in O.C.G.A. §13-10-91(b) (1). It shall be the duty of any subcontractor receiving an affidavit from a sub-subcontractor to forward notice to the contractor of the receipt, within five business days of receipt, of such affidavit. It shall be the duty of a subcontractor receiving notice of receipt of an affidavit from any sub-subcontractor that has contracted with a sub-subcontractor to forward, within five business days of receipt, a copy of such notice to the contractor. Requirements for sub-subcontractors are also contained in this law. The "Illegal Immigration Reform and Enforcement Act of 2011" establishes alternatives to the required affidavits for reporting purposes. Only the authorized alternatives will be considered.

It shall be the duty of the contractor to submit copies of all affidavits, drivers' licenses, and identification cards required pursuant to this subsection to the public employer within five business days of receipt.

Copies of the required affidavits for the contractor, subcontractor and sub-sub contractor are included in the package. **The contractor submitting a bid/proposal for the work covered in these documents is required to supply a fully completed affidavit with the submission of the bid/proposal. Bids received that do not include the required affidavit, or allowed substitution, will not be considered.**

**Contractor Affidavit under O.C.G.A. § 13-10-91(b) (1)**

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 the City of Jesup 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

**South Macon Street Water and Sewer Extension**
Name of Project

The City of Jesup
Name of Public Employer

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

Executed on _____, 20__ 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 _____, 20__.

_____
NOTARY PUBLIC

My Commission Expires: _____

**Subcontractor Affidavit under O.C.G.A. § 13-10-91(b) (3)**

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 the City of Jesup 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 business days of receipt. If the undersigned subcontractor receives notice of receipt of an affidavit from any sub-subcontractor that has contracted with a sub-subcontractor to forward, within five business days of receipt, a copy of such 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

**South Macon Street Water and Sewer Extension**
Name of Project

The City of Jesup
Name of Public Employer

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

Executed on _____, 20__ 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 _____, 20__.

_____
NOTARY PUBLIC

My Commission Expires: _____

**Sub-subcontractor Affidavit under O.C.G.A. § 13-10-91(b) (4)**

By executing this affidavit, the undersigned sub-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 for_____ (name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract) and _____ (name of contractor) on behalf of the City of Jesup 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 sub-subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned sub-subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the sub-subcontractor with the information required by O.C.G.A. § 13-10-91(b). The undersigned sub-subcontractor shall submit, at the time of such contract, this affidavit to_____ (name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract). Additionally, the undersigned sub-subcontractor will forward notice of the receipt of any affidavit from a sub-subcontractor to _____ (name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract). Sub-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 Sub-subcontractor

**South Macon Street Water and Sewer Extension**
Name of Project

The City of Jesup
Name of Public Employer

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

Executed on _____, 20__ 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 _____, 20__.

_____
NOTARY PUBLIC
My Commission Expires: _____

**SOUTH MACON STREET WATER AND SEWER EXTENSION**
**FOR**
**THE CITY OF JESUP**

**LIST OF SUBCONTRACTORS**

I _____/DO, _____/DO NOT, proposed to subcontract some of the work on this project. I proposed to subcontract work to the following subcontractors.

*(IF NO SUBCONTRACTORS WILL BE USED, PLEASE MARK "N/A" BEFORE RETURNING)*

| SUBCONTRACTOR NAME | ADDRESS: | DESCRIPTION OF WORK/SERVICES TO BE PERFORMED: | PROPOSAL AMOUNT: |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**PRIME CONTRACTOR NAME:_____**

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

**Prepared By**

EJCDC®
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

ACEC
American Council of Engineering Companies

ASCE
American Society of Civil Engineers

NSPE
National Society of Professional Engineers

CSI
Building Knowledge
Improving Project Delivery

NUCA
We Dig America

**EJCDC® C-700, Standard General Conditions of the Construction Contract.**
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National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

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**STANDARD GENERAL CONDITIONS**
**OF THE CONSTRUCTION CONTRACT**

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# STANDARD GENERAL CONDITIONS
# OF THE CONSTRUCTION CONTRACT

## ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*

*a.* A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.


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c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

*d.* A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.

23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.


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b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.

28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.

32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

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

35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.

39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.


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40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.

44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

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

46. *Technical Data*

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

    c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or


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chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

48. *Unit Price Work*—Work to be paid for on the basis of unit prices.

49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;

2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

3. 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 15.03 or Paragraph 15.04).

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.


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3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and


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3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

## ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.


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B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

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

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the


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Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or


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2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

## ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

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

4.03 *Reference Points*

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

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and


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interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

   1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

   2. Abnormal weather conditions;

   3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

   4. Acts of war or terrorism.

D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

   1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

   2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

   3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

   1. The circumstances that form the basis for the requested adjustment;

   2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

   3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

   4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

   5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

   Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.


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G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

## ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.


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C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

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

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;


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3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

   a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

   b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

   c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

   a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

   b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract


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Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.


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During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

    b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

    c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.


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B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.


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H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety.


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The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.


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F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;


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2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.


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D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.

2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.


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D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

## ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.


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B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that the proposed item:

1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) has a proven record of performance and availability of responsive service; and

4) is not objectionable to Owner.


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b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

a. will certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design;

2) be similar in substance to the item specified; and

3) be suited to the same use as the item specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;


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2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from the item specified; and

2) available engineering, sales, maintenance, repair, and replacement services.

d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.


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C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an 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 will be disclosed in the Contract Documents.


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

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

7.09 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. 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 the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

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

7.11 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within


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30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

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

7.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

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

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (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 any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.


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H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

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

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent 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 by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the


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Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.


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8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

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

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only


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by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;
2. Recommendation by Engineer or payment by Owner of any progress or final payment;
3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
4. Use or occupancy of the Work or any part thereof by Owner;
5. Any review and approval of a Shop Drawing or Sample submittal;
6. The issuance of a notice of acceptability by Engineer;
7. The end of the correction period established in Paragraph 15.08;
8. Any inspection, test, or approval by others; or
9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

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


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B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

## ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange


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to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract


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Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

## ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.


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9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

## ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and


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observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

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

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract,


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tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

## ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and


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4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.


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11.06 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the


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costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content*: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

   a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

   b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

   The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change


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Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

## ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.


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D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

## ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

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 in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be


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apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

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

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, 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.

        1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

    c. *Construction Equipment Rental*

        1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

        2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.


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3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

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

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

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.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.


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D. *Contractor's Fee*

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

    a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

    b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

        1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

        2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 *Allowances*

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

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.


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B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

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

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

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

## ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such


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inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.


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14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then 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, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then 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 will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.


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B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

## ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

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

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the


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Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

    a. the Work has progressed to the point indicated;

    b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

    c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

    a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

    b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

    a. to supervise, direct, or control the Work;

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

    e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, requiring correction or replacement;

    b. the Contract Price has been reduced by Change Orders;

    c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;


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d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

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

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.


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3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, 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.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents,


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or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
    a. all documentation called for in the Contract Documents;
    b. consent of the surety, if any, to final payment;
    c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
    d. a list of all duly pending Change Proposals and Claims; and
    e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.


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3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Final Application and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect


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Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;
2. correct such defective Work;
3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

## ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.


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16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.


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16.03 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

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

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

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

## ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;

2. agree with the other party to submit the dispute to another dispute resolution process; or


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3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

## ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract 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.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. 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.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the


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written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

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


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# SUPPLEMENTARY CONDITIONS

## 01. GENERAL CONDITIONS

The "Standard General Conditions of the Construction Contract", Engineers Joint Contract Documents Committee, 2018 Edition, Articles 1 through 18 inclusive, included herein preceding these supplements, is a part of this Contract.

## ARTICLE 6 – BONDS AND INSURANCE

Contractor's protective liability insurance, with limits as follows:

Personal injury including death - limits of $100,000. for each person and $1,000,000. for each occurrence.

Property damage - $100,000. for each and $1,000,000. for the aggregate for operations.

Contractor's public and automobile liability insurance (including contractual liability insurance as applicable to the Contractor's obligations under paragraph 4.18) with limits as follows:

Personal injury including death - limits of $100,000. for each person and $1,000,000. for each occurrence.

Property damage - limits of $100,000. for each occurrence and $1,000,000. for the aggregate of operations.

a. Any exclusion of so-called underground damage to pipes, collapse of structures or damage resulting from explosion or blasting, shall be deleted.

b. The policy shall provide completed operations coverage, and such coverage shall be maintained by the Contractor for a period of one year from the date of payment of the final amounts owed the Contractor by the Owner, whichever occurs first.

Owner's protective liability insurance, in the name of the Owner, his professional consultants and their agents as additional insureds under the contractor's general liability insurance policy with respect to the services performed by the Contractor for the Owner, with the following limits:

Personal injury including death - limits of $100,000. for each person and $1,000,000. for each occurrence.

Property damage - limits of $100,000. for each occurrence and $1,000,000. for the aggregate of operations.

## ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

Add the following sentence as paragraph 5 of Section 15.01 B:

“Each payment request shall be accompanied with record drawings showing as-built conditions of all work requested during the pay period.

## ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 B Any dispute arising under this agreement shall first be resolved by utilizing non-binding mediation, however, should the dispute not be resolved by this method it shall be heard in the Superior Court of the County in which the owner resides, and the parties consent to jurisdiction and venue in that Court. The parties waive any defense they may have to lack jurisdiction or improper venue and agree to have all disputes resolved in the Superior Court of the County in which the owner resides.

SECTION 01150
MEASUREMENT AND PAYMENT

## PART 1 – GENERAL

### 1.01 QUANTITIES

A. Quantities: Quantities listed in the Proposal are approximate only and are intended to serve as a guide in comparing proposals and may be increased or decreased without invalidating the unit price.

B. Payment: Contractor shall be paid for actual in place quantities as determined by the Engineer field measurements.

C. Discrepancies: In case of discrepancies between the figures shown in the unit prices and totals, the unit prices shall apply, and the totals shall be corrected to agree with the unit price.

## PART 2 – MEASUREMENT AND PAYMENT

### 2.01 CONNECT TO EXISTING MANHOLE

A. Measurement: Measurement will be made on the basis of each connection made in accordance with the construction plans or as directed by the engineer.

B. Payment: Payment will be made on the basis of each connection made in accordance with the construction plans or as directed by the engineer at the unit price shown. The unit price shall include all labor, equipment, and materials necessary to complete the item of work. Work shall include, but not be limited to, trenching, excavation, dewatering, utility protection, furnishing and installing all fittings, core drilling, epoxy coating, connecting to the existing manhole, coring, cutting, backfill, compaction, complete surface restoration and clean-up.

### 2.02 SEWER MANHOLE

A. Measurement: Measurement will be made on the basis of each standard or lined manhole up to six feet in depth installed in accordance with the construction plans or as directed by the engineer.

B. Payment: Payment will be made on the basis of each standard or lined manhole installed in accordance with the construction plans or as directed by the engineer at the unit price bid. The unit price shall include all labor, equipment, and materials necessary to complete the item of work. Work shall include, but not be limited to, construction layout, trenching, excavation, dewatering, utility protection, furnishing and installing manholes, bedding, installation of joint materials, installation of ring and cover, adjustment of rim to grade, installation of liner as required, backfill, compaction, complete surface restoration and clean-up.

### 2.03 MANHOLE VERTICLE RISERS

A. Measurement: Measurement will be made on the basis of each vertical foot of depth over six feet deep installed in accordance with the construction plans or as directed by the engineer. The depth of the manhole will be measured from rim to invert out elevation. The total depth will be reduced by six feet. The remainder will be considered for payment.

B. Payment: Payment will be made on the basis of each vertical foot of depth over six feet deep installed in accordance with the construction plans or as directed by the engineer at the unit price bid. The unit price shall include all labor, equipment, and materials necessary to complete the item of work. Work shall include, but not be limited to, trenching, excavation, dewatering, utility protection, furnishing and installing riser sections, sealing and coating, backfill, compaction, complete surface restoration and clean-up.

2.04 SEWER NAIN

C. Measurement: Measurement will be made on the basis of each linear foot of sewer main installed in accordance with the construction plans or as directed by the engineer. The length of the sewer main will be measured from center of manhole to center of manhole. The depth of the sewer main will be measured based on depths under six feet then at two-foot depth intervals. The depth will be measured from finished grade to invert of pipe. No deduction will be made for manholes or service connections.

D. Payment: Payment will be made on the basis of each linear foot of sewer main installed in accordance with the construction plans or as directed by the engineer based on the depth of bury at the unit price bid. The unit price shall include all labor, equipment, and materials necessary to complete the item of work. Work shall include, but not be limited to, construction layout, trenching, excavation, dewatering, utility protection, furnishing and installing pipe materials, bedding, backfill, compaction, installation of service tees and wyes, complete testing, backfill, compaction, complete surface restoration and clean-up.

2.05 REMOVE AND REPLACE PAVEMENT:

A. Description: The Contractor shall furnish all labor and materials to remove and replace roadway, driveways, sidewalks or parking areas, curb and gutter in accordance with the Contract Documents.

B. Work includes:
1. Marking, cutting, and removal of pavement materials as necessary.
2. Disposal of water material.
3. Installation of temporary traffic control measures such as barrels, markers, and the like.
4. Trench maintenance and crusher run stone as required to maintain level traffic surface during construction period.
5. Necessary shoring, sheeting, excavation, dewatering, and the like.
6. Providing and installing geotextile fabric complete.
7. Providing and installing graded aggregate base material complete.
8. Complete surface restoration and cleanup.
9. Furnish and install concrete/asphalt patch in accordance with detail on construction plans. This item does not include the final asphalt overlay.

C. Measurement: Measurement will be made o the basis of each square yard of pavement repair installed in accordance the lines, grades, and depths shown on plans and as specified.

D. Payment: Payment will be made on the basis of each square yard of pavement repair completed in accordance with the lines, grades, and depths shown on the construction plans at the unit price bid. The unit price bid shall include, but not be limited to, all work as described, labor, equipment, and materials necessary to complete the item of work.

2.06 HAY BALE CHECK DAM

A. Measurement: Measurement will be made on the basis of each complete hay bale check dam installed in accordance with the construction plans.

B. Payment: Payment will be made on the basis of each hay bale check dam installed and maintained in accordance with the construction plans at the unit price stated in the proposal. The unit price shall include furnishing all labor, equipment, and materials, necessary for the item of work. Work shall include, but not limited to, staking, excavation, trenching, furnishing, and installing hay bales, backfill, continual maintenance, removal, disposal, complete surface restoration and clean-up. No additional payment will be made for replacement hay bales.

2.07 REMOVE AND REPLACE FENCE

A. Measurement: Measurement will be made on the basis of each linear foot of fence removed in accordance with the construction drawings or as directed by the Engineer.

B. Payment: Payment will be made on the basis of each linear foot of fence removed and replaced in accordance with the construction drawings or as directed by the Engineer at the unit price bid. The unit price bid shall include all labor, equipment, and materials necessary to complete the item of work. The item of work shall include, but not be limited to, all costs to remove and dispose of existing fencing, posts, post foundations, and reposting of fence cut-off. Fence to be removed beginning at cut or fill line or as directed by the Engineer. Removal include backfilling of all post holes and any associated landscape restoration and sprinkler system repair due to damages made during fence removal. Replacement of fence includes all costs to install new post foundations, new fence posts, new in-kind fence, parts, and all materials to reinstall the full fence at the new location determined by the Engineer.

2.08 MULCHING

A. Measurement: Measurement shall be made on the basis of the completed item in accordance with the construction plans and bid items.

B. Payment: Payment will be made in accordance with the price stated in the bid. The unit price shall include, but is not limited to, furnishing all labor, materials, and equipment necessary for the satisfactory mulching on all disturbed areas in accordance with plans and specifications. Work shall include, but not be limited to, furnishing all materials, leveling, spreading, and maintenance of areas until final grassing is established.

2.09 GRASSING

A. Measurement: Measurement shall be made on the basis of the completed item in accordance with the construction plan and bid items.

B. Payment: Payment will be made in accordance with the price stated in the bid. The unit price shall include, but is not limited to, furnishing all labor, materials, and equipment necessary for the satisfactory growth of grass on all disturbed areas in accordance with plans and specifications. Work shall include, but not be limited to, furnishing all materials, fertilizer, soil samples, grass seed, raking, leveling, watering, re-seeding, maintenance, and final surface restoration. Final payment will not occur until permanent grass is established.

2.10 CONNECT TO EXISTING WATER MAIN

A. Measurement: Measurement will be made on the basis of each connection made in accordance with the construction plans or as directed by the engineer.

B. Payment: Payment will be made on the basis of each connection made in accordance with the construction plans or as directed by the engineer at the unit price shown. The unit price

shall include all labor, equipment, and materials necessary to complete the item of work. Work shall include, but not be limited to, trenching, excavation, dewatering, utility protection, furnishing and installing all fittings and valves, connecting to the existing water main, coring, cutting, valve vaults, concrete collars, backfill, compaction, complete surface restoration and clean-up.

2.11 WATER MAINS

A. Measurement: Measurement will be made along the centerline of the pipe trench and through fittings and specials. No deduction in length will be made for fittings or specials.

B. Payment: Watermains shall be paid for at the unit price shown per linear foot. Unit price shown shall include all materials, labor, and equipment necessary to complete the item of work. Work shall include, but not be limited to, trenching and excavation, necessary shoring and sheeting, dewatering, furnishing, and installing pipe, backfilling and compaction, concrete blocking, furnishing, and installing restrained joints, bedding, pressure testing, disinfection, complete surface restoration and cleanup.

2.12 GATE VALVES

A. Measurement: Measurement shall be made on the basis of each unit installed in accordance with the approved plans or as directed by the engineer.

B. Payment: Valves shall be paid for at the unit price shown for each specific valve size. The unit price shown shall include furnishing all materials, labor, and equipment necessary to complete the item of work. Work shall include, but not be limited to, excavation, necessary shoring, sheeting, dewatering, backfilling, concrete valve box collar, furnishing and installing gate valves, valve box, pressure testing, disinfection and complete surface restoration and cleanup.

2.13 DUCTILE IRON FITTINGS

A. Measurement: Measurement of the fittings shall be counted by unit of the various sizes & types actually installed. Fittings thus counted shall be converted to a total weight in pounds in accordance with Table 53.2 through 53.5 of AWWA Standard C153 for compact Ductile Iron MJ fittings. The weight shall not include glands, bolts, gaskets, etc.

B. Payment: Payment will be made on the basis of each ton of fittings installed in accordance with the approved plans at the unit price bid. The unit price bid shall include all labor, equipment and materials to complete the item of work. Work shall include, but not be limited to, excavation, necessary shoring, sheeting, dewatering, backfilling, restrained joints, thrust blocks, bolts, glands, gaskets, furnishing and installing compact fittings, pressure testing, disinfection and complete surface restoration and cleanup.

2.14 FIRE HYDRANT ASSEMBLY

A. Measurement: Measurement shall be made on the basis of each unit installed. The number of fire hydrant assemblies which will be paid for under this item will be the number in place, tested, and accepted by the ENGINEER.

B. Payment: Fire hydrant assemblies shall be paid for at the unit price shown for each assembly installed in accordance with the plan and approved by the engineer.. Unit price shown shall include furnishing all materials, labor and equipment, supervision, and incidentals required to furnish and to complete the installation of the fire hydrant assembly. Work shall include, but not be limited to, excavation, necessary shoring, sheeting,

backfilling, dewatering, fittings, including the main line diameter x 6-inch tee or reducer if tee is existing and required, 6-inch gate valve, valve box, concrete collar, 6-inch diameter PVC pipe from the main, fire hydrant, thrust blocking or restraining as shown on the drawings and specified herein. Fittings shall be included in the price of the fire hydrant assembly and will not be paid for under a separate item, pressure testing, disinfection and complete surface restoration and cleanup.

2.15 MOBILIZATION

A. Measurement: Measurement will be made on the basis of the completed item of work or percentage thereof.

B. Payment will be made for the price as stated in the Contract once the Contractor has established his construction yard and met the requirements established in the Contract Documents. Mobilization will be recognized complete once the Contractor has provided a construction schedule and moved his equipment and a substantial amount of material to the job site. Construction must be underway and progressing. Payment for mobilization will be limited to a maximum amount not to exceed 3.0% of the proposal price.

SECTION 02100
CLEARING AND GRUBBING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Clearing shall consist of the falling, trimming, cutting and disposal of trees and other vegetation designated for removal, including down timber, snags, brush, and rubbish occurring within the area to be cleared. Grubbing shall consist of the removal and disposal of stumps, roots larger than 1.5 inches in diameter and matted roots.

PART 2 – EXECUTION

2.01 Trees, down timber, stumps, roots, brush, and other vegetation in areas to be cleared shall be removed completely, except such trees and vegetation as may be indicated or directed to be left standing. Trees to be left standing within the cleared areas shall be trimmed of dead branches 1.5 inches or more in diameter.

2.02 Limbs and branches to be trimmed shall be neatly, cut close to the bore of the tree or main branches.

2.03 All organic materials, masonry, concrete, or metallic debris in the clearing and grubbing areas shall be excavated and removed to a depth of not less than 12 inches below grade where original grade is to remain level and two feet below finish grade, bottom of pavement base and bottom of footings.

2.04 Depressions made by grubbing shall be backfilled and compacted with fill material to meet the requirement for trenching and structural backfilling.

2.05 Machine grubbing shall not be done under trees left standing in the area covered by the branches, nor in any manner which might damage the trees or any new work.

2.06 Trees and vegetation to be left standing shall be protected from damage during clearing, grubbing, and construction operations, by the erection of barriers.

2.07 Objects above or below grade interfering with construction shall be removed as directed by the Architect/Engineer.

2.08 DISPOSAL OF MATERIALS

A. Cleared and grubbed materials to be disposed of to an approved off-site disposal area. The disposal area shall be a state-approved landfill.

B. On site burning will not be allowed, without written permission of local authorities. The Forestry Department should be contacted for the permit.

C. The use of an air curtain destructor for on-site burning shall be part of the permit.

SECTION 02210
SITE GRADING

PART I – GENERAL

1.01 QUALITY ASSURANCE

A. Reference Standards:

1. Standards of American Society for Testing and Materials:
ASTM-D-698 Moisture-Density Relations of Soils Using 5.5 lb. (2.5 KG)
Hammer and 12 inch (304.8 mm) Drop

2. Methods of Sampling and Testing of American Association of State Highway and Transportation Officials (AASHTO), latest edition.

