REQUEST FOR PROPOSALS

CONTRACT, PLANS AND SPECIFICATIONS

FOR

PATTERSON FARMS PHASE 4

FOR

THE BOARD OF WATER, LIGHT AND SINKING FUND COMMISSIONERS

OF

THE CITY OF DALTON, GEORGIA

PATTERSON FARMS PHASE 4

COMMISSIONERS

JOE YARBROUGH – CHAIRMAN
KEN WHITE
TOMMY BOGGS
ED ANTHONY
JACKIE KILLINGS

JOHN THOMAS
CHIEF EXECUTIVE OFFICER

Dalton
UTILITIES

September 2024

TABLE OF CONTENTS
FOR
PATTERSON FARMS PHASE 4
FOR
THE WATER, LIGHT AND SINKING FUND COMMISSION
OF
THE CITY OF DALTON, GEORGIA

Attachments:

1. Overall Utility Plan
2. Sewer Profiles

ADVERTISEMENT FOR BIDS

001113

ADVERTISEMENT FOR BIDS
FOR
PATTERSON FARMS PHASE 4
FOR
THE BOARD OF WATER, LIGHT AND SINKING FUND COMMISSIONERS OF THE CITY OF DALTON, GEORGIA D/B/A DALTON UTILITIES

Sealed Proposals for **PATTERSON FARMS PHASE 4** for the BOARD OF WATER, LIGHT AND SINKING FUND COMMISSIONERS OF THE CITY OF DALTON, GEORGIA D/B/A DALTON UTILITIES ("Owner") will be received in the Auditorium of the Dalton Utilities Administration Building at 1200 V.D. Parrott Jr. Parkway until **2:00 P.M.** local time **October 14, 2024**, at which time they will be publicly opened and read.

Work to be Done: The work to be done (hereinafter referred to as "Work") consists of furnishing all materials and equipment, except those specified in the Bid, and performing all labor necessary for the following project (hereinafter referred to as "Project"):

Construct the **PATTERSON FARMS PHASE 4** as shown in the drawings and specifications. The project will consist of 4,100 ft of DIP water main including services, Manhole, fittings, valves, flushing valves, installing future connections, etc. The Project also includes 2,800 LF of gravity sewer main including setting man-holes, installing laterals, testing, ect.

The Contractor's work also includes all erosion, sedimentation, and pollution control necessary for the project. The cost of any permits required for erosion control and land disturbing will be borne by the Owner. The Contractor will be responsible for the cost of any other permits or licenses required to complete the work. The Contractor will complete all necessary clean-up and restoration work to include filling, finish grading, grassing, landscaping, pavement repairs, driveway repairs, culvert repairs, drainage ditch restoration and other necessary restoration activities such that post construction conditions are **EQUAL TO OR BETTER** than those conditions that existed prior to any construction activity occurring.

The Owner is authorized to issue change orders, without the necessity of additional requests for bids, within the scope of the Project when appropriate or necessary in the performance of the contract. No additional work shall be performed unless authorized by the Owner. The bidder declares that it understands that the unit price quantities shown in the proposal are subject to adjustment by either increase or decrease, by the Owner, and that should the quantities of any of the items of the work be increased, the bidder proposes to do the additional work at the unit prices stated herein; and should the quantities be decreased, the bidder also understands that payment will be made on actual quantities at the unit price bid and will make no claim for anticipated profits for any decrease in the quantities, and that 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.

Bidder Pre-qualification: Pre-qualification of bidders for this project is required. Bidders must submit a pre-qualification package containing requested information to the office of Dalton Utilities by 5:00 P.M., local time, **Thursday, September 26, 2024.** All applicants submitting pre-qualification documentation will be notified of their status via phone call to the contact person listed on the package by 5:00 P.M. **Friday, September 27, 2024.** Only bids submitted by properly pre-qualified bidders will be opened.

Mandatory Pre-Bid Meeting: A mandatory pre-bid meeting will be held on **Tuesday, October 1, 2024, at 2:00 pm** in auditorium at Dalton Utilities administrative building, addition information will be sent out to qualified bidders. If pre-qualified bidders do not attend, then Dalton Utilities will not open a bid from this contractor.

Time Allotted: All work as specified herein shall be completed within **240** calendar days of notice to proceed. Contractors submitting bids on project must be prepared to proceed with work within three weeks of bid opening.

Bids: Bids shall contain complete and detailed prices for labor, equipment, and construction materials for all items listed.