1.02 TESTING

A. All soil testing shall be performed by an Independent Testing Laboratory selected by the Engineer and paid for by the Contractor.

1.03 EXCESS EXCAVATED MATERIALS

A. Excess excavated materials shall be wasted off site by the Contractor at no expense to Owner, or as directed by the Engineer.

1.04 BORROW MATERIAL

A. Any borrow material required to accomplish all levels, lines and grades indicated shall be furnished by the Contractor at no expense to the Owner.

B. Borrow material shall be obtained from borrow pits off site.

C. The Contractor shall pay for all soil analysis for borrow material

1.05 EXCAVATED MATERIAL

A. All material to be excavated shall be classified as earth.

1.06 UNSUITABLE BEARING MATERIALS

A. Should unsuitable bearing materials be encountered at levels indicated and found to have insufficient bearing values the Engineer may order the excavation carried to lower depths.

B. Compensation for the removal and/or replacement of unsuitable materials shall be in accordance with the General Conditions.

C. Excavation of unsuitable bearing materials shall not proceed until the conditions have been observed by the Engineer and written approval has been given by the Owner.

PART II – EXECUTION

2.01 TOP SOIL

A. Areas to be stripped shall first be scraped clean of all brush, weeds, grass, roots, and other material.

B. Remove topsoil from areas to be graded and stockpile in locations where it will not interfere with structures, roads, or utility operations.

C. Topsoil shall be free from subsoil, debris, and stones larger than two (2) inches in diameter. The stored topsoil shall be left in piles to be used for finished grading.

D. Stockpiles shall be protected from contamination by undesirable foreign matter and shall be graded to shed water.

2.02 EXCAVATION

A. Excavations shall be accomplished to bring surface to the levels, lines and grades as indicated.

B. Excavated material to be used for fill or backfill material shall be stockpiled on the site as directed by the Engineer. Stockpiles shall be graded to shed water.

2.03 FILLING

A. All fill material required to bring areas to the levels, lines and grades indicated shall be selected and approved materials from approved borrow areas.

B. Sub-grades on which fill material is to be placed shall be scarified to a depth of not less than four (4) inches by plowing or disking. A layer of suitable fill material, approximately three (3) inches in depth, shall be spread over the scarified surface and compacted.

C. Fill material shall be spread and compacted in successive uniform layers not exceeding eight (8) inches in depth (loose measure) until the total thickness of fill is completed.

2.04 COMPACTION

A. Compaction required for material fill shall be 95% of Standard Proctor, maximum dry density as determined by the procedures of ASTM D-698. Fill areas shall be crowned and sloped to drainage ditches or as required to prevent ponding of surface water.

B. Compaction by flooding of any material is not acceptable. In the event that any flooding takes place, the material and all adjacent softened material shall be removed and replaced with compacted fill at no cost to the Owner.

SECTION 02220
DEMOLITION

PART 1 - GENERAL

1.01 REFERENCES

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

A. AIR-CONDITIONING AND REFRIGERATION INSTITUTE (ARI)

ARI Guideline K (1997) Containers for Recovered Fluorocarbon Refrigerants

B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.6 (1990; R 1998) Safety Requirements for Demolition Operations

C. U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (1996) Safety and Health Requirements Manual

1.02 GENERAL REQUIREMENTS

Do not begin demolition until authorization is received from the Engineer. Do not allow accumulations inside or outside the building. The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. Rubbish and debris shall be removed from property daily, unless otherwise directed, to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the Engineer. In the interest of occupational safety and health, the work shall be performed in accordance with EM 385-1-1. Asbestos removal will be performed by others under a separate contract. All asbestos will be removed prior to the issuance of a notice to proceed.

1.03 REGULATORY AND SAFETY REQUIREMENTS

Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," safety requirements shall conform to ANSI A10.6.

A. Notifications

1. General Requirements

Furnish timely notification of demolition project to Federal, State, regional, and local authorities as required.

1.04 DUST AND DEBRIS CONTROL

Prevent the spread of dust and debris and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution. Vacuum and dust the work area daily or as necessary. Sweep pavements as often as necessary to control the spread of debris.

1.05 PROTECTION

A. Traffic Control Signs

Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Notify the Engineer prior to beginning such work.

B. Existing Work

Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The Contractor shall take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Owner; any damaged items shall be repaired or replaced as approved by the Engineer. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements pavements to remain. Provide new supports and reinforcement for existing construction weakened by demolition or removal work. Repairs, reinforcement, or structural replacement must have Engineer's approval.

C. Weather Protection

For portions of the building to remain, protect building interior and materials and equipment from the weather at all times. Where removal of existing roofing is necessary to accomplish work, have materials and workmen ready to provide adequate and temporary covering of exposed areas so as to ensure effectiveness and to prevent displacement.

D. Trees

Trees within the project site which might be damaged during demolition, and which are indicated to be left in place, shall be protected by a 1.8 m (6 foot) 6-foot high fence. The fence shall be securely erected a minimum of 1.5 m 5 feet from the trunk of individual trees or follow the outer perimeter of branches or clumps of trees. Any tree designated to remain that is damaged during the work under this contract shall be replaced in kind or as approved by the Engineer.

E. Facilities

Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities. Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, shall remain standing without additional bracing, shoring, of lateral support until demolished, unless directed otherwise by the Engineer. The Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

F. Protection of Personnel

During the demolition work the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

1.06 BURNING

The use of burning at the project site for the disposal of refuse and debris **will not** be permitted.

1.07 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair items to be relocated which are damaged or replace damaged items with new undamaged items as approved by the Engineer.

1.08 ENVIRONMENTAL PROTECTION

The work shall comply with all federal, state, and local laws and regulations.

1.09 USE OF EXPLOSIVES

Use of explosives **will not** be permitted.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 EXISTING FACILITIES TO BE REMOVED

A. Structures

Existing structures indicated shall be removed to grade. Interior walls, other than retaining walls and partitions, shall be completely removed to grade. Basement slabs shall be broken up and completely remove. Sidewalks, curbs, gutters, and street light bases shall be removed as indicated.

B. Utilities and Related Equipment

Remove existing utilities to limit of the property and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Engineer. When utility lines are encountered that are not indicated on the drawings, the Engineer shall be notified prior to further work in that area. Remove meters and related equipment.

C. Paving and Slabs

Remove concrete and asphaltic concrete paving and slabs including aggregate base as indicated to natural grade. Provide neat saw cuts at limits of pavement removal as indicated.

D. Masonry

Saw cut and remove masonry so as to prevent damage to surfaces to remain. Where new masonry adjoins existing, the new work shall abut or tie into the existing construction as specified for the new work.

E. Concrete

Saw concrete along straight lines to a depth of not less than 50 mm 2 inches. Make each

cut in walls perpendicular to the face and in alignment with the cut in the opposite face. Break out the remainder of the concrete provided that the broken area is concealed in the finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete.

F. Patching

Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish. Patching shall be as specified and indicated, and shall include:

1. Holes and depressions left as a result of removals in existing masonry walls to remain shall be completely filled with an approved masonry patching material, applied in accordance with the manufacturer's printed instructions.

2. Where existing partitions have been removed leaving damaged or missing resilient tile flooring, patch to match the existing floor tile.

3. Patch acoustic lay-in ceiling where partitions have been removed. The transition between the different ceiling heights shall be effected by continuing the higher ceiling level over to the first runner on the lower ceiling and closing the vertical opening with a painted sheet metal strip.

G. Air Conditioning Equipment

Remove air conditioning equipment without releasing chlorofluorocarbon refrigerants to the atmosphere in accordance with the Clean Air Act Amendment of 1990. Recover all refrigerants prior to removing air conditioning equipment and dispose of in accordance with the paragraph entitled "Disposal of Ozone Depleting Substance (ODS).”

H. Cylinders and Canisters

Remove all fire suppression system cylinders and canisters and dispose of in accordance with the paragraph entitled "Disposal of Ozone Depleting Substance (ODS)."

I. Locksets on Swinging Doors

The Contractor shall remove all locksets from all swinging doors indicated to be removed and disposed of. Contractor shall give the locksets to the County after their removal.

3.02 FILLING

Holes, open basements and other hazardous openings shall be filled in accordance with the construction drawings. The finished grade shall match the adjacent grades and shall be properly drained as directed by the Engineer.

3.03 DISPOSITION OF MATERIAL

A. Title to Materials

Except where specified in other sections, all materials and equipment removed, and not

reused, shall become the property of the Contractor and shall be removed from County property. Title to materials resulting from demolition, and materials and equipment to be removed, is vested in the Contractor upon approval by the County of the Contractor's demolition and removal procedures, and authorization by the Contracting Officer to begin demolition. The Government will not be responsible for the condition or loss of, or damage to, such property after contract award. Materials and equipment shall not be viewed by prospective purchasers or sold on the site.

B. Disposal of Ozone Depleting Substance (ODS)

Class I and Class II ODS are defined in Section, 602(a) and (b), of The Clean Air Act. Prevent discharge of Class I and Class II ODS to the atmosphere. Place recovered ODS in cylinders meeting ARI Guideline K suitable for the type ODS (filled to no more than 80 percent capacity) and provide appropriate labeling. Recovered ODS shall be [put back into the existing equipment] [turned over to the Contracting Officer] [remove from Government property and dispose of in accordance with 40 CFR 82]. Products, equipment and appliances containing ODS in a sealed, self-contained system (e.g. residential refrigerators and window air conditioners) shall be disposed of in accordance with 40 CFR 82.

1. Special Instructions

Each container shall have in it no more than one type of ODS. A warning/hazardous label shall be applied to the containers in accordance with Department of Transportation regulations. All cylinders including but not limited to fire extinguishers, spheres, or canisters containing an ODS shall have a tag with the following information:

a. Activity name and unit identification code
b. b. Activity point of contact and phone number
c. c. Type of ODS and pounds of ODS contained
d. d. Date of shipment

2. Fire Suppression Containers

Fire suppression system cylinders and canisters with electrical charges or initiators shall be deactivated prior to shipment. Also, safety caps shall be used to cover exposed actuation mechanisms and discharge ports on these special cylinders.

C. Unsalvageable Material

Concrete, masonry, and other noncombustible material, except concrete permitted to remain in place, shall be disposed of by the Contractor.

3.04 CLEANUP

Debris and rubbish shall be removed from basement and similar excavations. Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

A. Debris and Rubbish

Debris and rubbish shall be removed from basement and similar excavations. Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

SECTION 02221
TRENCH EXCAVATION, BACKFILL AND COMPACTION

PART 1 - GENERAL

1.01 SCOPE

A. Work under this section shall consist of furnishing all materials, equipment, and labor for excavation, trenching and backfilling for utility systems. "Utility systems" shall include underground piping and appurtenances for gas, gasoline, oil, and water distribution systems, storm water drains, and sewage collection systems.

1.02 EXISTING UTILITIES

A. Before opening trenches, the Contractor shall examine all available records and explore for the location of all sub-surface pipes, valves or other structures and reference such locations on the surface. It shall be the responsibility of the contractor to contact the utility clearinghouses as required by law.

B. In opening trenches, every effort shall be made not to interfere with these utilities structures. Expose existing piping by hand before excavating by machine. Excavate existing utilities sufficiently in advance of pipe laying to determine crossing arrangement. Slight deviations may be permitted in order to clear such structures. The Contractor shall be entirely responsible for the preservation of all underground or overhead utility lines and structures, such as gas, water, sewer lines, telephone conduit, power lines, etc., and shall replace, adjust, or repair, without additional compensation, any such lines damaged or interfered with as a result of this construction.

C. Schedule work to keep roads and utilities in usable condition; coordinating all operation with the Governing Authority to avoid inconvenience insofar as practicable.

1.03 BORROW MATERIAL

A. Any borrow material required to accomplish all levels, lines, and grades indicated shall be furnished from an approved site.

B. The OWNER or his agent shall pay for all soils analysis for borrow material.

1.04 TESTING

A. All soil testing shall be performed by an Independent Testing Laboratory selected by the Governing Authority and the design engineer.

1.05 QUALITY ASSURANCE

A. All excavation within the rights of way of city streets and county, State or Federal roadways, shall be backfilled in accordance with the then prevailing requirements of the Georgia Department of Transportation, Highway Division.

B. Reference Standards: Methods of Sampling and Testing of American Association of State Highway and Transportation Officials (AASHTO).

1.06 SAFETY

A. The Contractor is responsible for maintaining a safe job environment. He is responsible for meeting all OSHA requirements and conditions as part of the project.

PART 2 - EXECUTION

2.01 GENERAL EXCAVATION

A. The Contractor shall do all excavation of whatever substances encountered to depth shown on plans. Excavated materials not required for fill or backfill shall be removed from site as directed by the Engineer.

B. Contractor is to excavate to provide 36-inch minimum cover over utility.

C. Excavation for manholes and other accessories to have 12-inch minimum and 24-inch maximum clearance on all sides.

D. Excavation shall not be carried below the required level.

E. Where excavation is carried below grades indicated, the Contractor shall refill same to the proper grade with compacted earth or stone, or as directed by the Engineer.

F. Width of trench shall be as shown on the plans. The bottom of trench for sewers and culverts shall be rounded so that an arc of the circumference equal to 0.6 of the outside diameter of the pipe rests on undisturbed soil.

G. Bell holes shall be excavated accurately to size by hand.

2.02 UNSUITABLE BEARING MATERIALS

A. Should unsuitable bearing materials be encountered at levels indicated and found to have insufficient bearing values, the Engineer may order the excavation carried to lower depth.

B. Excavation of unsuitable bearing materials shall not proceed until the conditions have been observed by the Engineer and written approval is given by the Owner.

2.03 PIPE BEDDING

A. The contact between a pipe and the foundation on which it rests is the pipe bedding.

B. Classes of Bedding: Four typical classes of bedding to be used for pipes in trenches are described as follows:

1. Class A - Concrete Cradle or Concrete Arch Bedding: This class of bedding may take either of two forms.

a. Concrete Cradle - The pipe shall be bedded in a monolithic cradle of plain or reinforced concrete having a minimum thickness of 1/4 the inside pipe diameter of a minimum of four (4) inches under the barrel and extending up the sides for a height equal to 1/4 the outside diameter. The cradle shall have width at least equal to the outside diameter of the pipe barrel plus eight (8) inches. Backfill above the cradle and extending to 12 inches above the crown of the pipe shall be compacted carefully.

b. Concrete Arch - The pipe shall be embedded in a carefully compacted granular material having a minimum thickness of 1/4 the outside diameter between barrel and bottom of trench excavation and extending halfway up the sides of the pipe. The top half of the pipe shall be covered with monolithic plain or reinforced concrete arch having a minimum thickness of 1/4 the inside diameter at the crown and having a minimum width equal to the outside pipe diameter plus 8 inches.

2. Class B- First - Class Bedding - Class B bedding may be achieved by either of two construction methods.

    a. Shaped Bottom with Tamped Backfill. The bottom of the trench excavation shall be shaped to conform to a cylindrical surface with a radius at least two (2) inches greater than the radius to the outside of the pipe and with a width sufficient to allow 6/10 of the width of the pipe barrel to be bedded in fine granular fill placed in the shaped excavation. Carefully compacted backfill shall be placed at the sides of the pipe to a thickness of at least 12 inches above the top of the pipe. Shaped trench bottoms shall be used only with the approval of the Engineer.

    b. Compacted Granular Bedding with Tamped Backfill. The pipe shall be bedded in compacted granular material placed on a flat trench bottom. The granular bedding shall have a minimum thickness of 1/4 the outside pipe diameter and shall extend halfway up the pipe barrel at the sides. The remainder of the side fills and minimum depth of 12 inches over the top of the pipe shall be filled with carefully compacted, select material.

3. Class C - Ordinary Bedding: Class C ordinary bedding may be achieved by either of two construction methods:

    a. Shaped Bottom. The pipe shall be bedded with "ordinary" care in an earth foundation formed in the trench bottom by a shaped excavation which will fit the pipe barrel with reasonable closeness for a width of at least 50% of the outside pipe diameter. The side fills and area over the pipe to a minimum depth of six (6) inches above the top of the pipe shall be filled with lightly compacted fill. The shaped bottom bedding shall be used only with the approval of the Engineer.

    b. Compacted Granular Bedding with a Tamped Backfill. The pipe shall be bedded in compacted granular material placed on a flat trench bottom. The granular bedding shall have a minimum thickness of four (4) inches under the barrel and shall extend 1/10 to 1/6 of the outside diameter up the pipe barrel at the sides. The remainder of the side fills and to a minimum depth of six (6) inches over the top of the pipe shall be filled with lightly compacted backfill.

4. Class D - Class D bedding is not permissible. Flat bottom trench. In this class of bedding the bottom is left flat, and no care is taken to secure compaction of backfill at the sides immediately over the pipe.

C. Granular pipe bedding material shall be well graded crushed stone or crushed gravel meeting the requirements of ASTM C33, Gradation 67 (3/4 inch to No. 4). A well-graded gravel meeting these same requirements can also be used.

D. Where ledge rock, compact rocky or gravelly soil, or other unyielding foundation material is encountered, the pipes shall be bedded in accordance with the requirements of the foregoing classes of bedding, but with the following additions: The hard unyielding material shall be excavated to the elevation of the bottom of the concrete cradle (Class A bedding) or below the bottom of the pipe and the pipe bell (Class B or C bedding), to depth of at least six (6) inches (15cm). The width of the excavation shall be at least 5/4 the outside diameter of the pipe and it shall be refilled with granular material as identified above.

2.04 BRACING AND SHORING

A. The Contractor shall do all bracing, sheeting, and shoring necessary to perform and protect all excavations as required for safety.

B. Sheeting driven alongside the pipe should be cut off and left in place to an elevation 1.5 feet above the top of the pipe.

C. All other sheeting shall be removed as directed by the Engineer.

2.05 DEWATERING FOR EXCAVATION

A. The Contractor shall pump or remove any water accumulated in any excavated area and shall perform all work necessary to keep excavations clear of water while foundations, structures or any masonry are being constructed or while pipe is being laid, or during demolition.

B. No structure or pipe shall be laid in water, and water shall not be allowed to flow over or rise upon any concrete or masonry or piping until same has been inspected and the mortar or joint material has cured.

C. All water pumped or bailed from the trenches or other excavation shall be conveyed in a manner to a point of discharge where it will neither cause a hazard to the public health, nor damage to the public or private property, or to work completed or in progress.

2.06 BACKFILL

A. The soil at the sides of a pipe and above it is the backfill.

B. Prior to backfilling any excavation, all piping and structures, the Engineer and Governing Authority's Inspector shall be notified for observation.

C. After pipes have been tested and approved, backfilling shall be done with approved material free from large clods or stones.

D. Backfill shall be placed in uniform layers, four (4) inches thick, on both sides of the pipe and thoroughly compacted with pneumatic or hand tampers. The backfill shall be brought up uniformly on both sides of the pipe and compacted to an elevation of one (1) foot above the top of the pipe, after which the fill shall be placed in 8-inch lifts. No rock will be allowed in the backfill within a distance of one (1) foot from the pipe, and rock larger than six (6) inches in the greatest dimension will not be permitted in any part of the trench or backfill.

1. Backfill shall be compacted to not less than 95% of the maximum dry weight per cubic foot as determined by AASHTO Method T-99 (Standard Proctor Test).

2. The top 18 inches of backfill under any paved area shall be compacted to 100% Standard Proctor.

3. Water settling will not be permitted in clay soils. It may be allowed at the option of the Governing Authority's Inspector and design engineer in sandy soils.

2.07 REPLACING PAVEMENTS

A. Subgrades shall be compacted with a mechanical tamper.

B. The minimum width of replaced concrete pavements shall be four (4) feet at interiors and six (6) feet at joints and constructed as shown on Standard Details. Avoid cutting pavements at joints; if unavoidable, reconstruct same as original joint. Depth shall be equal to the original thickness. Existing pavements edges shall be cut vertical.

C. Use high-early-strength cement if road is to be opened in less than 24 hours.

D. The minimum width of replaced bituminous pavements shall be three (3) feet with 8-inch concrete patch. The existing pavement shall be cut vertically and horizontally to a straight line. The 8-inch concrete patch shall be minimum 3,000-psi concrete containing black dye and shall be flush with the existing pavement.

E. The minimum width of replaced bituminous pavement with asphalt shall be three (3) feet with six (6) inches of concrete and two (2) inches of asphalt after the existing pavement is cut vertically and horizontally to a straight line.

**SECTION 02300**
**EARTHWORK**
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SECTION 02300
EARTHWORK

PART 1 – GENERAL

1.01 SCOPE

A. Work under this section shall include all excavation, handling, re-handling, backfilling, compaction of earth material and disposal of any and all deleterious materials encountered during excavation. Other work under this section shall include all dewatering of excavated areas or trenches, backfilling around structures, preparation of subgrades, surfacing and grading and other incidental or appurtenant earthwork operations necessary to complete work in a satisfactory manner. Moreover, the Contractor must assume all responsibility for any added obstacles or conditions, foreseen or unforeseen, and encountered or manifest during the execution of the work.

B. Contractor shall provide all service, labor, materials, and equipment required for all earthwork and related operations necessary to complete the work as shown on drawings or specified in these specifications, or as determined in the field jointly by Contractor and Engineer.

C. Tests for compaction and density shall be conducted by an independent testing laboratory selected by the Contractor and approved by the Engineer. Costs of compaction tests performed by an independent testing laboratory shall be paid for directly by Contractor. The contractor shall make all necessary excavations and shall supply samples of materials necessary for conducting compaction and density tests. Cost of all retests made necessary by failure of materials to conform to requirements of these specifications shall be paid for by Contractor.

1.02 RELATED WORK

A. Section 02230 – Site Clearing

B. Section 02315 – Excavation, Trenching and Backfill of Utility System

C. Section 02370 – Soil Erosion Control

D. Section 02920 – Grassing

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM)

| | |
|---|---|
| ASTM C 136 | (1996a) Sieve Analysis of Fire and Coarse Aggregates |
| ASTM D 422 | (1963; R 1998) Particle-Size Analysis of Soils |
| ASTM D 1140 | (1997) Amount of Material in Soils Finer than the No. 200 (75-micrometer) Sieve |
| ASTM D 1556 | (190; R 1996) Density and Unit Weight of Soil in Place by the Sand-Cone Method |
| ASTM D 1557 | (1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. Ft. (2,700 kN-m/cu.m.) |
| ASTM D 2167 | (1994) Density and Unit Wright of Soil in Place by the Rubber Balloon Method |
| ASTM D 2487 | (1998) Classification of Soils for Engineering Purposes (Unified soil Classification System) |
| ASTM D 2922 | (1996) Density of Soil and Soil-Aggregate in Place by Nuclear |

| | |
|---|---|
| | Methods (Shallow Depth) |
| ASTM D 2937 | (1994) Density of Soil in Place by the Drive-Cylinder Method |
| ASTM D 3017 | (1988; R 1996el) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth) |
| ASTM D 4318 | (1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils |

B. Georgia Department of Transportation Standard Specification, Construction of Roads and Bridges (Georgia D.O.T. Specifications).

1.04 DEFINITIONS

A. Compaction – The degree of compaction is specified as percent compaction. Maximum or relative densities refer to dry soil densities obtainable at optimum moisture content.

B. Excavation Slope – Excavation slope shall be defined as an inclined surface formed by removing material from below existing grade.

C. Embankment Slope – Embankment slope shall be defined as an inclined surface formed by placement of material above existing grade.

D. Topsoil – Material obtained from excavations suitable for topsoil is defined as natural, friable soil, characteristic of representative soils in the vicinity that produce heavy growths of crops, grass, or other vegetation. Topsoil shall be free from roots, stones greater than two inches, and other materials that hinder grading, planting, and maintenance operations, and free from objectionable weed seeds and toxic substances.

1.05 QUALITY ASSURANCE

A. Soil Tests – The Contractor shall arrange for a certified testing service approved by the Engineer to provide all testing services required by this section. The testing service shall take samples and perform moisture content gradation, compaction, and density tests during placement of backfill materials to check compliance with these specifications at locations selected by the Engineer. The Contractor shall remove surface material at locations designated by the Engineer and provide such assistance as necessary for sampling and testing. The Engineer may direct the Contractor to construct inspection trenches in compacted or consolidated backfill to determine that the Contractor has complied with these specifications.

Tests will be performed in accordance with the following:

| Test | Standard Procedure |
|---|---|
| Moisture content | ASTM D 3017 |
| Gradation | ASTM C 136 |
| Density in-place | ASTM D 1556 |
| Moisture-density relationships | ASTM D 1557 |

Test results will be furnished to the Engineer.

1.06 CONDITIONS

A. 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 these sections. If the Contractor is not willing to accept any ground surface elevations indicated upon the Drawings for payment, he shall notify the Engineer prior to starting any excavation work.

B. Earthwork operations shall be performed in a safe and proper manner with appropriate precautions being taken against all hazards.

C. The Contractor shall locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.

D. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

E. Do not interrupt existing utilities serving facilities occupied and used by the Owner or others except when permitted in writing by Engineer and then only after acceptable temporary utility services have been provided.

F. All excavated and filled areas for structures, trenches, fills, topsoil areas, embankments, pavement, drainage ditches and channels shall be maintained by Contractor in good condition at all times until final acceptance by the Owner. All damage caused by erosion or other construction operations shall be repaired by the Contractor using materials of the same type as the damaged material.

G. No classification of excavated materials will be made. Excavation and trenching work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the work, regardless of type, character, composition, or condition thereof.

H. Earthwork within rights-of-way of the Georgia Department of Transportation, County Road Department, City Street Department, or utility companies shall be done in accordance with requirements and provisions of permits issued by those agencies for construction within their respective rights-of-way. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these Specifications.

I. The contractor shall control grading in a manner to prevent water running into excavations. Obstruction of surface drainage shall be avoided and means shall be provided whereby storm water will not be interrupted in existing gutters, other surface drains, or temporary drains. Material for backfill or for protection of excavation in public roads from surface drainage shall be neatly placed and kept shaped so as to cause the least possible interference with public travel. Free access must be provided to all fire hydrants, water valves, meters, and private drives.

J. All earthwork operations shall comply with applicable OSHA Construction Standards.

K. It is understood and agreed that Contractor has made a thorough investigation of the surface and subsurface conditions of the site and any special construction problems which might arise as a result of nearby watercourses and floodplains, particularly in areas where construction activities may encounter water-bearing sands and gravels or limestone solution channels. Contractor shall be responsible for providing all services, labor, equipment, and materials necessary or convenient to him for completing the work within the time specified in these specifications.

1.07 PROJECT RECORD DOCUMENTS

A. Accurately record location of utilities remaining, rerouted utilities, and new utilities by horizontal dimensions, elevations or inverts, and slope gradients.

1.08 PROTECTION

A. Protect trees, shrubs, lawns, and other features remaining as portion of final landscaping. Protect benchmarks, R/W markers, monuments, iron pins, property corner markers, etc. If such markers are disturbed or destroyed, Contractor shall provide services of a registered land surveyor to replace the markers at no expense to the owner.

PART 2 – PRODUCTS

2.01 SOIL MATERIALS

A. Satisfactory soil materials are limited to soils classified in accordance with ASTM D 2487 as GM, GC, SW, SP, SM, SC, ML, and CL.

Unsatisfactory soil materials are classified in accordance with ASTM D 2487 as Pt, OH, OL, CH, and MH.

B. Satisfactory soil materials shall be free of clay, rock or gravel larger than 2” in any dimension, debris, waste, frozen materials, organics, vegetation and other deleterious matter.

C. Borrow shall consist of sand or sand-clay soils capable of being readily shaped and compacted to the required densities, and shall be free of roots, trash and other deleterious material.

D. All soils used for structural fills shall have a PI (plastic index) of less than 10 and a LL (liquid limit) of less than 30. Fill soils shall be dried to appropriate moisture contents prior to compaction.

E. Additionally, fill soils used for the top 2 feet of fill beneath roads and parking lots shall have no more than 15% passing the #200 sieve. Fill soils used for house lots shall nave no more than 25% passing the #200 sieve.

F. The contractor shall furnish all fill material.

G. Contractor shall be responsible for and bear all expenses in developing borrow sources including securing necessary permits, drying the material, haul roads, clearing, grubbing, and excavating the pits, haul roads, placing, restoration of pits and haul roads to a condition satisfactory to property owners and in compliance with applicable state and local laws and regulations.

2.02 SOURCE QUALITY CONTROL

A. If tests indicate materials do not meet specified requirements, change material and retest.

B. Provide materials of each type from the same source throughout the work.

PART 3 – EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Identify known below grade utilities. Stake and flag locations.

C. Identify and flag above grade utilities.

D. Maintain and protect existing utilities remaining which pass through work area.

E. Notify all utility companies prior to grading and where required to remove utilities.

F. Upon discovery of unknown utility or concealed conditions, discontinue affected work; notify Owner/Engineer immediately.

3.02 DEWATERING

A. The 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 that will ensure 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. The 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 time as water can safely be allowed to rise in accordance with the 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. The contractor shall not operate dewatering devices (i.e., pumps, etc.) before the hour of 7:00 AM and after the hours of 7:00 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. The contractor shall dispose of water from the work in a suitable manner without damage to adjacent property. The conveyance of water shall be such as to not interfere with construction operations or surrounding property owners. No water shall be drained into work completed or under construction without prior consent of Engineer. The 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 specified in Section 02370 – Soil Erosion Control, 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.

I. Permanent French drains under and around structures shall be installed where shown. Excavation of a trench as shown on the drawings is required. A non-woven drainage geotextile such as Polyfelt TS700 shall be initially draped in the trench. No. 57 stone shall be placed in the trench followed by a 6-inch diameter perforated PVC pipe as shown in the drawings. Crushed stone shall be placed such that the granular layer is extended to finished grade. Filter fabric shall be lapped over the top of the stone. The permanent French drain must have daylight into a lower elevation area of the site. A headwall and an animal screen shall be provided at the outlet end of the pipe to protect it from future clogging.

3.03 TOPSOIL EXCAVATION

A. Excavate topsoil from areas to be further excavated or graded and stockpile in designated area. Remove excess topsoil not being reused from site.

B. Do not excavate wet topsoil.

C. Stockpile topsoil to a height not exceeding 8 feet. (Cover to protect from erosion).

3.04 GENERAL EXCAVATION

A. Excavation shall include removal of all material from an area necessary for the construction of a structure, dam or dike. Excavations shall provide adequate working space and clearances for the work to be performed therein. Excavation for structures shall conform to the elevations and dimensions shown with a tolerance of plus or minus 0.10 feet.

B. The contractor shall be responsible for any problems caused to property owners in residential areas due to excessive dust caused by excavation operations. Preparations shall be made by Contractor to control excessive dust in or near any residential area.

C. Where quicksand, soft clay, spongy, swampy or other materials unsuitable for subgrade or foundation purposes are encountered below excavation limits, they shall be removed to a level of suitable material as directed by the soils engineer. Areas so excavated shall be backfilled with Class D concrete or with foundation backfill to the original excavation limit unless otherwise directed by the soil engineer.

D. Barriers shall be placed at each end of all excavations and at such places as may be necessary along excavations to warn all pedestrian and vehicular traffic of such excavations. Lights shall also be placed along excavations from sunset each day to sunrise of next day until excavations are backfilled. All excavations shall be barricaded in such a manner as to prevent persons from falling or walking into any excavation.

3.05 BORROW EXCAVATION

A. 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 Soils Engineer. Any soil tests required for approval of the borrowed material proposed shall be at the Owner's expense.

3.06 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 the 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 plans.

3.07 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 soils engineer, shall be removed from the work site and disposed of by the Contractor at his expense.

D. No waste material shall be dumped on private property unless written permission is furnished by the owner of the property and unless a dumping permit is issued by the local jurisdiction.

3.08 COMPACTION

A. Control soil compaction and moisture content during construction in accordance with the following requirements.

B. Fill Placement – Once the subgrade has been approved, the exposed surface and all subsequent fill lifts shall be compacted to at least [95%] [98%] of the maximum dry density in accordance with ASTM D 698, current edition. This soil shall be placed maintaining the moisture content within 3% of the optimum moisture content.

3.09 BACKFILL AND FILLS

A. Place acceptable soil material in layers to required elevations.

B. Ground Surface preparation – Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

C. When existing ground surface has a density less than that specified under “Compaction” for particular area classifications, break up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.

D. Placement and Compaction – Place backfill and materials in layers not more than 6” in loose depth for material compacted by heavy compaction equipment and not more than 4” in loose depth for material compacted by hand operated tampers.

E. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to the required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

F. Place backfill and fill materials evenly adjacent to structures, to required elevations. Take care to prevent wedging action of backfill against structures by carrying material uniformly around structure to approximately same elevation in each lift.

3.10 TOLERANCES

A. Unpaved areas within 0.1 feet of elevation shown on the drawings provided such deviation does not create low spots that do not drain.

B. Paved Areas – Subgrade to within 0.05 feet of the drawing elevations less the compacted thickness of the base and paving.

C. Building Pads – Subgrade to within 0.05 feet of the drawing elevations less the thickness of the concrete slab.

3.11 FINISHED GRADING

A. All areas covered by the project including excavated and filled sections and adjacent transition areas shall be smooth graded and free from irregular surface changes.

B. Degree of finish shall be that originally obtainable from either blade grader or scraper operations supplemented with hand raking and finishing, except as otherwise specified.

C. The finished surface of unpaved areas shall be not more than 0.10’ above or below the established grade or approved cross-section.

D. Ditches and lagoon banks shall be finish graded, dressed and seeded within fourteen (14) calendar days of work to reduce erosion and permit adequate drainage.

3.12 PROTECTION

A. Graded areas shall be protected from traffic, erosion, settlement, or any washing away that may occur from any cause prior to acceptance.

B. The Contractor shall be responsible for the protection of below grade utilities shown on the drawings or indicated to him by the Owner at all times during earthwork operations.

C. Repair or re-establishment of graded areas prior to final acceptance shall be at the Contractor’s expense.

D. Site drainage shall be provided and maintained by Contractor during construction until final acceptance of the project. Drainage may be by supplemental ditching or pumping, if necessary, prior to completion of permanent site drainage.

3.13 DRAINAGE

A. The Contractor shall be responsible for providing surface drainage away from all construction areas. This shall include maintenance of any ditches that exist or may be constructed by others in the immediate vicinity of the work. The contractor shall provide proper and effective measures to prevent the siltation of wetlands, streams, and ditches both on the Owner’s property, and those properties downstream.

3.14 PRE-DENSIFICATION AND PROOFROLLING

A. At completion of clearing, grubbing and stripping of topsoil, stump holes or other depressions shall be cleared of loose material and debris and shall then be backfilled with approved fill. The backfill shall be placed in six-inch thick loose lifts and compacted to 98% of the maximum dry density in accordance with the ASTM D 698, current edition.

B. Following the clearing and grubbing of trees and underbrush and stripping of topsoil, the fill subgrade shall be evaluated by the geotechnical engineer or his representative prior to fill placement. Proof rolling of the subgrade soils shall be performed where possible. Proof rolling shall be accomplished with a loaded dump truck or other approved rubber tired equipment. Overlapping passes of the vehicle shall be made across the site in one direction and then at right angles to the original direction.

C. Proof rolling shall not be performed on excessively soft areas or areas of high water table. Recommendations for these areas will be made by the geotechnical engineer at the time of construction. These recommendations may include undercutting soft areas, trenching of soils for drainage or the placement of bridge lifts.

3.15 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction – Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed. An experienced geotechnical engineer shall observe all proof rolling and all fill and liner placement. Submit one copy of results of all compaction tests and observations of pre-densification to Owner and Engineer.

B. Perform field density tests in accordance with ASTM D 2937 (drive cylinder method), ASTM D 2167 (rubber balloon method), as applicable, or nuclear method ASTM D 2922.

C. Perform at least one field density test for each layer of fill for every 5,000 square feet of area.

D. If in opinion of Engineer, based on testing service reports and inspection, subgrade or fills that have been placed are below specified density, provide additional compaction and testing at no additional expense.

E. Testing will be the responsibility of the Owner. Contractor shall coordinate with Inspector for testing.

END OF SECTION

**SECTION 02510**
**PIPING SYSEM**
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SECTION 02510
PIPING SYSTEM

PART 1 – GENERAL

1.01 SCOPE

A. This section of the Specifications describes products to be incorporated into the water lines and requirements for the installation and use of these items. The Contractor shall furnish all products and perform all labor necessary to fulfill the requirements of these Specifications. It includes, but is not limited to the construction of the following items:

B. Piping

C. Valves

D. Fittings

E. Connect to Existing System

F. All necessary appurtenances to convey potable water to the existing system as shown on the plans.

G. Any pipe, pipe fittings, plumbing fittings or fixtures, solder, or flux used in the installation or repair of a public water system must meet the new definition of lead free meaning: (a) not containing more than 0.2 percent lead when used with respect to solder; and (b) not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures.

1.02 RELATED WORK

A. Other work required for the construction of the Piping System is specified in the following sections of these specifications:

| Section No. | Title |
|---|---|
| 01605 | Shipment, Protection, and Storage |
| 02315 | Excavation, Trenching and Backfilling |
| 02920 | Grassing |
| 04000 | Well Houses |
| 09900 | Painting |
| 11240 | Chemical Feed System |
| 16100 | Electrical |

1.03 REFERENCES

A. ASTM D 3740-94a – Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

B. ASTM E 329-93b – Agencies Engaged in the Testing and/or Inspection of Materials as Used in Construction.

C. ANSI/AWWA C 150/A 21.50-96 – Thickness Design of Ductile Iron Pipe.

D. ANSI/AWWA C 151/A 21.51-91 – Ductile Iron Pipe, Centrifugally Cast, for Water or Other Liquids.

E. ASTM D 3212-92 – Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

F. ASTM F 477-95 – Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

G. ASTM D 2241-94 – PVC Pressure-Rated Pipe (SDR – Series).

H. ASTM D 3139-95 – Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seams.

I. ASTM A 139-93a – Electric-Fusion (Arc) Welded Steel Pipe (NPS 4 and over).

J. ACI 318-89 – Building Code Requirements for Reinforced concrete.

K. ASTM C 39-94 – Compressive Strength of Cylindrical Concrete Specimens.

L. ASTM C 890-91 – Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.

M. ASTM C 891-90 – Installation of Underground Precast Concrete Utility Structures.

N. ASTM C 913-89 – Precast Concrete Water and Wastewater Structures.

O. ASTM A 615/A 615 M-95b – Deformed and Plain Billet – Steel Bars for Concrete Reinforcement.

P. ANSI/AWWA C-500-93 – Metal-Seated Gate Valves for Water Supply Service.

Q. ANSI/AWWA C-509-94 – Resilient-Seated Gate Valves for Water Supply Service.

R. ASTM D-2922-91 – Test methods for Density of Soil and Soil Aggregate In-Place by Nuclear Methods (Shallow Depth).

S. ASTM D-1557-91 – Laboratory Compaction Characteristics of Soil Using Modified Effort.

T. ASTM D 1556-90 – Density and Unit Weight of Soil In-Place by The Sand-Cone Method.

U. ASTM D 71-87 (reapproved 1994) – Evaluation Degree of Blistering of Paints.

V. ASTM D 2794-93 – Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).

W. ASTM E 96-95 – Water Vapor Transmission of Materials.

X. ASTM G 53-95 – Operating Light and Water-Exposure Apparatus (Fluorescent UV – Condensation Type) for Exposure of Nonmetallic Materials.

Y. ANSI/AWWA C 111/A 21.11-95 – Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings.

Z. ASTM A 377-95 – Index of Specifications for Ductile Iron Pressure Pipe.

AA. ANSI/AWWA C 600-93 – Installation of Ductile Iron Water Mains and their appurtenances.

1.04 OPTIONS

A. The specifications describe several materials. Where manufacturers and models of equipment are named in the specification, it is intended that these are to describe the quality and function required. The Contractor may use equipment or materials of other manufacturers provided they are reviewed and accepted by the Engineer and the Owner as meeting the specifications.

B. The Contractor will furnish the Engineer and the Owner a description of all materials before ordering. The Engineer will review the Contractor's submittals and provide in writing an acceptance or rejection of material. However, an acceptance of any material by the Engineer does not relieve the Contractor of this responsibility to meet the requirements of the construction plans or these specifications.

1.05 QUALITY ASSURANCE

A. Material and equipment shall be the standard product of a manufacturer who has manufactured them for a minimum of 2 years and who provides published data on the quality and performance of the project.

B. A Subcontractor for any part of the work must have experience on similar work and if required, furnish the Engineer with a list of projects and the Owners or Engineers who are familiar with his competence.

C. Devices, equipment, structures, and systems not designated by the Engineer that the Contractor wishes to furnish shall be designed either by a registered professional engineer or by someone the Engineer approved as qualified. If required, complete design calculations and assumptions shall be furnished to the Engineer or the Owner before acceptance.

D. All testing of the piping shall be made by the Contractor with equipment qualified by the Owner, Engineer, or utility company and in the presence of the Engineer, Owner and utility company. The Engineer or his representative reserves the right to accept or reject testing equipment.

E. Soil testing shall be done by a testing laboratory regularly engaged in soil testing and shall be approved by the engineer prior to engagement. Mill certificates of test on materials made by manufactures will be accepted provided the manufacturer maintains an adequate testing laboratory, makes regularly scheduled tests that are spot checked by an outside laboratory, and furnishes satisfactory certificates with the name of the one making the test.

F. The details of all welded joints shall comply with all of the requirements for joints, which are accepted without qualification test under the "Code of Arc and Gas Welding in Building Construction of the American Welding Society". Workmanship shall conform to A.I.S.C. Specifications for Fabrication and Erection. All work shall be executed by skilled workmen under experienced supervision. All welding shall be done by welders who have been previously qualified by tests as prescribed in the "American Welding Society Standard Qualification Procedure" to perform the type of work required. Welders shall have passed the qualification test (Qualification tests using procedures covered in AWSS B3.0 Part II) within the preceding 12 months.

1.06 PRODUCT DELIVERY, STORAGE & HANDLING

A. Shall be as described in Section 01605 – Shipment, Protection and Storage.

1.07 SEQUENCING, SCHEDULING

A. The Contractor shall arrange his work so that sections of mains between valves are tested, sterilized, and placed in service as soon as reasonable after it is placed.

1.08 ALTERNATIVES

A. The intention of these specifications is to produce the best system for the Owner. If the Contractor suggests that alternate material, equipment or procedures will improve the results at no additional cost, the Engineer and the Owner will examine the suggestion and if it is accepted, it may be used. The basis upon which acceptance of an alternative will be given is its value to the Owner, and not for the convenience of the Contractor.

1.09 GUARANTEE

A. The Contractor shall guarantee the quality of the materials, equipment, and workmanship for 12 months after acceptance of the completed Project. Defects discovered during that period shall be repaired by the Contractor, at no cost to the Owner. The Performance Bond shall reflect this guarantee.

B. The manufacturers of equipment, valves, pumps, controls, measuring devices and special equipment shall test the equipment at field conditions for compliance with the specifications. The manufacturer shall guarantee his product to be free from defects in material and factory workmanship for a period of 1 year from date of acceptance of the completed project, provided the product is properly installed, serviced and operated under normal conditions and according to the manufacturer's instructions. The manufacturer shall furnish a replacement for any component that proves defective during the guarantee period, except such items which are seals. The Contractor shall furnish the services of a representative of the manufacturer to check the installation after it is completed and to furnish the Engineer with a certificate that the equipment meets the specifications and will perform as required. The manufacturer shall furnish four field trips to the plant by a service representative during the first year after completion of the Project at no cost to the Owner.

1.10 EXISTING UTILITIES

A. All known utility facilities are shown schematically on plans and are not necessarily accurate in location as to plan or elevation. Utilities such as service lines or unknown facilities not shown on plans will not relieve the contractor of his responsibility under this requirement. "Existing Utilities Facilities" means any utility that exists on the project in its original, relocated or newly installed position. The Contractor will be held responsible for the cost of repairs to damaged underground facilities; even when such facilities are shown on the plans. The Contractor shall contact all utility companies prior to beginning the work and request an accurate field location of their respective utility lines.

B. Damage to any part of the existing water system and facilities by the Contractor or Subcontractors, which is required by the User's and Owner's forces, shall be charged to the Contractor on the basis of time and material, plus 30% for overhead and administration.

1.11 REQUIREMENTS OF REGULATORY AGENCIES

A. Water mains shall be sterilized to meet the requirements of the Georgia EPD. Sterilization shall be in accordance with AWWA Standards C-651, latest revision.