Contractor's License: All bidders must possess any and all licenses and permits as may be required by applicable federal, state and/or local law/ordinances. **The Georgia Utility Contractor License Number shall be written on the face of the bid.**

Performance and Bid Bond: A bid bond will be required in the amount of 10% of the total bid amount. A contract performance bond and a payment bond, in an amount equal to one hundred percent (100%) of the contract price, will be required of the successful bidder.

Withdrawal of Bids: Except as provided in O.C.G.A. Section 36-91-43, no submitted bid may be withdrawn for a period of sixty (60) days after the scheduled closing time for the receipt of bids.

Additional Instructions to Bidders, Drawings, Specifications and Contract Documents: Additional instructions to bidders, drawings, specifications, and other contract documents may be examined at Dalton Utilities, Watershed Engineering Services, 1200 V.D. Parrott Jr. Parkway, Dalton, Georgia. Drawings, Specifications and Contract Documents may be obtained at Dalton Utilities' website https://www.dutil.com/engineering/ or in person at Dalton Utilities, 1200 V.D. Parrott Jr. Parkway, Dalton, Georgia 30721.

Acceptance or Rejection of Bids: The right is reserved to accept or reject any and all bids and to waive technicalities and informalities.

Statutory Requirements: Notwithstanding any provision of this advertisement, all proposals must also comply with the minimum applicable requirements of Chapter 91 of Title 36 of the Official Code of Georgia Annotated.

E-Verify Requirements: All contractors and subcontractors performing work for Dalton Utilities must participate in the E-Verify Program pursuant to the Georgia Security and Immigration Compliance Act (SB 529).

THE BOARD OF WATER, LIGHT AND SINKING FUND
COMMISSIONERS OF THE CITY OF DALTON, GEORGIA

By: John Thomas, Chief Executive Officer

INSTRUCTIONS TO BIDDERS

002113

INSTRUCTIONS TO BIDDERS
PATTERSON FARMS PHASE 4
FOR
THE BOARD OF WATER, LIGHT AND SINKING FUND COMMISSIONERS
OF THE
CITY OF DALTON, GEORGIA
D/B/A DALTON UTILITIES

Bids received until **2:00P.M.**, Local Time, **October 14, 2024**

INSTRUCTIONS TO BIDDERS

I. Definitions:

Unless otherwise defined in this document, capitalized terms have the meaning defined in the Contract.

II. Evaluation of Bidders:

The Contract will be awarded pursuant to O.C.G.A. Section 36-91-21 to the lowest responsible and responsive bidder whose bid meets the requirements and criteria set forth in the invitation for bids. A responsible bidder is a person or entity that has the capability in all respects to perform fully and reliably the Contract requirements as determined by Dalton Utilities ("Owner"). A responsive bidder is a person or entity that has submitted a bid that conforms in all material respects to the requirements set forth in the invitation for bids as determined by Owner. Factors to be considered may include, but are not necessarily limited to the following:

A. Determination of Contract Awardee:

1. The Owner reserves the right to award the project to the Contractor who presents a bid that is determined to be the best overall value to the Owner. **This does not guarantee award of the project to the lowest bidder**. Award of this contract will be based on a combination of price, schedule, previous experience on similar projects, references from other sources having employed the contractor, and all other requirements detailed in this document and all contract documents. The Owner will determine which is the lowest responsible and

responsive bidder based on:

a) Completeness: The completeness and regularity of the bid form.
b) Exclusions: Bid form without exclusions, alternatives, or special conditions.
c) Contract Time: The Contractor has a maximum of **240** calendar days to complete the project.

2. Bidder's ability to begin the Work on this Project within three weeks upon the award of the Contract with sufficient resources to complete the Project by the Completion Date and maintain timely progress as determined by the Owner.

B. Qualifications of Bidders:

1. Each bidder must submit as part of its bid proposal a completed Statement of Bidder's Qualifications

2. The bidder must maintain a permanent place of business.

3. The bidder must have adequate technical experience on similar projects of comparable size.

4. The bidder must have sufficient resources (including but not limited to labor, equipment, and financial resources) to complete the Project by the Completion Date and maintain timely progress as determined by the Owner. The bidder should consider existing commitments in determining adequate personnel and equipment availability throughout the Project so as to stay on schedule and finish all Work by the Completion Date.