1.12 CONNECT NEW MAIN TO EXISTING SYSTEM

A. The Contractor shall furnish the necessary pipe and perform all excavation, dewatering, shoring, backfilling, etc. necessary to make the connection of a new main to the existing water system. The Contractor shall contact the Superintendent of the Water Utility a minimum of 48 hours in advance of construction. The Contractor shall be responsible for coordinating his construction with the utility operator.

1.13 ACCEPTANCE OF PORTIONS OF WORK

A. The Owner reserves the right to accept and use any portion of the work whenever it is considered in the public interest to do so.

1.14 RECORD DATA

A. It will be required of the Contractor to keep accurate, legible records of the location of any deviations from the construction drawings, any additional items or structures to the construction drawings, and all utilities encountered which are not shown on the construction drawings. These records will be made available to the Engineer before his inspection for incorporation into the Engineer's Record Drawings.

PART 2 – PRODUCTS

Products and materials used in the work shall conform to the following:

2.01 PIPE

A. Ductile Iron Pipe – Shall conform to ANSI A21.50 (AWWA C-150) latest revisions and ANSI A21.51 (AWWA C-151) latest revision. The ductile iron pipe shall be of the thickness according to ANSI/AWWA C150/A21.50, latest revision, for Laying Condition 2, and shall be Class 50 minimum. It shall be cement lined in accordance with ANSI A21.4 or AWWA C-104.

B. Plastic Pipe – Shall be PVC Class 150, DR 18, C-900 for 12" and smaller and Class 165, DR 25, C-905 for 14" and larger. All pipes shall conform to ASTM D-2241 and be installed in accordance with ASTM D-2321. Joints shall be in accordance with ASTM D-3036. Sizes and dimensions shall be as follows:

| 150 PSI, DR 18, C-900 | | | 165 PSI, DR 25, C-905 | | |
|---|---|---|---|---|---|
| Nom. Pipe Size | O.D. (in.) | Min. Wall Thickness (in.) | Nom. Pipe Size | O.D. (in.) | Min. Wall Thickness (in.) |
| 4" | 4.800 | 0.267 | 14" | 15.300 | 0.612 |
| 6" | 6.900 | 0.383 | 16" | 17.400 | 0.696 |
| 8" | 9.050 | 0.503 | 18" | 19.500 | 0.780 |
| 10" | 11.100 | 0.617 | 20" | 21.600 | 0.864 |
| 12" | 13.200 | 0.733 | 24" | 25.800 | 1.032 |
| | | | 30" | 32.000 | 1.280 |
| | | | 36" | 38.300 | 1.530 |

All PVC pipe less than 2" diameter shall be schedule 40 unless otherwise noted.

Pipe shall bear the National Sanitation Foundation seal of approval and shall comply with the requirements of Type I, Grade I (PVC 1120) of the ASTM resin specification D-1784 (AWWA C 151-76). Certificates of conformance with the foregoing specifications shall be furnished with each lot of pipe supplied. Plastic pipe shall be joined by means of a rubber ring bell joint which shall be an integral part of the barrel or solvent welded at the factory. The joints shall have a space to provide expansion and contraction of the pipe without leaking. Fittings for plastic pipes shall be PVC with ring tight rubber joints, or ductile iron with adapters to PVC pipe.

The bell shall consist of an integral wall section with a bounded-in solid cross section shall be designed to be at least as hydrostatically strong as the pipe wall and meet the requirements of UNI-BELL-B-11.

Each standard and random length of pipe shall be tested at two times the rated pressure of the pipe for a minimum of 5 seconds. The integral bell shall be tested with the pipe.

C. PVC Schedule 40 and 80 Pipe – Shall conform to ASTM 1785.

2.02 JOINTS

A. Flanged Joints – Shall conform to ANSI A21.15 (AWWA C-115) latest revision. Bolts shall conform to ANSI B18.2.1 and nuts shall conform to ANSI B18.2.2. Gaskets shall be rubber, either ring or full face, and shall be 1/8 inch thick. Gaskets shall conform to the dimensions recommended by AWWA C-115 latest revision.

B. Mechanical Joints – In ductile iron pipe shall conform to ANSI A21.11 (AWWA C-111) latest revision.

C. Push-On-Joints – In ductile iron pipes shall conform to ANSI A21.11 latest revision.

D. Plastic Pipe – Joints in plastic pipe 4-inches and larger shall meet all requirements of AWWA C-900 latest revision. Joints in plastic pipe with a diameter less than 4-inches shall conform to ASTM D-3139 latest revision.

E. Restrained Joints – Restrained joints for pipe, valves and fittings shall be mechanical joints with ductile iron retainer glands or push-on type joints equivalent to “Lok-Ring”, “TR Flex”, or “Super Lock” and shall have a minimum rated working pressure of 250 psi. The joints shall be in accordance with the applicable portions of AWWA C111. The manufacturer of the joints shall furnish certification, witnessed by an independent laboratory, that the joints furnished have been tested at a pressure of 500 psi without signs of leakage or failure. Restrained joints shall be capable of being deflected after assembly.

2.03 FITTINGS

A. Fittings for Ductile Iron – Shall be short body ductile iron, manufactured in accordance with ASA 21.53 (AWWA C-153) latest revision. They shall be cement lined in accordance with ANSI A-21.4 (AWWA C-104) latest revision. Fittings shall be designed to accommodate the type of pipe used.

B. Fittings for Flanged Pipe – Shall be manufactured in accordance with ASA B 16.1, Class 125 flanges.

C. Fittings for PVC Pipe – Less than 4” shall be PVC with ring tight rubber joints or solvent weld joints. PVC Fittings 4” and larger shall not be allowed.

D. Fittings for Schedule 40 – shall conform to ASTM D-2466

E. Fittings for Schedule 80 – socket fittings shall conform to ASTM D-2467 and ASTM D-2464, for thread fittings.

2.04 POLYETHYLENE ENCASEMENT

A. Polyethylene encasement shall be in tube form conforming to the requirements of ANSI/AWWA C105/A21.5 latest revision. The polyethylene film shall have the following characteristics:

| | |
|---|---|
| Tensile Strength | 1,200 psi minimum |
| Elongation | 300 percent minimum |
| Dielectric Strength | 800 V/mil thickness minimum |
| Thickness | Normal thickness of .0008 in. (8 mil.) |

Polyethylene encasement shall be installed on ductile iron piping, fittings, and valves below grade.

2.05 GATE VALVES (GV)

Gate valves and operators shall be as shown on the Plans and shall conform to the following Specifications:

A. Gate Valves (3 inches and larger):

1. Gate valves 3 inches and larger shall conform to AWWA C500 and shall be double disc, parallel seat type with non-rising stem.

2. Unless otherwise indicated or specified, gate valves shall be designed for a working pressure of not less than 150 pounds.

3. Valves shall take full test pressure on either face. Valves shall be from not more than two manufacturers and similar sizes shall be identical and parts interchangeable. They shall be constructed with bolted bonnets provided with stuffing boxes having bolted followers. The stuffing boxes shall be easily accessible and shall be packed ready for use.

4. Iron body valves 3 inches and larger shall have fittings of Grade I Bronze, except peened or rolled-in gate rings, which shall be Grade II Bronze.

5. Rubbing surfaces and surfaces in contact during the seating operations, including wedge seats, thrust ring seats, top and bottom stem guide bearing surfaces, packing gland surfaces and contact seats provided for packing under pressure, shall be all bronze bushed or bronze faced.

6. Stems for valves 3 inches and larger shall be cast forged or rolled bronze conforming to AWWA C500. Cast stems shall be of Grade IV Bronze. Bronze for forged and rolled stems shall be Grade III.

7. Valves 6 inches and larger, when installed on sewage or sludge lines, shall be provided with suitable cleanouts or approved type near the base of the body for removal of sediment.

8. Gate valves for liquid service shall be designed for 150 psi working pressure and shall be similar in design, construction and materials to American-Darling No. 52 or 55, Mueller Company No. A-2480-20 or A-2380-6, Dresser Style 67, or equal.

9. Gate valves shall be furnished with standard hand wheels or chain wheels as shown on the Plans and/or specified. Gate valves installed in an upright position, with hand wheels over 6 feet 6 inches above the floor shall be equipped with bevel gears and outside packed gear cases and chain wheels.

10. Gears shall be steel with cut teeth and shall be enclosed in watertight, cast iron gear case of the outside packed stuffing box type, equipped with provisions for lubrication of all moving parts.

B. Resilient-Seated Gate Valves 3 inches through 12 Inches:

1. Resilient-seated gate valves 3 inches and larger shall conform to AWWA C509 with non-rising stem.

2. Unless otherwise indicated or specified, pate valves shall be designed for a working pressure of not less than 150 psig.

3. Valves shall take full pressure on either face. Valves shall be from one manufacturer and similar sizes shall be identical and parts interchangeable. They shall be constructed with bolted bonnets provided with two O-ring stem seals which can be replaced with the valve under pressure in the full-open position.

4. Valves shall be constructed of materials conforming to AWWA C509. All internal and external surfaces shall be coated with epoxy to a minimum thickness of 8 mils.

5. Valve seats shall be coated with a rubber material conforming to AWWA C509 so that there shall be no rubber to metal contact when the valve is in the fully closed position.

6. Valves shall be hydrostatically tested in accordance with AWWA C509.

7. Valves shall be American, Waterous or equal and shall be furnished with standard hand wheels, chain wheels or nuts as shown on the Plans and/or as specified.

C. Gate Valves (2 ½ inches and Smaller):

1. Gate valves 2-1/2 inches and smaller shall be designed for a working pressure of not less than 125 psi. They shall be bronze, rising stem, double disc, parallel seat, screwed bonnet type. Valves shall be similar in design, construction and materials to Crane No. 440, or Nibco No. T-111-2 or equal, with appropriate end connections.

2.06 SILENT CHECK VALVE

A. Check valves shall be silent check valves. They shall be globe type. Silent check valve shall be designed with semi-steel bodies, bronze seat, bronze plug and stainless steel spring, for a 125-lb. ANSI flange rating. Check valve shall be of non-slam or silent type, of such design that the closing action is controlled by a conical (or helical) spring which telescopes within itself and so designed to return disc to seat at zero velocity or before reversal of flow takes place on the pipeline. Silent check valves shall be equivalent to valve manufactured by Empire or Val-matic.

B. Other check valves shall be swing check valves. They shall have iron bodies and be bronze mounted designed for a water working pressure of 125-psi. They shall be operated by outside level and weight.

2.07 BALL VALVES FOR PVC PIPE

A. Ball valves for PVC pipe shall be of PVC Type 1 with union, socket, threaded or flanged ends as required. Ball valves shall be full port, full flow, all plastic construction, 150 psi rated with teflon seat seals, O-ring and T-handles. Valves shall be double (true) union type. PVC ball valves shall be manufactured by Celanese Piping Systems, Inc., Wallace and Tiernan Inc., Plastiline, Inc., or equal.

B. All valves shall be mounted in such a position that valve position indicators are plainly visible when standing on the floor.

2.08 BALL VALVES (3-inches and smaller)

A. Ball valves 3-in and smaller shall be bronze, or carbon steel body; full bore, fire safe, rated for pressure of 250 psi. Valve ends shall be flanged, threaded, or soldered as required. All valves furnished shall be by the same manufacturer.

B. The design of the valve shall provide suitable seating in both directions. To compensate for wear on the seating surfaces, the valve shall utilize a separate ball and stem design which will allow the ball to float freely under pressure against the downstream seat and seal tightly under all service conditions. The stem shall be designed to prevent blowout. Ball valves shall have Type 316 stainless steel balls and trim, RTFE seats and RTFE stem packing.

C. The valves shall not require lubrication but shall have stuffing boxes which can be packed with the valve in service without undue leakage.

D. Valves shall be furnished with lever actuator attached to each valve.

Valves shall be "Apollo" series as manufactured by Conbraco Industries, Inc.

2.09 NEEDLE VALVES

A. The needle valves shall have a cast bronze body and be constructed in accordance with ASTM B62 and shall be designed for an operating pressure of 125 psi and a 200 psi maximum test pressure. The ends shall be ANSI B2.1 threaded. The valves shall have a rising bronze stem and non-slip malleable iron hand wheel.

B. The needle valve shall be Figure 680 as manufactured by the Wm. Powell Company, Cincinnati, Ohio, or Figure 88 as manufactured by Crane Company, Valve Division, Chicago, Illinois, or equal.

2.10 AIR RELEASE VALVES

A. The air release valves shall be installed as shown in the Drawings. The valves shall have a cast iron body, cover and baffle, stainless steel float, bronze water diffuser Buna-N or Viton seat and stainless steel trim. Valves shall be provided with a vacuum check to prevent air from reentering the line. The fittings shall be threaded. The air release valves shall be Model 200WD as manufactured by APCO Valve and Primer Corporation, Schaumburg, Illinois; Model 45VC by Val-Matic Valve and Manufacturing Corporation, Lyons, Illinois or equal.

2.11 METER BOX

A. Meter boxes shall be plastic. Material shall meet or exceed the following:

1. Tensile Strength: 3,400 psi (ASTM D 638).
2. Flexural Modulus: 191,000 psi (ASTM D 790).
3. Impact Strength, Izod: 0.6 feet 16/inch (ASTM D 256)
4. Deflection Temperatures: 200 degrees F (ASTM D 648

B. Plastic meter boxes shall be equal to Ameteck Plymouth Products Division Brooks Products, Inc. or approved equal.

C. Meter box shall be fitted with cast iron cover.

D. Minimum dimensions shall be 10-3/4 x 16-inches top and 18-1/2 x 13-1/4 – inches at bottom and 18-incehs deep

2.12 VALVE BOX

A. All buried valves shall have cast iron two or three piece valve boxes with cast iron covers. Valve boxes shall be provided with suitable heavy bonnets and to extend to such elevation at or slightly above the finished grade surface as directed by the Engineer. The barrel shall be one or two-piece, screw type, having 5-1/4-inch shaft. Covers shall have "WATER" cast into the top for all water mains and "DRAIN" cast into the top of all drain line. All valves shall have actuating nuts extended to within six inches of the top of valve box cover.

B. Valve boxes shall be provided with concrete base and valve nameplate with suitable anchors for casting in concrete. Nameplate shall be 3-inch diameter bronze disk with raised lettering 1/8-inch high as shown on the Drawings and manufactured by Shiedow Bronze Corporation, Kingwood, W. VA; or equal.

2.13 FLOW METER

A. The Contractor shall furnish and install flow meters complete with all specified appurtenances, mounting brackets, hardware, and all interconnecting tubing, wiring, and conduit.

All brackets and other hardware shall be constructed of stainless steel. The manufacturer shall supply all necessary transformers and appurtenances required for a complete installation and one year supply of circular charts for the furnished meter.

1. Propeller Flow Meters – Shall be indicator-totalizer-transmitter type with a ±2% accuracy throughout the flow range, epoxy coated steel pipe conforming to ASA pipe schedule, fitted with 150-lb. AWWA Class D flanges and straightening vanes, and a hermetically sealed register case.

   The instrument shall be housed in a NEMA 4X all metal enclosure with glass viewing window and protective cover with locking hasp. The gears and shafting shall be manufactured of corrosion resistant metal. The input shat speed shall not exceed 80-RPM. Change gears shall be replaceable without disassembly of the indicator-totalizer.

2. Indicator – Indication shall be displayed on a 3-1/4-inch diameter dial over a minimum arc of 220-degrees. Indication shall be in engineering units.

3. Totalizer – Shall be six-digit straight-reading with test sweep hand, one rotation of which shall be equal to the least significant digit of the totalizer.

4. Transmitter – Shall provide one of more of the following outputs as Required to be compatible with their respective receivers:

2-wire, single pole, single throw contact closure linear to flow scaled from one to 150 contacts/minute at full-scale flow rate. The contact rating shall be one ampere at 117-VAC. The “on-time” minimum shall be 100-ms with continuous “on-time” maximum. Power transmitter from recorder.

5. Recorder – A 12-inch circular chart recorder with four channels shall be furnished by the flow meter manufacturer and mounted at the pump house building. The recorder shall monitor and record the well and service flow rates, groundwater table, and system pressure. The recorder shall be Model DR 4500A manufactured by Honeywell or an approved equivalent. The unit shall have the following characteristics:

| | |
|---|---|
| Well Pump Flow Range Accuracy | 0 to 2,000 GPM plus or minus 2% of actual flow within the range specified for each instrument |
| System Pressure | 0 to 100-psi |
| Groundwater Table | 0 to (-)80-feet |
| Temperature Range | 30º F minimum to 120º F maximum |
| Humidity Range | 10% to 95º F |
| Power Supply | 115 VAC – 10%, 60 Hz, 1-Phase |
| Repeatability | 0.25% of full scale |
| Response | Less than four seconds for full scale |
| Input Signal | Pulse Rate: 10 pulses per second at maximum indicator scale |
| Chart Speed | 7-Day |
| Totalizer for Well | 14-digit print-out on chart |
| Other features shall include a lockable door and thermostatically controlled heater in case. | |

2.14 EYE/FACE WASH STATION

A. Shall have safety green ABS plastic receptor, ABS eye/face wash head with dust cover, and pedestal mounted with floor flange. The signage shall be safety green and universal emergency sign. Activation shall be a push flag. The unit shall be similar or equal to Haws Model 7121. The unit shall be freeze-resistant with polyethylene foam insulation and shall meet or exceed ANSI Standard A-358.1 and OSHA rules and regulations. The water supply line shall have polyethylene insulation. The waste line shall be provided and directed beyond the concrete pad.

2.15 PRESSURE GAUGE

A. Each pressure gauge shall be directly mounted, polished stainless steel case with a 3--1/2-inch diameter dial and furnished with an acrylic plastic window, 1/4-inch shut-off valve, and be glycerin filled with bronze or stainless steel tube. All gauges shall be weatherproofed. The face dial shall be white finished aluminum with jet black graduations and figures. The face dial shall indicate the units of pressure being measured (e.g., feet, inches, etc.) or be dual scale. Socket material shall be bronze.

B. Pressure gauges shall be equal to Ashcroft Model 1009 or approved equal. Range shall be 0 to 100 psi. Accuracy shall be within 1%.

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2.16 BASKET STRAINER

A. Basket strainer shall be a 2 inch iron body type installed on the suction piping of the booster pumps. The basket shall be stainless steel with 1/16” openings.

2.17 HOSE BIBBS

A. Hose bibbs shall be brass, polished chromium plated, as manufactured by Chicago Faucet Company. Potable water bibbs shall be No.952, 3/4-inch or l-inch with vacuum breaker as noted in the Drawings.

2.18 PIPE SLEEVE SEALS

A. A watertight seal at all wall sleeves shall be obtained using expandable rubber seal rings equal to Link-Seal as shown on the Drawings. These seal rings shall be the modular mechanical type consisting of synthetic rubber links shaped to continuously fill the annual space between the pipe and wall sleeve. Links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and nut. After the seal assembly is positioned in the sleeve, tightening of the bolts shall cause the rubber sealing sleeve. The watertight seal shall be effective against a hydrostatic head of at least 40 feet. The seal shall also be constructed so as to provide electrical insulation between the pipe and wall, thus reducing the chances of cathodic reaction between these two members.

2.19 METAL DETECTOR TAPE

A. Marking Tape: Detectable marking tape shall consist of a metalized foil laminated between two layers of color coded inert plastic film suitable for lasting as long as the pipe and shall be resistant to alkalis, acids, and other destructive agents found in the soil. The plastic film shall be imprinted with a continuous message “Caution Water Line Buried Below”. The message shall be in permanent ink. Marking tape shall be not less than 2” wide and not less than 5.5 mil thick with a tensile strength of not less than 120 grams per 1.5 mil. Detectable marking tape shall be the type that can be located by any standard electronic pipe locator. A continuous warning message repeated every 16” to 36” shall be imprinted on the tape surface.

2.20 TRACING WIRE

A. Tracer Wire: Tracer wire shall be installed on all pipelines and service lines in a continuous fashion. It shall be brought to the surface at each locator post. It shall be accessible from the surface at all valve and meter boxes. At locations tracer wire surfaces between valves, regular valve box with plain lid and collar shall be installed between a pipeline marker pair. Tracer wire shall be 12 GA single strand or up to 7 stands, copper with insulation UL rated for direct bury underground service. Splices shall be UL rated for direct bury and shall be minimized. Wire for directionally drilled bores shall be a minimum of #8 gauge.

2.21 DRYWELL

A. The drywell shall be a 24 inch diameter heavy duty, high density polyethylene drywell. The drywell shall be used to draw off any water drainage from the interior of the well house and discharge it into the ground. The drywell shall be located, buried a minimum 36 inches, wrapped in filter fabric and backfilled with stone as shown in the drawings.

PART 3 – EXECUTION

3.01 ON-SITE OBSERVATION

A. The Engineer shall have the right to require that any portion of the work be done in his presence and if any work is covered up after such instruction, it shall be exposed by the Contractor for observation. However, if the Contractor notifies the Engineer that such work

is scheduled and the Engineer fails to appear within 48 hours, the Contractor may proceed without him. All work done and materials furnished shall be subject to review by the Engineer or Project Representative. All improper work shall be reconstructed and all materials which do not conform to the requirements of the specifications shall be removed from the work upon notice being received from the Engineer for the rejection of such materials. The Engineer shall have the right to mark rejected materials so as to distinguish them as such.

B. The Contractor shall give the Project Engineer or project Representative a minimum of 48 hours' notice for all required observations or tests.

C. It will also be required of the Contractor to keep accurate, legible records of the location of all water lines, service laterals, valves, fittings, and appurtenances. These records will be prepared in accordance with the paragraph on "Record Data" in the Supplementary Conditions. Final payment to the Contractor will be withheld until all such information is received and accepted.

3.02 HANDLING MATERIALS

A. Unloading: Furnish equipment and facilities for unloading, handling, distributing and storing pipes, fittings, valves and accessories. Make equipment available at all times for use in unloading. Do not drop or dump materials. All materials dropped or dumped will be subject to rejection without additional justification.

B. Handling: Handle pipe, fittings, valves and accessories carefully to prevent shock or damage. Handle pipe by rolling on skids, forklift, or front loader. Do not use material damaged in handling.

C. Distribution: Distribute and place pipe and materials to not interfere with traffic. Do not string pipe more than 300 feet beyond the area where pipe is being laid. Do not obstruct drainage ditches.

D. Storage: Store all pipe which cannot be distributed along the route. Make arrangements for the use of suitable storage areas. Do not interfere with other contractors' right to access.

3.03 CONSTRUCTION ALONG HIGHWAYS, STREETS AND ROADWAYS

Install pipelines and accessories along highways, streets and roadways in accordance with the applicable regulations of the County, City, and/or the Department of Transportation with reference to construction operations, safety, traffic control, road maintenance and repair.

A. Protection of Traffic: Provide and maintain suitable signs, barricades and lights for protection of traffic.

Replace all highway signs removed for construction as soon as possible. Do not close or block any highway, street, or roadway without first obtaining permission from the proper authorities.

Provide flagmen to direct and expedite the flow of traffic.

B. Construction Operations: Perform all work along highways, streets and roadways to least interfere with traffic.

1. Stripping: Where the pipeline is laid along road shoulders, strip and stockpile all sod, topsoil and other material suitable for shoulder restoration.

2. Trenching, Laying and Backfilling: Do not open the trench any further ahead of pipe laying operations than is necessary. Backfill and remove excess material immediately behind laying operations. Complete excavation and backfill for any portion of the trench in the same day.

3. Shaping: Reshape damaged slopes, side ditches, and ditch lines immediately after completing backfilling operations. Replace topsoil, sod and any other materials removed from shoulders.

C. Excavated Materials: Do not place excavated material along highways, streets and roadways in a manner which obstructs traffic. Sweep all scattered excavated material off of the pavement.

D. Drainage Structures: Keep all side ditches, culverts, cross drains, and other drainage structures clear of excavated material and free to drain at all times.

E. Maintaining Highways, Streets, Roadways and Driveways: Maintain streets, highways, and roadways in suitable condition for movement of traffic until completion and final acceptance of the work. Use steel running plates to maintain traffic until pavement replacement is completed.

NOTE: Traffic must be maintained at all times. When one lane is closed, flagmen must be utilized to maintain traffic flow.

Repair all driveways that are cut or damaged immediately. Maintain them in a suitable condition for use until completion and final acceptance of the work.

3.04 EXISTING UNDERGROUND UTILITIES AND OBSTRUCTIONS

A. It is the responsibility of the Contractor to locate all existing utilities along the path of his construction. The drawings shall indicate underground utilities or obstructions that are known to exist. Where these or unforeseen underground utilities are encountered, the location and alignment of the water main may be changed, upon written approval of the Engineer and Owner, to avoid interference.

3.05 CONNECTIONS TO EXISTING PIPELINES

A. Before laying the pipe, the Contractor shall locate the points of connection to existing pipelines and uncover as necessary for the Engineer and Owner to confirm the nature of the connection to be made. The Contractor shall furnish materials and make the connection to all existing pipelines. The Contractor will be observed during construction of tie-ins by the Owner and the Engineer. The Contractor shall use all available practices and resources to minimize the time the customers are without water. The Contractor shall notify affected customers of a water outage at least 24 hours in advance.

3.06 LAYING PIPE

A. General – Ductile iron pipe shall be laid in accordance with AWWA C-600; PVC pipe shall be laid in accordance with AWWA C 605, ASTM D 2774, UNI-Bell UNI-B 3 and the pipe manufacturer’s recommendations; HDPE pipe shall be laid in accordance with the AWWA C 906, ASTM D2321, and the pipe manufacturer’s recommendations.

B. Construction Methods:

1. Field Inspection: All pipe and accessories shall be laid, jointed, tested for defects and for leakage with pressure and chlorinated in the manner herein specified in the presence of the Engineer or his authorized representative and subject to their approval.

2. Handling Pipe and Accessories:

    a. Care: Pipe, fittings, valves and other accessories shall be unloaded at the point of delivery, hauled to and distributed at the site of the project by the contractor; they shall at all times be handled with care to avoid damage. In loading and unloading they shall be lifted by hoists, slid, or towed on skid-ways in such a manager as to avoid shock. Under no circumstances shall they be dropped. Pipe handled on skidways must not be skidded or rolled against pipe already on the ground.

    b. At Site of Work: In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench and shall be laid on high ground so that it will not be in a drainage way.

    c. Bell Ends, How Faced: Pipe shall be placed on the site of the work parallel with the trench alignment and with the bell ends facing the direction in which the work will proceed, unless otherwise directed by the Engineer.

    d. Pipe Kept Clean: The interior of all pipes, fittings and other accessories shall be kept free from dirt and foreign matter at all times.

    e. Detection Tape: Marking tape shall be buried a minimum of 12” and a maximum of 18” below finish grade. The tape shall be placed during backfill.

    f. Tracing Wire: Tracer wire will be installed on the top of the pipe and looped up to surface level in all valve boxes and at all service laterals. Tracer wire shall be taped to the top of pipelines at a minimum of 5 ft intervals in a uniform, continuous manner. This tracing wire system shall be checked and tested by the Contractor, in the presence of the Engineer or OWNER, prior to acceptance of the water main installation. All equipment, meters, detectors, etc., needed for testing shall be furnished by the Contractor.

3. Alignment and Grade:

    a. General: All pipe shall be laid and maintained in the required lines and grades, with fittings and valves at the required locations, with joints centered and spigots home, and with all valve stems plumb.

    b. Depth of Pipe: Where pipe is laid in roadways and parkways of streets, the top of the barrel of the pipe shall have a minimum cover of thirty-six inches below the curb line of the street or where not curb line has been established, below the existing ground line. Where the pipe is laid in open, unsubdivided areas, a minimum of thirty-six inches of cover is required. A greater depth of cover is required in certain sections of the main, such as railroad crossings, valve locations and other sections of special construction, and within State and Federal highway rights-of-way.

    c. Prior Investigation – Prior to excavation, investigation shall be made to the extent necessary to determine the location of existing underground structures and conflicts. Care shall be exercised by the Contractor during excavation to avoid damage to existing structures. The pipe manufacturer’s recommendations shall be used when the water main being installed is adjacent to a facility that is catholically protected.

d. Unforeseen Obstructions – When obstructions that are not shown on the plans are encountered during the progress of work and interfere so that an alteration of the plans is required, the Owner will alter the plans, or order a deviation in line and grade, or arrange for removal, relocation, or reconstruction of the obstructions.

e. Clearance – When crossing existing pipelines or other structures, alignment and grade shall be adjusted as necessary, with the acceptance of the Owner, to provide clearance as required by federal, state, and local regulations or as deemed necessary by the Owner to prevent future damage or contamination of either structure.

4. Excavation and Preparation of Trench:

   See Section 02315

5. Pipe Handling:

   a. Manner of Hauling Pipe and Accessories: Proper implements, tools and facilities shall be provided and used by the contractor for the safe and convenient execution of the work. All pipe, fittings and valves shall be carefully lowered into the trench piece by piece by means of derrick ropes or other suitable tools or equipment, in such manner as to prevent damage to pipe to pipe or accessories from being dropped or dumped into the trench.

   b. Inspection: Before lowering and still suspended, the pipe shall be inspected for defects. Any defective, damaged or unsound pipe shall be rejected.

   c. Pipe Kept Clean: All foreign matter or dirt shall be removed from the pipe, and it shall be kept clean by approved means during and after laying.

   d. Laying of the Pipe: The spigot shall be centered in the bell, the pipe forced "home" and brought into true alignment; it shall be secured there by earth carefully tamped under and on each side of it, excepting at the bell holes. Care shall be taken to prevent dirt from entering the joint space. No "blocking up" of pipe or joints will be permitted. The joint shall be made as hereinafter described.

   e. Trench Water Entering Pipe: At times when pipe laying is not in progress, the open ends of the pipe shall be closed by approved means and no trench water shall be permitted to enter the pipe.

   f. Cutting Pipe: Cutting of pipe for inserting valves, fittings or closure pieces shall be done in a neat workmanlike manner without damage to the pipe.

   g. Bell Ends Face Direction of Laying: Unless otherwise directed, pipe shall be laid with bell ends facing in the direction of laying; and for lines on an appreciable slope, bells shall, at the discretion of the engineer face up-grade.

   h. Permissible Deflections at Joints: Wherever necessary to deflect pipe from a straight line, either in the vertical or horizontal plane to avoid obstructions, the degree of deflection shall be according to manufacturer's recommendations.

   i. Unsuitable Conditions for Laying Pipe: No pipe shall be laid in water, or when the trench conditions or the weather is unsuitable for such work.

6. Jointing Pipe-Mechanical Joints: The following steps shall be taken in making mechanical joints:

    a. All lumps, blisters and excess coal-tar enamel shall be removed from the socket and spigot of the pipe.

    b. Wash socket and plain end with soapy water containing chloride solution; then slip gland and gasket over plain end. The small side of gasket and lip gland shall face bell.

    c. Paint gasket with soapy solution containing chlorine.

    d. Push gasket into position, being sure it is evenly seated in socket.

    e. Slide gland into position; insert bolts and run nuts up finger tight.

    f. Tighten bolts to uniform tightness with correct ratchet wrench. The first bolt tightened shall be the bottom bolt, then top. All other bolts shall be tightened in sequence at 180 degrees apart.

7. Setting, Valves, Valve Boxes and Fittings:

    a. General: Valves and pipe fittings shall be set and joined to the new pipe in the manner heretofore specified for cleaning, laying and jointing pipe. Valves shall be installed plumb. Valve-operating stems shall be oriented in a manner to allow proper operation.

    b. Valve Boxes: Cast iron valve boxes shall be firmly supported and maintained centered and plumb over the wrench nut of the gate valve, with box cover.

8. Plugging Dead Ends: Standard plugs shall be inserted into the bells of all dead ends of pipes, tees or crosses and spigot ends shall be capped. Plugs or caps shall be joined to the pipe or fittings in the manner specified above.

9. Thrust Blocking: Concrete having compressive strength of not less than 3000 psi shall be used as a cradle or thrust blocking where shown on the plans or where directed by the Engineer. Bends exceeding 22-1/4 degrees, crosses with one opening plugged, and all tees shall be backed with concrete as a thrust block. Blocking shall be placed between solid ground and the fitting to be anchored; the area of bearing on the pipe and on ground in each instance shall be that shown on the plans. The blocking shall be so placed that the pipe fitting joints will be accessible for repair. No extra payment will be made for the thrust blocks.

10. Pressure and Leakage Tests:

    a. Pressure Test: Immediately after the pipe has been laid and backfilled, but prior to the placement of pavement, each valved section of newly laid pipe shall be subjected to a leakage and pressure test. For any section being tested the pressure applied shall be such that at the highest point in the section, the pressure shall be 200 pounds per square inch.

    b. Duration of Test: The duration of each pressure test shall be two (2) hours.

    c. Procedures: Each valved section of pipe shall be slowly filled with water and the specified test pressure, measured at the point of highest elevation shall be supplied by means of a pump connected to the pipe in a satisfactory manner. The pump,

pipe connection, and all necessary apparatus, gauges, and meters shall be furnished by the contractor. The contractor shall furnish all necessary labor and assistance in conducting the tests. The owner will furnish, through connections made by the contractor to existing mains, water for filling the lines for making the test.

d. Expelling Air Before Tests: Before applying the specified test pressure, all air shall be expelled from the pipe. To accomplish this, taps shall be made, if necessary, at points of highest elevation and afterward tightly plugged.

e. Examination Under Pressure: At intervals during the test, the route of the pipeline shall be inspected to locate any leaks or breaks. Any cracked or defective joints cracked, or defective pipe, fittings or valves discovered in consequence of this pressure test shall be removed and replaced with sound material in the manner provided and the test shall be repeated until satisfactory results are obtained.

f. Permissible Leakage: Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, of any valved section thereof, to maintain the specified leakage test pressure after the pipe has been filled with water and the air in the pipeline has been expelled. No installation will be accepted if leakage is greater than that determined by the formula:

$$L = \frac{SD\,(P)^{0.5}}{7{,}400}$$ Where:

L is the allowable leakage, in gallons per hour; S is the number of joints in the length of pipeline tested; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge. Leakage valves determined by the above formula are to be found in the following Table.

Allowable Leakage for PVC Plastic Pipe with
Elastomeric Joints in Gallons Per Hour

| Nominal Pipe Size, Inches | Average Pressure in Line - P.S.I. 150 | 200 |
|---|---|---|
| | Allowable Leakage Per 1000 ft. | |
| 4" | .33 | .38 |
| 6" | .50 | .57 |
| 8" | .66 | .76 |
| 10" | .83 | .96 |
| 12" | .99 | 1.15 |

11. Backfilling, Cleaning Up and Maintaining Surfaces:

    See Section 02315

12. Disinfection of Mains: The contractor shall disinfect all new mains, in accordance with AWWA C651 furnishing all labor, equipment and material necessary for the complete disinfection of the mains as hereinafter provided. Mains shall be disinfected by the application of a chlorinating agent into the water used for the initial filling of the mains. The chlorinating agent may be chlorine gas-water mixture, calcium hypochlorite in water, or chlorinated lime of known chlorine content in water and shall be fed through a suitable solution feed device. The chlorinating agent shall be applied at or near the

beginning point from which the main is being filled and shall be injected into the main through a corporation cock tapped into the horizontal exit of the newly laid main. The water being used to fill the line shall be controlled to flow into the section to be sterilized very slowly and the rate of application of the chlorinating agent shall be in such proportion to the rate of the water entering the pipe that the chlorine dose applied to the water shall be at least 50 ppm. The chlorine treated water shall be retained in the new main at least 24 hours and a 10 ppm of residual chlorine shall remain after the 24-hour period. Following chlorination all treated water shall be flushed from the mains until replacement water shall have a chlorine content of not more than 0.1 ppm in excess of the residual in water from the supplying main and in any event not less than 0.2 ppm. Samples of the water shall be taken from several points in the new lines and submitted to a State Approved lab for bacteriological analysis. Should the analysis show contamination, the system shall be re-chlorinated and further samples taken and submitted for analysis until no contamination is indicated.

END OF SECTION

SECTION 02540
EROSION CONTROL

PART 1 - GENERAL

1.01 SCOPE

A. The work specified in this Section consists of furnishing, installing, and maintaining temporary erosion controls and temporary sedimentation controls.

B. All erosion and sediment control measures shall be in accordance with the existing Erosion and Sedimentation Control Ordinance of the governing authority.

1.02 DEFINITIONS

A. Temporary erosion controls shall include grassing, mulching, watering, and reseeding on-site sloped surfaces, providing berms at the top of the slopes and providing interceptor ditches at the ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or minimized.

B. Temporary sedimentation controls shall include silt dams, traps, barriers, and appurtenances at the toe slopes and in drainage ways.

PART 2 - MATERIALS

2.01 Hay bales shall be clean, seed free cereal hay type, securely bound with wire or mylar cord.

2.02 Netting shall be 1/2-inch, galvanized steel chicken wire mesh.

2.03 Filter stone shall be crushed stone conforming to the Department of Transportation State of Georgia-Standard Specifications - Construction of Roads and Bridges -1983 or latest edition - Table 800.01 H, Size Number 3.

PART 3 - EXECUTION

3.01 SEDIMENTATION CONTROL

A. Silt dams, traps, barriers, and appurtenances shall be installed and shall be maintained in-place for duration of construction.

B. Hay bales shall be staked with two (2) 1X4 wood stakes per bale driven 18 inches into the ground and finishing flush with the top of the bale.

1. Install two (2) stakes per bale with the long dimension of the stakes parallel to the long dimension of the bale.

2. Where bales are installed in multiple layers the bales shall be installed with vertical joints staggered and two (2) 1 x 4 wood stakes per bale driven through all layers, full from top of bale to 18 inches into the ground.

3. Hay bales that have deteriorated shall be replaced with new materials.

C. Silt Fence

1. Silt fence shall be installed in accordance with manufacture instructions. The bottom two (2) inches should be installed beneath the ground surface.

2. A small trench should be dug before installation. The silt fence should then be installed and the trench back filled.

D. Erosion and sedimentation controls shall be maintained in a condition that will retain unfiltered water.

E. The Contractor shall construct the sedimentation ponds and control devices prior to clearing and grubbing the site to insure complete silt control. When the silt or the debris level is greater than one (1) foot above the bottom of the pond, the Contractor shall remove the silt or debris to restore the proper elevation for the bottom of the pond.

F. The Contractor shall have all erosion and sedimentation control devices in service and operating properly prior to completion and final acceptance of the contract.

3.02 RESPONSIBILITY

A. The Contractor shall be solely responsible for insuring that no silt or debris leaves the immediate construction site. Any silt or debris that does leave the immediate site shall be cleaned up and the area disturbed shall be returned to its natural state as directed by the City Inspector at the Contractor's expense.

B. The Contractor has the option to submit additional control measures in the form of shop drawings.

SECTION 02555
WATER DISTRIBUTION SYSTEM

PART 1 - GENERAL

1.01 REFERENCE STANDARDS

A. American Water Works Association (AWWA):

C500 Gate Valves 3" - 48" for Water and Other Liquids

C502 Dry-Barrel Fire Hydrants

C600 Installation of Cast Iron Water Mains

C601 Disinfecting Water Mains

C800 Threads for Underground Service Line Fittings

C900 Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution.

C901 Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm), for Water Service.

C905 Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In. Through 48 In. (350 mm Through 1,200 mm), for Water Transmission and Distribution.

B. American National Standards Institute (ANSI):

A-21.10 Gray-Iron and Ductile Iron Fittings, 2"-48" for Water and Other liquids

A-21.11 Rubber Gasket Joints for Cast Iron and Ductile Iron Pressure Pipe Fittings

A-21.4 Cement Mortar Lining for Cast Iron and Ductile Iron Pipe and Fittings for Water

A-21.51 Ductile Iron Pipe, Centrifugally Cast in Metal or Sand-Lined Molds, for Water or Other Liquids

B-18.2 Square and Hex-Head Bolts and Screws

C. American Society of Testing and Materials (ASTM):

A-47 Malleable Iron Castings

A-48 Gray Iron Casting

A-88 Seamless Copper Water Tube

A-240 Chromium and Chromium-Nickel Stainless Steel Plate Sheet and Strip for Fusion-Welded Unfired Pressure Vessels

A-307 Low Carbon Steel Externally and Internally Threaded Standard Fasteners

D-1784 Rigid Poly (Vinyl chloride) Compounds, and Chlorinated Poly (Vinyl Chloride) Compounds

D-2239 Polyethylene (PE) Plastic Pipe (SDR-PR)

D-2241 Poly Vinyl Chloride (PVC) Plastic Pipe (SDR-PR and Class T)

D-3139 Joints for Plastic Pressure Pipe Using Flexible Elastomeric Seals

D. Rule for Safe Drinking Water, Georgia State EPD: Chapter 391-3-5

1.02 DESCRIPTION

A. All valves of the same type shall be from a single manufacturer. Parts for valves of the same type and size shall be interchangeable. Spare parts shall be furnished where required in the payment items. Special tools required for repacking or dissembling valves shall be provided.

B. All valves shall open left (counter-clockwise).

C. Any pipe, pipe fittings, plumbing fittings or fixtures, solder, or flux used in the installation or repair of a public water system must meet the new definition of lead free meaning: (a) not containing more than 0.2 percent lead when used with respect to solder; and (b) not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures.

1.03 SUBMITTALS

A. Six copies of manufacturer's drawings and catalog cuts of the following items shall be submitted for approval of the Design Engineer:

1. Pipe
2. Fittings
3. Joints and Couplings
4. Hydrants
5. Valves

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Materials delivered to site shall be inspected for damage, unloaded, and stored with the minimum of handling. Store materials on site in enclosures or under protective coverings. Store plastic piping and rubber gaskets under cover and protect from exposure to direct sunlight. Store materials above ground. Interior of pipe and fittings shall be kept free of dirt and debris.

B. Pipe, fittings, valves, hydrants, and other accessories shall be handled to insure delivery to the point of installation in sound undamaged condition. If coatings or linings of pipe or fittings are damaged, such pipe or fittings shall be removed from the site and new materials furnished. Pipe shall not be dragged. Rubber gaskets that are not installed immediately shall not be left in the sunlight but shall be stored under cover and protected from exposure to direct sunlight.

PART 2 - PRODUCTS

All materials that come into contact with the drinking water during its treatment, storage, transmission or distribution shall not adversely affect drinking water quality and public health and must be certified for conformance with American National Standards Institute/National Sanitation Foundation Standard 61 (ANSI/NSF Standard 61)

2.01 POLYVINYL CHLORIDE PIPE (PVC)

A. Polyvinyl chloride water main pipe shall comply with AWWA C900, Class 235.

B. Pipe shall have integral bell and spigot joints. Provisions shall be made for contraction and expansion at each joint with an elastomeric ring. Threaded or solvent welded type joints shall not be used.

C. The Contractor shall install a continuous run of 14-gauge copper tracer wire with underground coating above the top of the PVC pipe 12 inches above the pipe but no deeper than 48 inches below finished grade. The tracer wire shall be suitable for detection with metal pipe location equipment.

D. Pipe shall carry National Sanitation Foundation (NSF) seal and be factory marked with manufacturer's identification, pipe size, material, and pressure rating.

2.02 DUCTILE IRON PIPE

A. Ductile iron pipe shall conform with the requirements of ANSI Standard A21.51 and shall be of the thickness classes shown below:

| NORMAL PIPE DIAMETER | THICKNESS CLASS |
|---|---|
| 4" | 51 |
| 6" | 50 |
| 8" | 50 |
| 10" | 50 |
| 12" | 50 |
| 16" | 50 |
| 18" | 50 |

Class designations for the various classes of pipe shall be painted on the outside of each joint of pipe. Weights shall be conspicuously painted in white on each joint of pipe after the bituminous coating has hardened.

B. All joints shall have the same pressure rating as the pipe with which it is used. Joints shall be rubber gasketed push on or mechanical joint. Joints shall meet the requirements of ANSI A21.11.

C. Pipe shall be coated inside and out with one mil. thick bituminous coating conforming to ANSI A21.4. The interior shall be lined with a cement mortar lining conforming to ANSI/AWWA C104/A21.4.

2.03 GALVANIZED STEEL PIPE

A. This pipe and fittings shall conform to the requirements of ASTM A120. The pipe shall be "standard weight", unless otherwise specified.

2.04 PLASTIC TUBING

A. Plastic pipe shall conform to all the requirements of the "Specifications for Polyethylene (PE) Plastic Pipe (ADR-PR)", as they apply to PE 3306 of ASTM D2239.