5. The bidder shall possess all necessary certifications for the bidder as an entity, for individuals it employs, and for all associated equipment to complete the Project by the Completion Date. Any reference made to necessary certifications includes but is not limited to conforming to the standards of all applicable technical society, organization, body, code, and standards. The bidder shall provide all materials needed to meet or exceed these necessary certifications including material fabrication, and the bidder shall provide all necessary testing and installation. In a case where the Owner establishes a more stringent qualification, the more stringent qualification shall prevail. In addition, necessary certifications shall include all applicable

requirements of local codes, utilities, and any other authorities having jurisdiction regarding the Project. The bidder must have a damage prevention program in place providing for coordination of excavating with the Utilities Protection Center of Georgia and have the provisions for a readily available location for the excavation permit on site for the particular excavation. This information shall be delivered in writing prior to commencement of Work on the Project.

6. The bidder shall have all necessary licenses and permits to complete the Project by the Completion Date. All licenses and permits must give the bidder authority to perform the Work including similar licensing for reference in the bidder's State of origin. This includes any permits required by Whitfield County for pavement cuts.

7. If the Contract is awarded to the bidder, the bidder must obtain and maintain insurance coverage of the types and amounts set forth in the Construction Contract.

III. Site Examination and Sub-Surface Conditions:

The bidder is expected to examine the location of the Project and to inform itself fully as to the conformation of the ground; the character of equipment and facilities needed preliminary to, and during the performance of the Work; the general and local conditions; and all other matters that can in any way affect the Work to be done.

A sub-surface investigation has not been made on any portion of the work site by Dalton Utilities. As such, the amount of rock excavation and unsuitable materials is unknown. The bidder shall make its own analysis of the materials to be encountered and include prices for removal and replacement of these materials in its unit prices.

IV. Interpretation of Drawings and Specifications:

If any entity contemplating submitting a bid for the Project has any question as to the true meaning of any part of the Drawings, Specifications, or other Contract Documents, or as to the scope of any part of the Work, it shall submit to the Owner a written request for an interpretation thereof. The entity submitting the request will be responsible for its prompt delivery in ample time for an interpretation to be issued before the bid opening date. Questions must be received by **5:00 pm on Monday October 7, 2024**. No questions will be answered within 72 hours of bid opening. Interpretations of the documents will be made only by addendum, and a copy of the addendum will be posted on the

Owner's website 72 hours prior to bid opening. The Owner will not be responsible for other interpretations of the documents. The bids shall be opened publicly, and evaluated by the Owner without discussion with the bidders.

V. Complete Work Required:

The Specifications, the Drawings, and all Contract Documents are essential parts of the Contract. Application requirements occurring in one are as binding as though occurring in all. All requirements are intended to be complementary, and to describe and provide for the complete Work.

VI. Pre-qualification Submittal:

1. The bidder shall provide Corporate experience including:
    a.) The applicant has operated under the current corporate name for the last 4 years.
    b.) Provide name, address, and telephone number of applicant's corporate headquarters, relevant regional office(s) and subsidiaries, if any.
    c.) Provide name, title and biographical summary of all corporate officers.
    d.) The applicant has sufficient bonding capacity to provide performance and payment bonds, both in the amount of 100 % of the contract amount. **Provide a statement of bonding capacity**, bonding company, insurance agent contact persons, and telephone numbers.
    e.) The applicant has access to adequate equipment to complete the project. Provide a list of major equipment proposed to perform the work and indicate whether owned or leased.
    f.) The applicant has never failed to complete a project. Provide a statement that the applicant has never failed to complete a project. If this is not the case, explain.
    g.) The applicant has a history of completing projects consistently on time and within the bid amount. **Contractor must provide a statement of any projects that were not completed on time.** Provide a statement that the applicant has not been involved in liquidated damages in the past 5 years or served the Owner with a claim for additional compensation prepared by an attorney or a claims consultant, excluding routing change order requests. If this is not the case, explain.
    h.) The applicant has a history of not being involved in litigation against Owners or Engineering Firms. The applicant should provide a statement that they have not been involved in litigation

as a plaintiff against the Owner or Engineering Firm in the past 5 years. If this is not the case, please explain.

i.) The applicant has available project management personnel with at least two years' experience on projects with the technical characteristics listed in paragraph 2 below to complete the project. Provide experience of proposed on-site project manager and/or field superintendent who would supervise and be in charge of the project. Experience can be from a previous employment but must be pertinent to technical information listed in paragraph 2. If your firm is the successful bidder, at least one of these key personnel must be actively involved in the day-to-day operations of the **Patterson Farms Phase 4** in Whitfield County, Georgia.

j.) List all other projects currently under contract, the current contract amounts, and scheduled completion dates.

k.) Contractor must provide OSHA Incident Rate for the past three (3) years.

2. The bidder shall provide Technical Experience including:
   a.) Two sewer main and water main expansion/installation projects of similar scale and technical difficulty as of the **Patterson Farm Phase 4** project. Project must have been completed or started within the time frame of January 1, 2020 and January 1, 2024. Each of these projects must be complete or progressing on schedule as of January 1, 2024. Dalton Utilities will consider experience performed as a sub-contractor, provided that these projects were completed ahead of schedule and under budget.
   b.) Projects must be at least $250,000.00, or that portion of a sub-contracted project must have been equal to or greater than $750,000.00.
   c.) Contractor must have previous experience with the installation of water mains. List previous experience.

3. Provide the information specified below for each of the above projects:
   a.) Name of the project as bid; name of Owner; name of engineering firm; name, position or title, address and telephone number of contact person currently employed by each of the above; percent of labor related items performed by the applicant's own work force.
   b.) A complete description of each project including linear footage of pipeline installed and associated diameters.
   c.) The bid amount and final cost to the Owner, with an explanation of cost overrun, if any, including change orders.
   d.) The contract time as bid, actual time to complete project and completion date, with an explanation of time overrun, if any.

The applicant's pre-qualification package should be signed by an officer of the company. **Failure of the contractor to provide requested information or provide accurate information may result in contractor disqualification.** No bid shall be opened unless the bidder has been approved by Dalton Utilities prior to the bid opening date. If the bid is submitted by a joint venture, all parties to the joint venture must individually satisfy the pre-qualification requirements. Final determination of the applicant's qualification is the approval by Dalton Utilities. The package must be received by the Owner not later than **5 PM on Thursday, September 26, 2024.** Applicants will be advised of their pre-qualification status by **5 PM on Friday, September 27, 2024.** This package shall be sent to the Owner at Dalton Utilities, 1200 V.D. Parrott Jr. Parkway, Dalton, Georgia 30721 Attention: **Rafael Romero**.

BID

004113

BID

Project Description: **Patterson Farms Phase 4**

Proposal of _____
(hereinafter called "Bidder"),

To: The Board of Water, Light and Sinking Fund Commissioners of the City of Dalton, Georgia.

Gentlemen:

The Bidder, in compliance with your Advertisement for Bids for the construction of this project, having examined the Drawings and Specifications with related documents and the site of the proposed work and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, equipment, and supplies to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the price(s) stated below. This price(s) is to cover all expenses including overhead and profit incurred in performing the work required under the Contract Documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written Notice to Proceed of the Owner and to fully complete the project within **240** consecutive calendar days thereafter as stipulated in the specifications. Bidder further agrees to pay, as liquidated damages, the sum of $ 1,000.00 for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.

Bidder acknowledges receipt of the following addenda:

_____

_____

_____

Bidder agrees to perform all necessary work as described in the Specifications and shown on the Plans to complete the Project as specified, including all appurtenant and accessory work for the attached price(s).

The attached price(s) shall include all labor, materials, equipment, supplies, overhead, profit, insurance, etc., to cover the finished work of the several kinds for which are called.

Bidder understands that the Owner reserves the right to reject any or all Bids and to waive any informality in the bidding.

The Bidder agrees that this Bid shall be good and may not be withdrawn for a period of 60 calendar days after the scheduled closing time for receiving Bids.

Upon receipt of written notice of the acceptance of this Bid, Bidder will execute the formal contract attached within twenty (20) calendar days and deliver surety bonds and certificate(s) of insurance as required by the Contract Documents. 10 percent of the total Bid is to become the property of the Owner in the event the contract and bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

Respectfully submitted:

_____

By_____
Signature

Title_____

_____

_____

_____
Business Address

ATTEST:

_____

Name_____
(Please Type)

Title_____ (SEAL)

Note: Attest for corporation secretary; for a partnership by another partner; for an individual By a Notary.