B. The hydrostatic design stress shall be 630 psi for water at 23° centigrade (73.4° F) and 500 psi for water at 37.8° C (100° F).

C. The polyethylene extrusion compound from which the pipe is extruded shall meet the requirements of Type III, Grade 3, Class C material as described in "Specification for Polyethylene Molding and Extrusion Materials", ASTM D1248, except that melt index shall be determined under a higher temperature than any of the conditions as listed in Section 6(b) of "Method of Test for Measuring Flow Rates of Thermoplastics by Extrusion Plastometer", ASTM D1238. The test condition shall be the same as for condition J, except that the temperature shall be 310° C (590° F), with a load of 12-5 kilograms. Under these conditions the resin shall extrude at a maximum rate of 0.25 grams per ten minutes. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, or other defects. The pipe shall be uniform in color, capacity, density, and other physical properties.

D. The size, the type of plastic pipe material, dimension ratio, commercial standards with which the pipe complies, the manufacturer's name and the National Sanitation Foundation (NSF) seal of approval, shall be conspicuously marked on the outside of the pipe at intervals of not more than five (5) feet.

2.05 FITTINGS

A. Ductile iron mechanical joint fittings shall conform to the requirements of ANSI A21.10. The fittings shall be of the lightest class conforming to the pressure rating of the pipelines in which they are installed, in no case shall the fittings be lighter than class 200.

B. Fittings for galvanized steel pipe shall be malleable iron conforming to ANSI B16.3 except the nipples and couplings shall be the same material as the pipe. All fittings shall be hot-dip galvanized in accordance with ASTM A120.

C. The mechanical joint shall meet the requirements of ANSI A21.11 and shall have the same pressure rating as the fitting of which it is a part.

D. Fittings shall be coated inside and out with one mil. thick bituminous coating conforming to ASNI A21.4.

2.06 HYDRANTS

A. All fire hydrants shall conform to AWWA C502.

B. All fire hydrants shall have a 6-inch mechanical joint in-let connection and be equipped with a 5-1/4-inch valve, two 2-1/2-inch hose nozzles and one 4-1/2-inch pumper connection, all with ANSI (National) standard threads. Operating nuts shall be 1-1/2-inch, pentagon type.

C. All fire hydrants shall be equipped with "O" ring type stem seals.

D. All fire hydrants shall be designed for 150 psi working pressure and 300 psi test pressure.

E. All fire hydrants shall be equipped with a 6-inch gate valve, complying with other sections of the specifications, installed on the fire hydrant lead between the hydrant and the main.

F. The Contractor shall paint the hydrant with XO-14 Tractor Red (Federal Safety Color) paint.

G. All fire hydrants shall be designed such that clockwise rotation of the stem closes the valve and counterclockwise rotation opens the valve. Hydrant covers shall have the word "Open" and an arrow showing the proper rotation of the operating nut cast in or permanently attached.

H. An independent drain shall be provided, completely draining the hydrant after use. The drain shall be activated to the open position by the closing of the hydrant valve. The drain rod shall be easily cleaned. The drain shall have a protective shield integral with the hydrant base to minimize clogging and prevent undermining.

I. All working parts of the hydrant shall be easily removed for inspection or servicing without digging or the use of hoists or derricks or special tools. The hydrant cover and stand pipe shall be removable without requiring the water to be shut off.

J. Each fire hydrant shall be equipped with a ground line mounted breakaway flange and cast iron safety stem coupling specially designed so that upon sustaining severe impact the hydrant will shear off at the ground line without loss of water in the main.

K. All fire hydrants shall be Mueller standard or equal as approved by the Governing Authority's Inspector.

2.07 METERS

A. All meters shall be approved first line product of recognized manufacturer and shall be compatible with the meter reading system currently being used by the Governing Authority.

B. Meters, meter materials and meter test shall conform to applicable AWWA Specifications and shall meet or exceed current AWWA Specifications.

C. Each meter shall have manufacturers serial number on the lid.

D. All body parts as cases, boxes and lids shall be of bronze composition.

E. Meters shall be split case, positive displacement type.

F. The register shall read in U.S. Gallons and shall be hermetically sealed and driven by permanent magnets.

2.08 METER BOXES

A. The meter box shall be the approved standard product used by the Governing Authority.

B. They shall be rectangular and of adequate dimension to accommodate the specified meters.

C. Boxes shall have cast iron or heavy plastic covers labeled "WATER METER".

D. Boxes for 5/8-inch by 3/4-inch meters shall have inside width not less than 10 inches, inside length not less than 15 inches and overall height not less than 12 inches.

E. Boxes shall be designed and built to withstand traffic loads typical of yard installations.

2.09 VALVES

A. All valves two (2) inches in diameter and smaller shall be constructed of brass or bronze except that the hand wheel which shall be of malleable iron construction with screwed ends. All

valves 2-1/2 inches in diameter and larger shall have flanged ends for interior service and mechanical joints for buried service unless otherwise approved. They shall be iron body, bronze mounted, except that in the smaller sizes the valves may be all bronze.

B. Gate Valves:

1. Gate valves smaller than three inches shall meet the requirements of Fed. Spec. WW-V-54, Class A, 125 pounds.

2. Gate valves three inches and larger shall have nonrising stems and shall meet the requirements of AWWA Standard C-500. Valves for lighter pressures than the AWWA Standard shall meet the requirements of the above specifications except that the requirements for metal thickness and strengths and structural designs shall be adjusted as required to meet hydrostatic test pressures not less than 150 psi.

3. All gate valves shall have standard stuffing box seals. Bonnet bolts, studs and nuts shall be cadmium plated. Seating devices shall be bronze to iron or bronze to bronze. The glands shall be bronze or bronze bushed. Gland bolts and nuts shall be bronze.

4. All gate valves 2-1/2 inches in diameter and larger shall be of the double disc type. All gate valves two inches in diameter and smaller shall be of the double disc or the solid wedge type.

5. Valves to have two (2) inches square operating nut, with the exception that gate valves in altitude valves pits shall have hand wheels.

6. Valves buried in ground or located in vaults or structures shall have suitable extensions for socket operation with top of operating nut located two (2) feet below finished grade maximum.

C. Check Valves:

1. Check valves two (2) inches through 24 inches shall be iron body, bronze mounted swing check valves meeting the requirements of AWWA Standard C508-76.

2. The check valve shall be metal to metal or composite to metal seat construction with flange ends or screw and coupled ends.

D. Altitude Valves:

1. All altitude valves furnished for use on this project shall be equipped for showing at all times the position of the valve. Said altitude valves shall be of the size specified on the drawings and suitable for the use intended.

2. The Contractor shall supply the services of a qualified manufacturer's representative to check and calibrate each altitude valve installation for proper working pressure and sequence.

E. Air Release Valves

1. Air release valve shall have all bronze body and bonnet. They shall be the direct acting type.

2. Valves shall be hydrostatically tested to at least 150 psi.

3. The valve shall have stainless steel floats and an internal coating with rust inhibitors.

2.10 BACKFLOW PREVENTERS

A. The back flow preventers used shall be those specifically designed for use in connections when the danger from back flow presents a health hazard.

B. All back flow preventers shall be of the reduced pressure type.

C. Back flow preventers 3/4 inches to two (2) inches shall be Hersey, Model FRPII or equal meeting or exceeding the following specifications:

| | |
|---|---|
| Mainline Case | Bronze |
| Working Parts | Bronze & Stainless Steel |
| Springs | Stainless Steel |
| Diaphragms | Buna N and Mylar |
| Valve disc | Silicone Rubber |
| O Ring | Buna N |
| Check Valve Enclosure | Glass Reinforced Plastic |
| Maximum Rated Working Pressure | 150 psi |
| Temp. Range | 33° - 210°F |

D. Back flow Preventers 2-1/2 inches to 10 inches shall be Model 6CM or equal meeting or exceeding the following specifications:

| | |
|---|---|
| Body 8"-10" | Hot Dipped Galvanized or Epoxy Coating |
| Body 2½"-6" | Bronze |
| Working Parts | Bronze & Stainless Steel |
| Springs 2½"-6" | Stainless Steel |
| Springs 8"-10" | Vinyl Coated Carbon Steel |
| Diaphragms | Reinforced Elastomer |
| Valve Disc | Silicone Rubber |
| Maximum Rated Working Pressure | 175 psi |
| Temp. Range | 33° - 140°F |

E. Back flow preventers larger than 10 inches shall be designed for conditions that do present a health hazard. It shall be the reduced pressure type and depending on the application, may require detection of leaks or unauthorized use. Detectors above 10 inches shall be submitted for approval. The submittal shall include complete shop drawings. The submittal will be reviewed based on the product's ability to meet the needs of the project.

PART 3 - EXECUTION

A. All valves shall be carefully mounted in their respective positions free from distortion and strain. All valves shall be properly packed and left in satisfactory operating condition at the completion of the project.

B. Valve box and cover shall be installed with each valve as shown in miscellaneous details.

3.01 PIPE INSTALLATION

A. PVC pipe shall be installed in accordance with the Uni-Bell Plastic Pipe Association guide for installation of polyvinyl chloride plastic pressure pipe for municipal water main distribution system and the printed recommendations of the manufacturer.

B. Ductile iron pipe shall be installed in accordance with AWWA C600.

C. Pipeline alignment and gradient shall be straight or shall follow true curves as near as practicable. Curvature in pipelines, where required, shall be well within the allowable laying radius, horizontal and vertical.

D. Excavation, cleaning, laying, jointing and back filling shall follow as closely as is possible so as to progress the work. In no case shall pipe be left in the trench overnight without completing the jointing. The completed pipeline shall not be left exposed in the trench unnecessarily, and the Contractor shall backfill and compact the trench as soon as is possible after laying and jointing is completed. Each day at the close of work, and at all times when laying is not in progress, the exposed end of the pipeline in the trench shall be closed with a head or barrier of wood or metal. If at any time it becomes necessary to cover the end of any uncompleted pipeline with backfill, the end of that pipe shall be closed with a mechanical joint plug.

E. The Contractor shall keep exposed ends of pipe properly plugged during laying to prevent dirt and other materials from entering the line, and shall also, before the system is accepted, thoroughly clean all lines.

F. Thrust Blocks (Reaction Blocking) shall be provided as specified AWWA C600. All exposed pipes, valves, hydrants, etc., shall be securely strapped and all ends and bends braced.

G. Other means of pipe restraining shall include "mega lug" utilization and all threads bolted through fittings in accordance with AWWA C600.

H. Mechanical joints shall be made only be experienced mechanics. Sockets and spigots shall be washed with soapy water before slipping gland and gasket over spigot. The spigot shall be inserted in the socket full depth. The gasket shall be brushed with soapy water and pushed into position making sure the gasket is evenly seated in the socket. The gland shall then be properly positioned for compressing the gasket. All bolts and nuts shall be tightened with a torque wrench to a uniform, permanent tightness. Bolts shall be tightened alternately 180 degrees apart. Sockets, spigots, glands and bolts shall be kept clean and wet with soapy water until each joint is completed.

I. All water distribution mains shall have a minimum 36 inches of cover.

3.02 FIRE HYDRANT INSTALLATION

A. All fire hydrants shall have 36 inches minimum pipe cover provided for the branch supply line.

B. Each fire hydrant shall be set on a stable foundation at least 18 inches square and six (6) inches thick and shall be blocked against the end of the trench with concrete and anchored.

C. Hydrant drainage shall be provided by installing around the hydrant at least seven (7) cubic feet of gravel or crushed stone below the top of the hydrant supply pipe.

D. The barrel of the fire hydrant shall be set plumb (perpendicular to the ground) with the lowest discharge outlet at least 15 inches high but no higher than 24 inches above finished grade. No fire hydrant shall be installed within 10 feet of any private driveway. Hydrants shall be located no closer than five (5) feet of a curbing and no further than 12 feet of the curbing.

E. Immediately before installation of a hydrant, the following operations shall be performed:

1. The hydrant shall be thoroughly inspected.

2. The hydrant interior shall be thoroughly cleaned.

3. The hydrant shall be opened and closed to determine that all parts are in proper working order, with valves seating properly and the drain valve operating freely.

3.03 HYDROSTATIC TEST

A. Pressure and leak test shall be performed in accordance with the latest edition of AWWA Standard C600. Upon completion of back filling operations and not less than seven (7) days after the last concrete blocking anchor has been poured, the pipe system shall be subject to hydrostatic test.

B. The system shall be filled with water and all air expelled.

C. The Contractor shall pressurize the system to 150 pounds per square inch at the highest point in the system.

D. The test pressure shall be maintained for two (2) hours.

E. If the pressure cannot be maintained, the cause shall be determined, corrected, and test repeated until successful.

3.04 LEAKAGE TEST

A. Following the pressure test, the system shall be subject to a leakage test. Pressure and leak test shall be performed in accordance with the latest edition of AWWA Standard C600.

3.05 DISINFECTION

A. Disinfection of the new mains and the disposal of the heavily chlorinated water, following the disinfection, shall be accomplished in accordance with the latest edition of AWWA Standard C651. Water mains and accessories shall be disinfected in accordance with "Rules for Safe Drinking Water" as published by the Georgia Environmental Protection Division.

B. The chlorine solution used for disinfection of water mains shall have a free chlorine residual concentration not less than 25 mg/L. This heavily chlorinated water shall be retained in the main for at least 24 hours, during which time all valves and hydrants shall be operated to ensure disinfection of the appurtenances. At the end of the 24-hour period, the treated water in all portions of the main shall have a residual of not less than 10 mg/L free chlorine. Re-chlorinate is required results are not obtained on all samples.

C. The mains shall be flushed before disinfecting by maintaining a velocity of at least 2.5 feet per second for a period of ten minutes.

D. The continuous feed method may be used for any size main or system where satisfactory quantity and quality water is available. The tablet method shall not be acceptable.

E. Following disinfection, the system shall be flushed until chlorine concentration is less than one (1) milligram per liter.

F. Bacteriologic Tests:

1. Tests shall be performed to detect the presence of coliform organisms on samples taken from the end farthest from the point at which chlorine was introduced into the system and at 1,000-foot intervals.

2. If unsatisfactory samples are produced, disinfection shall be repeated until samples are satisfactory.

SECTION 02616
PAVEMENT REPAIR AND RESURFACING

PART 1 – GENERAL

1.01 DEFINITION

A. When used in this section, the term "Standard Specifications" shall mean the DEPARTMENT OF TRANSPORTATION, STATE OF GEORGIA STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES, 1983 Edition or later edition, unless amended herein.

1.02 DESCRIPTION

A. Related Work Specified Elsewhere:

1. Trench Excavation, Backfill and Compaction Section 02221.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Base: Granular material to meet the following gradation:

| SIEVE SIZE | PERCENT PASSING BY WEIGHT |
|---|---|
| 1-1/2" | 100 |
| 3/4" | 60-100 |
| 10 | 30-55 |
| 60 | 8-35 |
| 200 | 5-20 |

B. Concrete: 3000 psi compressive strength

C. Prime Coat: RC-70 Georgia DOT Specifications

D. Asphalt Surface Course: Asphaltic Concrete, Type E or F, Georgia DOT Specifications as shown on the plans.

PART 3 – EXECUTION

3.01 CONCRETE PAVEMENT REPLACEMENT (DRIVEWAYS)

A. Existing pavement shall be removed to a minimum of 12 inches on either side of the trench.

B. Following trench back filling and compaction, the depth of concrete pavement replaced shall match the existing pavement or shall be a minimum of six (6) inches thick, whichever is greater.

C. Joints and finish of the slab shall match existing pavement.

D. Pavement replacement for each driveway shall be accomplished with one (1) pour. Deviation must be approved by the Engineer.

E. All joints shall have waterproof sealer to avoid water intrusion and deterioration of the patch.

3.02 CONCRETE PAVEMENT REPLACEMENT (ROADWAY)

A. Existing pavement shall be removed to a minimum of 12 inches on either side of the trench.

B. A minimum 8-inch concrete slab containing black dye in the top two (2) inches (minimum) shall be placed extending 12 inches on either side of the trench and on undisturbed soil.

C. Depth of concrete pavement replaced shall match the existing pavement or shall be a minimum of eight (8) inches thick, whichever is greater.

D. Joints and finish of the slab shall match existing pavement. Joints shall have expansion material between old and new paving.

E. All slabs shall be installed in one (1) pour unless directed otherwise by the Engineer. If construction joints are required, measures must be taken to avoid deterioration of the patch later by water intrusion.

3.03 ASPHALT PAVEMENT REPLACEMENT

A. Existing pavement shall be removed to a minimum of 12 inches on either side of the trench.

B. Granular base material shall be place to a minimum depth of eight (8) inches and compacted to 95% maximum dry density following trench back filling and compaction.

C. If so directed by the Engineer the base shall be a 6-inch concrete slab extending 12 inches on either side of the trench and on undisturbed soils, then a 2-inch asphalt surface course shall be placed after a prime coat is applied to the concrete slab at the rate of 0.25 gallons per square foot to bring the paving to grade.

3.04 MAINTENANCE OF SURFACE

A. Pavement damage due to settlement of backfill: Repair for period of one (1) year.

B. Depressions more than six (6) inches deep in aggregate surfaced areas: Fill to grade for period of three (3) months.

3.05 TESTING

A. Certified laboratory reports shall be required to ensure the subgrade has been compacted to 95% and the base compacted to 100% standard proctor.

SECTION 02650
SANITARY SEWERS

PART 1 - GENERAL

1.01 APPLICABLE STANDARDS

A. American National Standards Institute (ANSI):

A-21.4 Cement-Mortar Lining for Cast-Iron and Ductile-Iron Pipe and Fittings for Water

A-21. Cast-Iron Pipe Centrifugally Cast in Metal Molds, for Water or Other Liquids

A-21.11 Rubber Gasket Joints for Cast-Iron and Duc-Tile-Iron Pressure Pipe and Fittings

A-21.51 Ductile Iron Pipe, Centrifugally Cast in Metal or Sand-Lined Molds, for Water or Other Liquids

B. American Society of Testing and Materials (ASTM):

A-48 Gray Iron Casting

C-12 Installing Vitrified Clay Sewer Pipe

C-425 Compression Joints for Vitrified Clay Bell and Spigot Pipe

C-478 Precast Reinforced Concrete Manhole Sections

C-594 Compression Couplings for Vitrified Clay Plain-End Pipe

C-700 Extra Strength and Standard Strength Clay and Perforated Clay Pipe

D-1784 Rigid Poly (Vinyl Chloride) Compounds and Chlorinated Poly (Vinyl Chloride) Compounds

D-2241 Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR and Class T)

D-2321 Underground Installation of Flexible Thermoplastic Sewer Pipe

D-2774 Underground Installation of Thermoplastic Pressure Piping

D-3034 Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings

D-3139 Joints for Plastic Pressure Pipe Using Flexible Elastomeric Seals

D-3212 Sewer Pipe Joints Using Elastomeric Seals

C. American Water Works Association (AWWA)

C-600 Installation of Cast-Iron Mains

1.02 SUBMITTALS

A. Materials used in the sanitary sewer system shall be submitted for approval to the Design Engineer. The Design Engineer shall review the drawings, provide a list of materials, and certify compliance to the Owner.

B. Six copies of shop drawings or manufacturer's standard drawings or catalog cuts shall be submitted for the following:

1. Precast Concrete Manholes
2. Manholes and Frames
3. Gasket – One of each type
4. Pipe – One of each type
5. Valves – One of each type

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. The Contractor shall be responsible for handling and storage of all materials and damaged materials shall not be used in the work. Materials delivered to the site shall be promptly inspected for damage upon arrival. Damaged or defective materials to be immediately removed from the site.

B. All materials to be stored as least 12 inches above grade. Inside of pipes and fittings shall be kept free of dirt and debris. Rubber gaskets and plastic pipe not used immediately shall be protected from direct sunlight. Manhole units shall be handled with care to avoid chippage or breakage.

PART 2 - PRODUCTS

2.01 POLYVINYL CHLORIDE PIPE AND FITTINGS

A. Polyvinyl chloride pipe and fittings for gravity sewers shall be SDR-35 for less than 12-foot bury and SDR-26 for 12-foot bury and over, meeting ASTM D-3034 for type PSM Polyvinyl Chloride (PVC) sewer pipe. The joints shall be Push-On "O" ring gasket type with integral bell and spigot meeting ASTM D-3212. Threaded or solvent welded type joints shall not be used.

B. Polyvinyl chloride pipe and fittings for pressure sewers shall be class 200-SDR 21 conforming to ASTM D-2241 and consisting of Type I, Grade 1 PVC compound meeting ASTM D-1784. Joints shall be integral bell and spigot with elastomeric gaskets meeting ASTM D-3139. Threaded or solvent weld type joints shall not be used.

C. Marking: Pipe shall be clearly marked with:

1. Manufacturer's Identification

2. Nominal Pipe Size

3. Material, Type, and Grade

4. SDR or Pressure Rating

5. "SEWERAGE FORCE MAIN" or "GRAVITY SEWER" as appropriate, marked every three feet.

2.02 CAST IRON PIPE AND FITTING

A. Type: Gray or Ductile

B. Joints:

1. Push on type in accordance with ANSI A-21.11.

2. Mechanical joint in accordance with ANSI A-21.11.

C. Gray iron pipe shall conform to ANSI A-21.6, shall have an iron strength not less than 18/40, designed for internal pressure of 150 psi.

D. Ductile iron pipe shall conform to ANSI A-21.51.

E. Pipe shall have a polyethylene lining. The polyethylene lining shall be virgin polyethylene complying with ANSI/ASTM D-1248. The compound may contain inert filler and enough carbon black to resist ultraviolet radiation during above ground storage of the pipe. The polyethylene lining should be bonded to the interior of the pipe by heat. The polyethylene lining should have a high resistance to fatty oils, detergents, and sewage generated hydrogen sulfide.

F. Pipe shall have an outside bituminous coating of approximately one (1) mil. thick.

2.03 REINFORCED CONCRETE PIPE AND MANHOLES (WET WELLS OR VALVE PITS)

A. Precast concrete sections to be manufactured in accordance with provisions of ASTM C-478. As a minimum, the interior of all sections shall be coated with two coats of bituminous coating. The first coat shall be spray applied and the second coat should be roller applied. In extremely corrosive environments, such as force main receiving manholes, the manhole shall be lined with sealed HDPE sheet liner. The HDPE liner shall have a watertight seal at all joints and penetrations. The liner shall be Agru Sure Grip Liner or equivalent.