PATTERSON FARMS PHASE 4

Item No.	Approx. Quantity	Unit	Description	Unit Price	Labor Total Price	
			Gravity Sewer			
1.)	1,100	LF	8" Ductile Pipe < 10' Depth		$	-
2.)	1,680	LF	8" Pipe Ductile > 10' Depth		$	-
3.)	68	EA	6" Ductile Lateral Service with Cleanout (30' Length)		$	-
4.)	200	Tons	Stone Backfill/Bedding		$	-
5.)	102	VF	Install Pre-Cast Manholes		$	-
6.)	10	EA	Rings and Covers		$	-
				SUBTOTAL	$	-
			Water Main			
1.)	4,100	LF	Install New 8" Class 350 Ductile Iron Pipe(includes Fittings)		$	-
2.)	31	EA	Install New Water Services (Single Meter)		$	-
3.)	44	EA	Install New Water Services (Double Meter)		$	-
4.)	2	EA	Tie To Existing Main 8" DIP		$	-
5.)	6	EA	8" gate valve		$	-
6.)	9	1	Install Fire Hydrant Complete		$	-
7.)	100	Tons	Stone Backfill		$	-
				SUBTOTAL	$	-
			ALLOWANCE ITEMS			
1.)	250	CY	Removal of Rock (if rock is encoutered)		$	-
2.)	1	LS	Contingency	$ 25,000.00	$	25,000.00
				SUBTOTAL		
				TOTAL		

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

004519

004519
Non-Collusion Affidavit of Prime Bidder

STATE OF GEORGIA COUNTY OF WHITFIELD

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

He is _____ of _____, the Bidder that has submitted the attached Bid;

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

Such Bid is genuine and is not a collusive or sham Bid;

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

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

(Signed) _____
(Signature on File)

(Title) _____

Subscribed and Sworn to before me this ____ day of _____, 2024.

_____ My Commission Expires:_____
(Signature on File) (Notary Public) (SEAL)

CORPORATE CERTIFICATE

004543

CORPORATE CERTIFICATE

I, _____ certify that I am the Secretary of the corporation named as Contractor in the foregoing proposal; that _____ _____, who signed said proposal in behalf of the Contractor was then _____ of said corporation; that said proposal 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 corporation is organized under the laws of the State of _____ and its registered and in good standing with the _____ Secretary of State.

This _____ day of _____, 2024.

_____

(SEAL)

STATEMENT OF LICENSE CERTIFICATE

004546

STATEMENT OF LICENSE CERTIFICATE

Each Contractor bidding shall fill in and sign the following:

This is to certify that _____ ("Contractor") has fully complied with all the requirements of the Georgia State Construction Industry Licensing Board Laws and Rules. The Contractor's license number, other information outlined in the Instructions for Bidders, expiration date, and that part of classification applying to the bid shall appear on the envelope containing the Bid, otherwise the Bid will not be considered.

The Georgia State Construction Industry Licensing Board issued to the Contractor, Certificate No. _____, expires on _____.

Signed _____

Name _____

Title _____

E-VERIFY
AFFIDAVIT

004549

004549-1
E-Verify Affidavit

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 Water, Light and Sinking Fund Commission of the City of Dalton, Georgia d/b/a Dalton Utilities 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.C.A. §13-10-91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____
Federal Work Authorization User Identification Number

_____
Date of Authorization

_____
Name of Contractor

_____
Name of Project

_____
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.
Executed on _____, ___, 202___ 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_____, 202___.

_____
NOTARY PUBLIC
My Commission Expires: _____

004549-2
E-Verify Affidavit

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 Water, Light and Sinking Fund Commission of the City of Dalton, Georgia d/b/a Dalton Utilities 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 OC.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

_____
Name of Project

_____
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.
Executed on _____, ___ 202___ 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_____, 202___.

_____
NOTARY PUBLIC
My Commission Expires: _____

004549-3
E-Verify Affidavit

Sub-subcontractor Affidavit under O.C.GA. §13-l0-91(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 Water, Light and Sinking Fund Commission of the City of Dalton, Georgia d/b/a Dalton Utilities 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 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

_____
Name of Project

_____
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.
Executed on _____, _____, 202___ 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_____,202___.

_____
NOTARY PUBLIC
My Commission Expires: _____

CONSTRUCTION CONTRACT

005213

CONSTRUCTION CONTRACT
FOR
PATTERSON FARMS PHASE 4

This construction contract ("Contract") is made and entered into on the _____ day of _____, 2024, by and between THE BOARD OF WATER, LIGHT AND SINKING FUND COMMISSIONERS OF THE CITY OF DALTON, D/B/A DALTON UTILITIES, hereinafter called the "Owner" and _____ , hereinafter called the "Contractor".