B. Precast concrete riser sections to be 48 inches in diameter with minimum wall thickness of four inches.

C. Precast concrete base units to have minimum wall thickness of five inches.

D. Jointing material shall be rubber gasket type conforming to ASTM C-443 or vulcanized butyl rubber base flexible joint sealer in rope form conforming to Federal Specification SS-S-00210, Kent-Seal No. 2 or approved equal. The inside and outside of the joint shall be finished with mortar. Mortar shall be one part Portland cement and two parts sand.

E. Manhole base sections shall provide for a flexible watertight union between pipe and manhole base. Manhole sleeves shall be of high quality synthetic rubber with tensile strength of 1,500 psi resistant to raw sewage, ozone, acids, and weathering, flexible at temperatures below 0°F and resistant to heat as high as 250°F. A substantial, serrated flange of the sleeve material shall be integrally cast into the wall of the manhole base forming a tight waterseal. The sleeve shall protrude through the wall of the base. A watertight union shall be secured with the end of the pipe with stainless steel strap claps. Manhole sleeves shall be Interpace Corp. Lock Joint Manhole Sleeves or approved equal.

F. Pick up holes shall not penetrate the interior walls or the riser.

2.04 MANHOLE FRAMES AND COVERS

A. Frames and covers to have machined bearing surfaces/

B. Covers to have checkered top design and marked “City of Jesup, Sanitary Sewer.”

C. Combined weight of frame and cover shall be approximately 450 pounds.

D. Frame shall have a depth of approximately nine (9) inches and an access opening of not less than 20 inches.

E. Covers shall have two (2) pick holes located at edges.

F. Materials shall conform to ASTM A-48 for Class 30 gray iron castings.

2.05 MANHOLE STEPS

A. Manhole steps shall be constructed of a number 3 reinforcing bar encapsulated in polypropylene plastic with a non-skid tread.

B. Finished dimension of the steps shall be identical to that of malleable iron manhole steps.

C. Steps to have a minimum tread width of 12 inches.

2.06 NUTS AND BOLTS

A. Stainless Steel Flanged: Square head MB/SF, hexagon nuts, ASTM 307B, ANSI B-18.2, zinc plated.

2.07 GASKETS

A. Flanged pipe gaskets shall conform to requirements of ASA A-21.10 and shall be suitable for the indicated services.

2.08 VALVES

A. All valves two (2) inches in diameter and smaller shall be constructed of brass or bronze except the hand wheel, which shall be of malleable iron construction. Valves two (2) inches in diameter and smaller shall have screwed ends unless approved otherwise. All valves 2½ inches in diameter and larger shall have flanged ends unless otherwise approved. They shall be iron body, bronze mounted, except that in the smaller sizes that valves may be all bronze at the contractor's option and expense.

B. The contractor shall prepare and submit for approval complete detailed drawings of all valves in accordance with the requirements of the appropriate section of these specifications. All valves of the same type shall be from a single manufacturer. Parts of valves of the same type and size shall be interchangeable. Spare parts shall be furnished as specified under the proposal items. Special tools required for repacking or disassembling valves shall be provided.

C. All valves shall be carefully mounted in their respective positions free from all distortion and strain. All valves shall be properly packed and left in satisfactory operating condition at the completion of the project. All valves shall open left.

D. Gate Valves

1. Gate valves should not be used in raw sewage applications. Gate valves should only be used where primary and partial secondary treatment has already occurred.

2. Unless otherwise specified or directed, gate valves three inches and larger shall have non-rising stems and shall meet the requirements of AWWA Standard C-500. Valves for lighter pressures than the AWWA Standard shall meet the requirements of the above specifications except that the requirements for metal thicknesses and strengths and structural designs shall be adjusted as required to meet hydrostatic test pressures not less than 125 psi.

3. Unless otherwise specified or directed, gate valves smaller than three inches shall meet

the requirements of Federal Specification WW-V-54, Class A, 125 pounds.

4. All gate valves shall have standard stuffing box seals. Bonnet bolts, studs, and nuts shall be cadmium plated. Seating devices shall be bronze to iron or bronze to bronze as specified or required. The glands shall be bronze or bronze bushed. Gland bolts and nuts shall be bronze.

5. All gate valves 2½ inches in diameter and larger shall be of the double disk type. All gate valves two inches in diameter and smaller may be of the double disk or the solid wedge type.

E. Plug Valves

1. All plug valves shall be the two-way type.

2. Nonlubricated, eccentric with resilient faced plugs.

3. Port area of four to 20-inch valves shall be at least 70 percent of full pipe area.

4. Valves to be designed for 125 psi working pressure.

5. Bodies to be semisteel with raised seats.

6. Seated to have either a welded-in overlay of approximately 90 percent pure nickel on surfaces contacting the plug face or shall be bronze conforming to ASTM B-62 and attached to the body by stainless steel set screws.

7. Upper and lower plug stem bushings to be stainless steel and shall be permanently lubricated.

8. Exposed nuts, bolts, and washers to be zinc plated.

9. Flanges to be faced and drilled to ASA 125 pound standard.

F. Check Valves

1. Type: Ball Check

a. Static head must exceed 10 feet to use ball check valves.

b. No ball check valve will be mounted vertically to compensate for low static head.

c. Ball check ends must be flanged.

d. The body shall be cast iron, ASTM A-159-72, Class 35.

e. The ball shall be hollow steel with vulcanized nitrile rubber covering.

f. Pressure rating shall be 150 psi.

g. Valve to be Flygt HDL or equal.

2. Lever Actuate Spring Check Valve

a. Where static head is less than 10 feet lever action swing check valves shall be used.

b. Lever action swing checks may be spring and lever type or weight on lever type as approved by the design engineer and the owners.

c. Valves shall be installed in the horizontal position.

d. The valve body, disc, cover, and lever shall be cast iron, ASTM A-159-72, Class 35.

e. The disc arm shall be cast steel.

f. The seat ring shall be bronze or stainless steel.

g. All studs, bolts, or nuts shall be commercial grade steel.

h. The gate shall be rubber faced.

i. The hinge shaft shall be stainless steel.

j. The chamber shall be bronze.

k. The valve shall be Clow F=5340 (outside spring and lever) or Clow F=5345 (outside weight and lever) or an approved equal.

G. Automatic Sewage Air Release Valve

1. The automatic sewage air release valve shall be designed to allow entrapped air to escape from the sewage force main line. After the air escapes out of the air release valve, the valve shall shut-off until more air accumulates in it and the opening cycle will repeat automatically.

2. The sewage release valve must have a compound internal linkage of precision molded delfin or stainless steel. All other internals must be stainless steel to positively prevent galvanic action. The float rod shall be 20 inches long to provide an air gap between the linkage and waste level inside the valve to retard the waste solids from clogging the linkage. The stainless steel float must withstand a minimum 1,000 psi pressure. Each valve shall be complete with hose and blow off valves to permit back flushing without dismantling valve.

| | |
|---|---|
| Body and Cover Cast Iron | ASTM A-48 Class 30 |
| Internal Delfin Linkage | ASTM D-2133 (or Stainless Steel) |
| Stainless Float | ASTM A-240 |
| Buna-N | ASTM SB-800 |

3. Typical installation will utilize standard body valve. Valve height 28-inch with back flushing attachments 33-½ inches. If depth of trench is not deep enough, furnish short valve. Valve height 17-½-inch with back flushing attachments 23-½ inches.

4. Automatic sewage air release valve to be as manufactured by Crispin, Val-matic, or APCO equal to APCO Model 400 with accessories.

2.09 ACCESSORIES, PLUG, AND GATE VALVES

A. Valves to have 2-inch square operating nut unless otherwise indicated.

B. Valves buried in ground or located in vaults or structures to have suitable extensions for socket operation with top of operating nut located two feet below finished grades maximum.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Plastic piping installation shall be in accordance with ASTM D-2321 Recommended Practice for non-pressure pipe and ASTM D-2774 Recommended Practice for pressure pipe.

B. Ductile iron pressure piping shall be installed in accordance with AWWA Standard C-600/

C. Material selection for piping material shall be as indicated. If piping materials are not indicated, the Contractor has the option of selecting materials in accordance with this section.

D. Service sewer lines shall be constructed of same materials as the mains.

E. Sewer lines shall not be laid closer than 10 feet horizontally to a water main. Pressure sewer lines shall pass beneath water lines, with the top of the sewer being at least 18 inches below the bottom of the water line. Where sanitary sewer lines pass beneath water lines, no joints in the sewer line shall be closer than 10 feet, horizontal the water line. When the vertical or horizontal separation cannot be accomplished, the concrete encasement shall extend a minimum of 10 feet on both sides of crossing.

F. Pipe laying to proceed up-grade with pipe bells or groove on the upper end. Pipe to be laid with joints close and even, butting all around. Sagging joints will not be tolerated.

G. Pipe shall be straight and of uniform grade between manholes, laid to line and grade.

H. All sewer shall be designed and constructed to give velocities of not less than 2.0 FPS. Since the Owner has adopted a low flow plumbing device ordinance, the following slopes will be used.

| | Minimum Slope in Feet |
|---|---|
| Sewer Size | Per 100 Feet |
| 8” | 0.40 |
| 10” | 0.28 |
| 12” | 0.22 |
| 15” | 0.15 |
| 18” | 0.12 |
| 21” | 0.10 |
| 24” | 0.08 |
| 30” | 0.058 |
| 36” | 0.046 |

I. Bell holes shall be dug so the pipe barrel will carry the load of the pipe. Pipe shall be bedded in undisturbed earth or, where rock occurs, on a thoroughly compacted layer of #57 stone or sand fill of a minimum thickness of six inches under the barrel or bell of the pipe.

J. Where sewers or force mains are to be connected to existing manholes or other structures, and where no stub or opening has been provided for the connection, the Contractor shall make an opening of minimum diameter through the side wall of the structure for inserting the sewer pipe. After inserting the pipe, the space remaining outside the pipe shall be completely filled with a nonshrinking mortar and made watertight.

K. Lateral connection made to the sewer prior to back-filling shall be laid on a slope not exceeding two feet vertical to one foot horizontal, and not less than 1.8-inch per foot, so that the lateral shall have a solid bearing on undisturbed earth as stipulated for pipe sewers. The lateral shall make such a horizontal angle with the sewer line that a proper connection with the wye or tee

branch or slant is obtained without trimming the pipe and with no danger or jointing material being forced in the sewer. All laterals shall be closed by means of suitable stoppers or end caps.

L. Wye or tee branches shall be field located for service to all inhabitable structures unless otherwise directed by the Architect/Engineer. Wye branches shall be installed so that the lower lip of the branch is not more than two inches below the outside top of the pipe. Tees shall be installed with the branch 45° to vertical. After installation, wye or tee branches shall not be covered with backfill until determination and record has been made of the locations of each with reference to the nearest manhole downstream and the direction in which the wye faces.

M. All laterals shall be properly marked on ground surface at the point where laterals terminate with treated timber markers. Timber markers shall consist of a two-inch by four-inch timber extending from the end of the lateral vertically to within two inches of the ground surface. All such markers shall be securely anchored and maintained in a proper vertical position until backfilling has been completed. The top end of such markers shall be marked or left exposed until an “as-built” survey has been made.

N. The top rim of manhole frames and covers shall be set to conform to grades and transverse slopes. Generally along outfall lines, the manhole frames and covers shall extend approximately six (6) inches above finished grade or to a designated elevation for flood protection. Generally where lines are located along streets, the manhole frames and covers shall be set flush with the surface.

O. The Contractor shall install a continuous run of plasticized metallic tape above the top of the sewer main at 12 inches to 18 inches below finished grade. Tape shall be suitable for detection with metal pipe location equipment labeled “sewer buried below,” and brightly colored to contrast with the soil.

P. A 14-gauge copper tracer wire with underground coating shall be installed along the route of pressure sewers. The wire shall be located 12 inches above the pipe but no deeper than 48 inches.

Q. All PVC pressure pipe shall have a minimum of 36-inch cover. Areas where the cover is not maintained may require the use of extra strength pipe as directed by the engineer.

3.02 PRESSURE TESTS

A. FORCE MAINS: The Contractor shall test by hydrostatic pressure to 150 pounds per square inch. Each section tested shall be slowly filled with water, care being taken to expel all air from the pipes. The required pressure shall be applied for not less than two hours. No pipe installation will be accepted until the leakage during the pressure test is less than the number of gallons listed below for each 1,000 feet of pipe.

| | |
|---|---|
| 6” – 1.5 gallons | 12” – 2.75 gallons |
| 8” – 1.75 gallons | 14” – 3.00 gallons |
| 10” – 2.75 gallons | 16” – 3.5 gallons |

B. GRAVITY MAINS: The Contractor shall pressure test the gravity mains with air. Each section between manholes shall be pressurized to 3.5 psi. The allowable pressure drop of 0.5 psi on any portion of the system shall not be less than the times shown on the following chart.

| Pipe Size | Minimum Time |
|---|---|
| 4” | 3 min. |
| 6” | 4 min. |

| | |
|---|---|
| 8” | 6 min. |
| 10” | 7 min. |
| 12” | 8 min. |

If the main will not maintain the specified pressure, the Contractor will isolate the weak joint and repair. The test will be repeated until successful. The service lines must be installed at least to the back of the curb prior to testing. These pressure drops represent a maximum infiltration/exfiltration rate of 50 gallons per inch of pipe diameter per mile per 24-hour period.

C. Utilization of the pressure test is dependent upon groundwater levels. If the depth of sewer below the groundwater level exceeds six feet the test pressure shall be adjusted accordingly to a maximum of five (5) psi.

3.03 ALLOWABLE INFILTRATION/EXFILTRATION

A. If any visible flow is observed in the pipe during installation or final inspection, a weir test will be conducted.

B. The leakage inward or outward (infiltration or exfiltration) of the entire system including the sewer mains, service sewers, manholes, and wet wells shall not exceed 50 gallons per inch of pipe diameter per mile per day for any section of the system.

C. The weir shall be installed in each manhole. The manhole will then be filled with water to a depth of three (3) feet from the top of the pipe, which should be at the bottom of the weir. The water level will stand for one (1) hour to stabilize then filled (if necessary) to the initial level. During the next hour the water level will be observed and the amount flowing through the weir or the amount of water required to maintain the level will be measured. The measured amount should not exceed the allowable.

3.04 INSPECTION

A. Upon complete installation of the gravity sewer, the Contractor must enter a waiting period of not less than 10 days prior to inspection. In order to initiate the waiting period, the Contractor must notify the Design Engineer and the Owner in writing of the status of the sewer.

B. After completion of the waiting period all sewer mains must pass a five (5) percent deflection mandrel pulled by hand. If a five (5) percent deflection mandrel will not pass through any section, that section will be replaced or rerounded at the expense of the Contractor. Mandrel to be supplied by the Owner.

C. No sewer main will be accepted if there is any evidence of sagging or bowing in the line which will adversely affect the performance of the pipe. Nor will any sewer mains be accepted if they are laid on a grade substantially less that specified on the Construction Plans. No line will be accepted if laid on less grade than the minimum stated in this specification.

D. All manholes will be inspected for general appearance, cracks, leaks, proper installation of frame and cover, steps, and inverts. Any manholes, which do not conform to specifications, will not be accepted until the deficiency is corrected by the Contractor.

E. All 4-inch sewer services will be tested for continuity and minimum bends by passing a standard tennis ball. Each sewer service shall be temporarily capped during construction. During the inspection, a tennis ball will be dropped down the open end of the sewer service. If the ball does not appear in the lower manhole the Contractor will excavate the service, correct the blockage, and repeat the test until successful.

3.05 CLEANING

A. Contractor to clean completed system of any debris or obstructions prior to Final Acceptance.

SECTION 02711
CHAIN LINK FENCE

PART I – GENERAL

1.01 APPLICABLE STANDARDS

A. American Society for Testing and Materials (ASTM)

A-90 Weight of Coating on Zinc-Coated (Galvanized) Iron and Steel Articles

E-8 Tension Testing of Metallic Materials

1.02 DEFINITIONS

A. Chain Link Fence Fabric: Chain link fence fabric shall be fencing material made from wire helically wound and interwoven in such a manner as to provide a continuous mesh without knot or ties except in the form of knuckling or of twisting and barbing the ends of the wires to form the selvage of the fabric.

B. Knuckling: Knuckling is the term used to describe the type of selvage obtained by interlocking adjacent pairs of wire ends and bending the wire ends back into closed loop.

C. Twisting and Barbing: Twisting and barbing is the term used to describe the type of salvage obtained by twisting adjacent pairs of wire ends together in a close helix of 1½ machine turns which is equivalent to three full twists and cutting the wire ends at an angle to provide sharp points.

PART II – MATERIALS AND INSTALLATION

2.01 FABRIC

A. Chain link fabric shall be Commercial Grade No. 9 gauge core galvanized wire, with 2-inch mesh and zinc-coated by electrolytic or hot dipped process before fabrication.

2.02 Fabric Coating

A. If specified for on the plans, the chain link fabric coating shall be vinyl and be dipped after material is helically wound. The vinyl coating shall have a 6-gauge finish over a 9-gauge core.

2.03 CORNER AND TERMINAL POSTS

A. Corner posts shall be 3-inch O.D. standard weight galvanized steel with top caps, except when shown differently on plans. Posts shall be set in concrete footings. Fabric shall not be attached to posts until concrete footings are sufficiently cured. Centerline of posts shall be set 12 inches from the facility property line as shown on the plans. Where specified for vinyl coating, the posts shall be powder coated.

B. Line posts shall be 2-inch O.D. standard weight galvanized steel with top caps, except where shown on plans differently. Where specified for vinyl coating, the posts shall be powder coated.

2.04 FABRIC CONNECTIONS

A. Fabric shall be attached to corner and terminal posts with 3/16 inch x ¾ inch tension bars and ⅞ inch beveled steel. Tension band spaced at a maximum of 14 inches on center. Where specified on the plans for vinyl coating, all hardware shall be powder coated.

2.05 RAILS AND DIAGONAL BRACING

A. If specified, the top, middle, and bottom rail shall be 1⅝ inch O.D. standard weight pipe fastened to corner and terminal post with malleable rail end cup and ⅞ inch beveled steel brace band. Where specified on plans for vinyl coated fence, rails and bracing shall be powder coated.

B. Install diagonal bracing midway between the top rail and ground level from the terminal post to the corner post and fasten to post with malleable rail end and ⅞ inch beveled brace bands.

C. Barbed wire shall consist of three (3) strands of 12½ gauge zinc coated wire with 14-gauge 4-point barbs spaced at five (5) inches apart. Furnish barb wire and supporting arms. Barb wire and supporting arms shall be zinc coated.

2.06 GATE FRAMES

A. Gate frames shall be constructed of tubular members round welded at all corners or assembled with fittings. Steel welds shall be painted with zinc based paint. Where vinyl coating is called for, welded joints shall be sanded, primed, and repainted with vinyl paint. Where corner fittings are used, gates shall have truss rods of ⅜ inch nominal diameter to prevent sag or twist. Gate leaves shall have vertical intermediate bracing as required, spaced so that members are no more than 8 feet apart. Gate leave 10 feet or over shall have a horizontal brace or one ⅜ inch, diagonal truss rod. When barbed wire top is specified at the end members of the gate, frames shall be extended one foot above the top horizontal member to which 3 strands of barbed wire, uniformly spaced, shall be attached by use of bands, clips or hook bolts. Gate filler shall be of the same fabric as specified for fence and shall be attached to gate frame at intervals of 14 inches.

2.07 HINGES

A. Hinges shall have large bearing surfaces for clamping in position. The hinges shall not twist or turn under the action of the gate. The gate shall be capable of being opened and closed easily by one person. All hardware shall be pressed steel. Where specified on plans for vinyl coated fence, the hinges shall be powder coated.

2.08 LATCHES, STOPS, AND KEEPERS

A. Latches, stops and keepers shall be provided for all gates. Latches shall have a plunger bar arranged to engage the center stop, except that for single gates of openings less than 10 feet wide a fork latch may be provided. Latches shall be arranged for locking. Center stops shall consist of a device arranged to be set in concrete or asphalt and to engage a plunger bar of the latch of double gates. No stop is required for single gates. Keepers shall consist of a mechanical device securing the free end of the gate when in full open position. All hardware shall be pressed steel. Where specified on the plans for vinyl coated fence, the hardware shall be powder coated.

SECTION 02821
GRASSING

PART 1 – GENERAL

1.01 APPLICABLE STANDARDS

A. Conform to Section 700 and other applicable articles of the "Standard Specifications Construction of Roads and Bridges", of the Department of Transportation, State of Georgia, dated September 15, 1977. Omit all references to measurement and payment.

1.02 SOIL SAMPLES

A. The Contractor shall take soil samples from several areas of the site to be grassed and have them analyzed by the Georgia Extension Service. The results of the analysis shall determine the best fertilizer mixture to use on the site.

PART 2 – MATERIALS

2.01 FERTILIZER

A. Commercial Fertilizer: Fertilizer for lawns shall be a complete fertilizer, the nitrogen content of which shall be derived from either organic or inorganic sources and meeting the following minimum requirements of plant food by weight, unless the soil analysis and report indicates a need for a different fertilizer mixture in which case the recommended mixture shall be furnished and applied. All State and Federal laws relative to fertilizer must be complied with.

10% Nitrogen - 12% Phosphoric Acid - 12% Potash

B. Ground Limestone: Lime shall be ground dolomitic limestone containing not less than 85% of total carbonates and shall be ground to such fineness that 50% will pass through a 20-mesh sieve. Coarser material will be acceptable, provided the specified rates of application are increased proportionately on the basis of quantities passing the 100-mesh sieve.

C. Sodium Nitrate shall be a commercial product in dry powder form and shall be delivered in the original, unopened containers each bearing the manufacturer's guaranteed statement of analysis. It shall contain not less than 16% Nitrogen.

2.02 LAWN MATERIALS

A. Kentucky 31 Fescue (Fescue elatior: var. arundinacea): Seed shall be 98% min. purity and 85% germination.

B. Bermuda Grass (Cyanodon Dactylon): Seed shall be 98% min. purity and 85% germination.

2.03 PREPARATION

A. Prepare the seed bed by thoroughly cultivating discing and hand raking as necessary to produce a smooth even grade free from hollows or other inequalities. Before any seeding is attempted the soil must be in a well pulverized, smooth, friable condition of uniformly fine texture.

2.04 FERTILIZING AND LIMING

A. Approximately two (2) days prior to the start of seeding operations, apply ground limestone at the rate of 20 pounds per 1,000 square foot of lawn area. Either in conjunction with the above

operation or immediately afterwards apply the specified Commercial Fertilizer over all lawn areas at the rate of 30 pounds per 1,000 square feet of lawn area. Work limestone into the top six (6) inches of ground and the fertilizer into the top two (2) inches of ground.

2.05 When the grass has started to cover well (approximately four (4) weeks after sowing seed) apply 1-1/2 pounds of Ammonium Nitrate to all lawn areas and immediately water using a fine spray. At the end of the maintenance period and prior to the final inspection apply 10 pounds of the specified Commercial Fertilizer per 1,000 square feet of lawn area and immediately water.

2.06 SEEDING

A. Before any seeding is attempted the soil must be in a well pulverized, smooth, friable condition of uniformly fine texture. Lawn areas shall be seeded evenly with a mechanical spreader at the rate of two (2) pounds of seed per 1,000 square feet, 50% in one (1) direction and the remainder sown at right angles to first sowing. The seeded areas shall be lightly raked, rolled with a suitable weight roller and watered with a fine spray.

2.07 WATERING

A. Soak soil to a minimum depth of six (6) inches immediately after seeding. Do not wash away soil or seed. Keep all surfaces continuously moist thereafter until 30 days after the lawn has been seeded. Use fine spray nozzles only.

2.08 Fescue planting season shall be as approved by Engineer.

2.09 Bermuda Grass seeding shall be planted only between May 1 to September 1.

2.10 Maintenance of grass areas shall consist of watering, weeding, cutting, repair of any erosion and reseeding or resodding as necessary to establish a uniform stand of the specified grasses and shall continue until final acceptance.

2.11 All grassed areas that do not show satisfactory growth within 15 days after sowing shall be re-sown and re-fertilized as directed until a satisfactory blanket is established. Approximately three (3) weeks after sowing the last seed, but not before the seed has taken hold and the grass is growing well, apply sulfate of ammonia or sodium nitrate at the rate of 300 pounds to the acre and water immediately. The lawns shall be considered established when they are reasonably free from weed, green in appearance and the specified grass is vigorous and growing well on each square foot of lawn area. Full coverage is required in 60 days.

2.12 All grassed areas shall be protected until accepted. All eroded and damaged areas, regardless of cause, shall be immediately repaired and reseeded. Protect lawn areas against traffic.

2.13 Grassed areas shall be covered evenly with a loose layer of clean wheat, rye, oats, Serecia Lespedeza, or Coastal Bermuda Hay. Two (2) tons of dry mulch shall be applied to each acre seeded. Hay shall be placed during calm weather with no wind.

2.14 As soon as the grass becomes established, a final inspection of the work will be made, provided a written request for such inspection is given to the Engineer. Satisfactory coverage is defined as coverage of the areas seeded with grass that is alive and growing, leaving no bare spots larger than one (1) square foot with 98% coverage.

2.15 When grassing is required between curbs and sidewalks, behind sidewalks in areas adjacent to private property, the Engineer may change the type of seeding to that required to match any type of grass which may be planted and growing on the adjacent lawn. No increase in the Contract Sum will be made for this substitution.

2.16 All temporary valves, cutoffs, and piping shall be removed by the Contractor at final acceptance of the grassing.

SECTION 02823
CHAIN LINK FENCING & GATES

PART 1 – GENERAL

1.01 SCOPE

A. The Contractor shall furnish all labor, materials, equipment, and miscellaneous items as necessary for the installation of a complete chain link fence system. Fencing shall be installed in the location as shown on the Construction Drawings in complete conformity with the Manufacturer's written recommendations and as specified herein.

B. Security fencing for the Contractor is at the Contractor's option and is not included as part of the work specified.

1.02 RELATED SECTIONS

A. Section 02300 – Earthwork

1.03 REFERENCES

A. ASTM A 90-95 – Standard Test Method for Weight of Coating

B. ASTM A 116-88 – Zinc Coated (Galvanized) Steel Woven Wire Fence Fabric

C. ASTM A 130-92 – Zinc Coated (Galvanized) Steel Barbed Wire

D. ASTM A 123-89 – Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products

E. ASTM A 153-95 – Zinc Coating (Hot-Dip) on Iron and Steel Hardware

F. ASTM A 392-91 – Zinc Coated Steel Chain Link Fence Fabric

G. ASTM A 569/A 569 M-91a (1993) – Steel, Carbon, Hot-Rolled Sheet and Strip Commercial Quality

H. ASTM A 491-94 – Aluminum Coated Steel Chain Link Fence Fabric

I. ASTM F 668-95 – PVC Coated Steel Chain Link Fence Fabric

J. ASTM A 428-89 – Test Method for Weight of Coating on Aluminum Coated Iron or Steel Articles

K. ASTM C 94-94 – Ready Mix Concrete

L. ASTM F 567-93 – Installation of Chain Link Fence

M. ASTM F 669-92 – Strength Requirements of Metal Posts and Rails for Industrial Chain Link Fence

N. ASTM F 10893-3 – Pipe, Steel, Hot-Dipped, Zinc-Coated (Galvanized) Welded, for Fence Structures

O. ASTM F 1234-93 – Protective Coatings on Steel Framework for Fences

P. Chain Link Fence Manufacturers Institute (CLFMI) – Product Manual

1.04 SUBMITTALS

A. Submittals for Review:

1. Product Data: Provide data on fabric, posts, accessories, fittings, and hardware.

2. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.

B. Submittals for Information:

1. Manufacturer's Installation Instruction: Indicate installation requirements.

C. Submittals for Closeout:

1. Project Record Drawings: Accurately record actual locations of property perimeter posts relative to property lines and easements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials with the manufacturer's tags and labels intact.

B. Provide storage and protection in accordance with the manufacturer's requirements.

C. Materials should be unloaded in a manner that will avoid damage and shall be stored where it will be protected and will not be hazardous to traffic. The Contractor shall repair any damage caused by the storage. Material shall be examined before installation and neither damaged nor deteriorated material shall be used in the construction of the chain link fence.

1.06 QUALITY ASSURANCE

A. Standards of manufacturer shall comply with the standards of the Chain Link Manufacturers Institute and these Specifications.

B. Provide fencing as a complete unit produced by a single manufacturer including the required erection accessories, fittings, fasteners, and all other necessary appurtenances.

C. Manufacturer: The Company must specialize in manufacturing ring chain link fences and its products specified in this section and must have a minimum of three years' experience.

PART 2 – PRODUCTS

2.01 GENERAL

A. Overall height for new fencing shall be _____ feet including three strands of barbed wire on malleable iron post tops. Posts shall be set no more than 10-foot centers, a full three feet deep in concrete footings, poured the full size of the holes as excavated. Corner posts shall have the necessary strut and tie bracing. Gates shall be provided of the size and at the locations indicated on the Construction Drawings.

B. Where fencing crosses ditches, steep grades, and other unusual conditions, make special provisions to ensure that the security, appearance, maintainability, and permanence of the standard fencing are equaled or exceeded.

2.02 MATERIALS

A. Wire: Fabric shall be of the "chain link" type, composed of individual wire pickets, helically wound and interwoven to form a square mesh. Wire used in the fabric shall be #9 W & M gage, of basic open hearth steel, containing not less than 0.20% copper, and having a tensile strength after galvanizing of 90,000 psi. Fabric shall be woven so as to form mesh two inches square and shall measure six feet in width. The wire ends at the edges of the fabric shall be cut diagonally and twisted to form barbs. The fabric shall be hot dipped galvanized after weaving, to produce a zinc coating weighing not less than 1.4 oz. per square foot of wire surface. Zinc coating shall withstand six one-minute dips, when tested by methods outlined in ASTM Specification No. 391 Class I, or the latest revision thereof.

B. Line Posts: Line posts shall be 2" O.D. galvanized steel pipe weighing 2.72# per foot of length.

1. Post shall be high carbon rail steel for rolled sections or of new high carbon steel for tubular sections. All posts shall be hot galvanized to withstand twelve one-minute dips when tested by methods outlined above.

C. Top Rails: Top rails shall be of new 1-5/8" O.D. schedule 10 steel pipe in random lengths averaging not less than 20 feet and joined with pressed steel sleeves. Rail and sleeves shall be hot dipped galvanized to produce a zinc coating equal to that of the fabric.

D. Fabric Ties: Fabric ties for attaching fabric to line posts, top rail, or top wire, shall be galvanized wire of approved gauge and design. Ties shall be located on top rail every 24 inches and on line posts every 14 inches.

E. Barbed Wire: The fabric shall be surmounted with three strands of barbed wire. Each strand shall consist of two No. 12-1/2 W & M gage twisted copper bearing steel line wires, hot dip galvanized with No. 14 W & M gage galvanized steel 4-point barbs spaced not more than four inches apart.

F. Barbed Wire Extension: All intermediate and corner posts shall be equipped with extension arms for supporting barbed wire. The base shall be of malleable iron and the extension presses Armco Ingot Iron, hot galvanized after the fabrication. The intermediate arm shall have provision for passing top rail, and corner arm casting equipped with setscrew.

G. End and Corner Posts: Shall be hot galvanized basic open hearth or copper- bearing steel pipe, three-inch OD, weighing 5.79 pounds per foot.

H. Swing Gate Posts: Shall be same as end posts but in the following sizes:

| Pipe Size OD | Weight Per Foot | Gate Opening Single Inclusive | Gate Opening Double Inclusive |
|---|---|---|---|
| 3" | 5.79 lbs. | To 6' | Up to 12' |
| 4" | 9.11 lbs | Over 6' to 13' | Over 12'-26' |
| 6-5/8" | 19.97 lbs. | Over 13' to 18' | Over 26'-36' |
| 8-5/8" | 25.00 lbs. | Over 18' to 32' | Over 36'-64' |

I. Brace and Tension Bands: Bands shall be unclimbable bevel ledge type with 3/8" diameter square shouldered, galvanized carriage bolts, non-removable from outside fence.

J. Bracing: All terminal posts shall be braced by means of 1-5/8" OD horizontal compression members, securely attached to terminal and first line posts with malleable iron fittings and

beveled edge bands and shall be truss braced from first line post to bottom of terminal posts with 1/2" rod and turn buckle. Corner posts shall be braced in each direction.

K. Tension Bars: Tension bars for attaching fabric to terminal posts shall be 3/16" x 3/4" high carbon steel attached to terminal post by means of beveled edge bands.

L. Swing Gate Frames: Swing gate frames shall be 2' OD Schedule 40 Pipe 2.72 #/Ft. with internal bracing of 1-5/8" OD Schedule 40 Pipe 2.27 #/Ft.

M. Gate Fillers: Gate frames shall be filled with the same specifications of fabric as is used in line of fence.

N. Hinges: Hinges shall be double-clamping offset type, allowing gates to swing back parallel with line of fence and shall be made of malleable iron and forgings.

O. Latches: Latches shall be of eccentric double-locking type which engage strikes securely bolted to either gate frame or gate post at both top and bottom and in case of double gates engage also a heavy malleable iron non-freezing gate stop anchored in concrete footing. For walk gates up to and including 4' opening, a malleable iron gravity type latch shall be furnished which automatically engages pin welded in gate frame. All latches shall be made so as to be readily locked with padlock.

P. Gate Keeper: Each gate frame shall be equipped with a keeper which automatically engages the gate frame when swung to the open position.

Q. Miscellaneous Fittings: All fittings entering into the fence, necessary to make a complete installation, shall be malleable iron, pressed steel, or forgings. All material shall be thoroughly galvanized by the hot dip method.

R. Quality: All fencing, posts, and gates shall be of a quality equal to standard 7-foot fencing as furnished and erected by Hurricane Fence Company or Cyclone Fence Company.

## PART 3. – EXECUTION

### 3.01 INSTALLATION

A. Fence installation shall not be started before the final grading is complete, with finished grade elevations established, unless otherwise permitted.

B. Excavation: Drill holes of diameters and spacings shown, for post footings in firm, undisturbed or compacted soil.

1. Excavate holes to the minimum diameters as recommended by fence manufacturer.

2. Excavate hole depths approximately 3 inches lower than the post bottom, with bottom of posts set not less than 36 inches below the surface when in firm undisturbed soil.

3. If solid rock is encountered near the surface, drill into rock at least 12 inches for line posts and at least 18 inches for end, pull corner, and gate posts. Drill hole at least 1 inch greater diameter than the largest dimension for the post to be placed. If solid rock is below soil overburden, drill to full depth required. Penetration into rock need not exceed the minimum depths specified above.

C. Setting Posts: Remove loose and foreign materials from sides and bottoms of holes and moisten soil prior to placing concrete.

1. Center and align posts in holes 3 inches above bottom of excavation.

2. Place concrete around posts in a continuous pour and vibrate or tamp for consolidation. Check each post for vertical and top alignment and hold in position during placement and finishing operations.

3. Trowel finish tops of footings and slope of dome to direct water away from posts. Extend footings for gate posts to underside of bottom hinge. Set keeps, stops, sleeves, and other accessories into concrete as required.

4. Grout in posts set into sleeved holes, concrete constructions or rock excavations with non-shrink Portland cement grout or other acceptable grouting material.

D. Concrete Strength: Allow concrete to attain at least 75% of its minimum 28-day compressive strength, but in no case sooner than 7 days after placement, before rails, tension wires, barbed wire or fabric is installed. Do not stretch and tension fabric and wires and do not hang gates until the concrete has attained its full design strength.

E. Top Rails: Run rail continuously through post caps or extension arms, bending to radius for curved runs. Provide expansion couplings as recommended by fencing manufacturer.

F. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.

G. Tension Wire: Install tension wires by weaving through the fabric and tying to each post with not less than 6-gauge galvanized wire or by securing the ore to the fabric.

H. Fabric: Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence and anchor to framework so that fabric remains in tension after pulling force is released.

I. Repair damaged coatings in the shop or during field erection by recoating with manufacturer's recommended repair compound, applied per manufacturer's directions.

J. Stretch Bars: Thread through or clamp to fabric 4 inches on center and secure to posts with metal bands spaced 15 inches on center.

K. Barbed Wire: Install three parallel wires on each extension arm; on security side of fence, unless otherwise indicated. Pull wire taut and fasten securely to each extension area.

L. Tie Wires: Use U-shaped wire appropriate for the diameter of pipe. Attach pipe and fabric firmly with tie wire ends twisted at least two full turns. Bend ends of wire to minimize hazard to persons or clothing.

M. Fasteners: Install nuts for tension band and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.02 CLEANING

A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all debris and equipment. Repair all damage resulting from chain link fence installation.

END OF SECTION

SECTION 09901
MANHOLE LINER

## PART 1 - GENERAL

### 1.01 DESCRIPTION

A. The work required for this section should include all work necessary to complete the lining of the specified manholes in vertical feet and width. The liner system should be monolithic once installed and should be impervious to infiltration.

### 1.02 SUBMITTALS

A. All materials and procedures required to establish compliance with the specifications shall be submitted to the owner/engineer for review/approval. Submittals shall include at least the following:

1. Technical Data Sheet on each product used.
2. Material Safety Data Sheet (MSDS) for each product used.
3. ASTM References.
4. CIGMAT Evaluation.
5. Descriptive literature, bulletins, and/or catalogs of materials.
6. Work procedures including flow diversion plan, method of repair, etc.
7. Material and method for repair of leaks or cracks in manholes.
8. Final installation report on completed manholes.

### 1.03 WARRANTY

A. Liner system should be warranted for a time period of 10 years or greater. Warranted item must be repaired within 60 days or less at no cost to the owner. It is understood that the normal sanitary sewer composition includes high concentrations of Hydrogen Sulfide and that the proposed liner system is able to withstand and prevent damage from it and all typical substances found in the City’s waste water.

### 1.04 QUALITY ASSURANCE

A. The manufacturer and/or applicator of the total liner system of manholes shall be a company that specializes in the design, manufacture, or installation of corrosion protection systems for manholes. Applicator shall be completely trained in leak repair, surface preparation, and corrosion materials application on manholes. Corrosion materials/products shall be suitable for installation in a sever hydrogen sulfide environment without any deterioration to the liner.

B. The applicator shall be trained and certified by the manufacturer for the handling, mixing, application, and inspection of the liner system as described herein.

C. To ensure total unit responsibility, all materials and installation thereof shall be furnished and coordinated with/by one supplier/applicator who turnkeys the work and assumes full responsibility for the entire operation.

## PART 2 - PRODUCTS

### 2.01 MATERIALS AND EQUIPMENT

A. The materials to be utilized in the lining of manholes shall be designed and manufactured to withstand the severe effects of hydrogen sulfide in a wastewater environment. Manufacturer of corrosion protection products shall have long proven experience in the production of the lining

products utilized and shall have satisfactory installation record.

B. Equipment for installation of lining materials shall be high quality grade and be as recommended by the manufacturer.

C. Cementitious liner system will not be acceptable as part of any of the liner system layers.

D. The lining system to be utilized for manhole structures shall be a multi-component stress skin panel liner system as described below:

1. Liner

| Installation | Liner |
|---|---|
| Moisture Barrier | Modified Polymer |
| Surfacer | Polyurethane/Polymeric Blend Foam |
| Final Corrosion Barrier | Modified Polymer |

2. Modified polymer shall be sprayable, solvent free, two-component polymeric, moisture/chemical barrier specifically developed for the corrosive wastewater environment.

TYPICAL CHEMICAL ANALYSIS

| | |
|---|---|
| "A" Component | |
| Viscosity, 77°F, cps., ASTM D-1638 | 450 |
| Physical State | Liquid |
| Color | Clear to amber |
| Hygroscopicity | Reacts with water |
| | |
| "B" Component | |
| Viscosity, 77°F, cps., ASTM D-1638 | 500 |
| Physical State | Liquid |
| Color | Flamingo Pink |
| Non-Volatile | 100% |
| | |
| Reaction Profile (100 Grams, 175°F sample) | |
| Gel Time, seconds | 10 |
| Tack Free Time, seconds | 20 |
| Cure Time, seconds | 90 |
| | |
| Processing | |
| A System/B System, volume ration | 1.00/1.00 |
| | |
| Typical Physical Properties | |
| Tensile Strength, PSI | >3,600 |
| Elongation, % | >300 |
| Tear Strength, PLI | >5,000 |
| Shore A Hardness | 96 |
| 100% Modulus, PSI | >2,500 |

3. Polyurethane Rigid Structure Foam, loam viscosity two-component, containing flame retardants.

TYPICAL CHEMICAL ANALYSIS

| | |
|---|---|
| "A" Component | |
| Viscosity, 77°F, cps., ASTM D-1638 | 200 |
| Physical State | Liquid |
| Color | Dark Brown |
| Hygroscopicity | Reacts with water and evolves $CO_2$ gas |
| "B" Component | |
| Viscosity, 77°F, cps., ASTM D-1638 | 660 |
| Physical State | Liquid |
| Color | Transparent Dark |
| Non-Volatile | Absorbs water rapidly thus changing ratio |
| Reaction Profile (100 Grams, 77°F sample) | |
| Cream Time, seconds | 1-4 |
| Tack Free Time, seconds | 5-8 |
| Rise Times, seconds | 6-10 |
| Processing | |
| A System/B System, volume ration | 1.00/1.00 |
| Typical Physical Properties | |
| Density, nominal, core, lbs/ft3 | |
| ASTMD-1622 @ 74°F | 4-10 |
| Compression Strength, ASTM D-1621 | |
| @ 74°F parallel rise; PSI | 90-150 |
| Closed Cell Content, % - ASTM 1940 @ 74°F | Over 95 |
| Shear Strength, PSI – ASTM C-273 @ 74°F | 225-250 |

4. Total thickness of multi-component stress panel liner shall be a minimum of 500 mils.

PART 3 - EXECUTION

3.01 INSPECTION

A. Applicator shall take appropriate action to comply with all local, state, and federal regulations including those set forth by OSHA, EPA, the Owner, and any other applicable authorities.

B. Prior to conducting any work, perform inspection of structure to determine need for protection against hazardous gases or oxygen depleted atmosphere and the need for flow control of flow diversion.

C. Submit plan for flow control or bypass to owner/engineer for approval prior to conducting the work.

D. New Portland cement structures shall have endured a minimum of 28 days since manufacture prior to commencing installation of the liner system.

3.02 SURFACE PREPARATION

A. Conduct surface preparation program to include monitoring of atmosphere for hydrogen sulfide, methane, low oxygen or other gases, approved flow control equipment, and surface preparation equipment.

B. Surface preparation methods may include high pressure water cleaning, hydro blasting, abrasive blasting, grinding, detergent water cleaning, and shall be suited to provide a surface compatible for installation of the liner system.

C. Surface preparation method shall produce a cleaned, abraded, and sound surface with no evidence of laitance, loose concrete, brick or mortar, contaminants, or debris, and shall display a surface profile suitable for application of liner system.

D. After completion of surface preparation, perform the seven point check list, which is the inspection for:

1. Leaks
2. Cracks
3. Holes
4. Exposed Rebar
5. Ring and Cover Condition
6. Invert Condition
7. Inlet and Outlet Pipe Condition

E. After the defects in the structure are identified, repair all leaks with a chemical or hydraulic sealant designed for use in field sealing of ground water. Severe cracks shall be repaired with a urethane based chemical sealant. Product to be utilized shall be as approved by owner/engineer prior to installation. Repairs to exposed rebar, defective pipe penetrations or inverts, etc. shall be repaired utilizing non-shrink grout or approved alternative method.

3.03 MATERIAL INSTALLATION

A. Application procedures shall conform to recommendations of the manufacturer, including materials handling, mixing, environmental controls during application, safety, and spray equipment.

B. Spray equipment shall be specifically designed to accurately ratio and apply the liner system.

C. Application of multi-component liner system shall be in strict accordance with manufacturer’s recommendation. Final installation shall be a minimum of 500 mils. A permanent identification and date of work performed shall be affixed to the structure in a readily visible location.

D. Provide final written report to owner/engineer detailing the location, date of report, and description of repair.

3.04 INSPECTION

A. Final liner system shall be completely free of pinholes or voids. Liner thickness shall be the minimum value as described herein.

B. Visual inspection shall be made by the owner/engineer. Any deficiencies in the finished liner system shall be marked and repaired according to the procedures set forth by Manufacturer.

C. The sewer system may be returned to full operational service as soon as the final inspection has taken place.