WITNESSETH:

That for in consideration of the mutual covenants and agreements herein contained and other good and valuable considerations, the receipt and sufficiency of which is hereby acknowledged, the parties hereto do agree as follows:

1. Definitions. As used in this Contract, the following terms are defined as follows:
   A. "Contract Documents" mean and include the following (and all exhibits and amendments thereto):
      (i) Advertisement for Bids;
      (ii) Instructions to Bidders;
      (iii) Contractor's Bid;
      (iv) Bid Bond;
      (v) This Contract;
      (vi) Payment Bond;
      (vii) Performance Bond;
      (viii) Notice of Award;
      (ix) Notice to Proceed;
      (x) Plans and Specifications;
      (xi) Drawings; and
      (xii) any and all Change Orders.
   B. "Completion Date" means the date that the Contractor has completed all of its Work regarding the Project and all of the certifications and affidavits have been executed in compliance with the Contract Documents.
   C. "Project" means **Patterson Farms Phase 4**, as previously described in the Contract Documents.
   D. "Work" means all materials, supplies, tools, equipment, labor, installation, testing, and all other services necessary for the completion of the Project.

2. Performance of Work by Contractor. The Contractor shall perform all of the Work described in the Contract Documents and comply with the terms therein for the price set forth in the Notice of Award, as may be modified by Change Orders. All Work performed by the Contractor shall be subject to the inspection and approval of the Owner.

3. Changes from Plans and Specifications. Any and all changes from the Contract Plans and Specifications shall be approved by the Owner prior to any changes in the Work being

performed. Any and all changes from the Contract Plans and Specifications that result in a change in the scope of work to be performed shall be approved by the Owner in writing by a written Change Order Form, executed by the Owner and Contractor prior to any changes in the Work being performed. For the purpose of this section, a change in the scope of the Work to be performed occurs whenever there is a change in the total price of the Contract or the scheduled Completion Date.

4. Time Period for Performance of Work. The Contractor will be required to complete all work for the Project in **240** calendar days unless the time period is modified by a written Change Order that has been executed by the Owner and Contractor. In addition, the Contractor shall achieve completion dates as specified in the Contract Documents for specific tasks to be accomplished as part of the overall Project. Work shall begin on the date specified in the Notice to Proceed. The Contractor shall deploy labor, materials, and equipment such that Work is prosecuted regularly, diligently and uninterrupted, at a rate of progress that will ensure meeting all final or task specific completion dates.

5. Bonds.

A. Performance Bond. The Contractor shall provide a performance bond approved by the Owner in the amount of at least the total amount payable by the terms of this Contract and shall be increased as the total amount payable pursuant to this Contract is increased. The Contractor shall be required to maintain the performance bond in the amount of 100% of the total Contract price until the expiration of the warranty period.

B. Payment Bond. The Contractor shall provide a payment bond approved by the Owner in an amount equal to the total amount payable by the terms of this Contract as may be amended, for the use and protection of all subcontractors, and all persons supplying labor, materials, machinery, and equipment in the performance of this Contract.

6. Compliance with Laws, Regulations, and Contractor Requirements. The Contractor will comply with all applicable laws and with all the requirements of any and all federal, state, and local authorities having jurisdiction over said Work or any matters connected therewith. Contractor will also comply with all requirements contained in General Requirements and Conditions of the Plans and Specifications.

7. Payment for Work Performed. The owner will pay only for Work completed in accordance with the unit prices detailed in the bid and as otherwise herein stated. The Contractor shall submit invoices not later than the tenth day of each month to the Owner for the Work completed during the preceding month and will attach to such invoices a detailed summary of the Work completed during the preceding month and the Contract period to date in a format prescribed by the Owner at the pre-construction meeting. Should the Owner not prescribe a format, the Contractor shall present the Owner with a format for review and approval prior to the first invoice being submitted. In preparing invoices, materials not subject to deterioration delivered on the Project site will be taken into consideration for inclusion in the payment request. The stored materials list must include

a brief description (not just manufacturer's name), invoice, material received during the period, and material used during the period. The eligible cost for on-site material included in the payment shall be the amount of the manufacturer invoice reduced by five percent (5%) of the amount. All material and Work covered by partial payments made shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and Work upon which payments have been made or the restoration of any damaged work or as a waiver of the right of the Owner to require the fulfillment of all of the terms of the Contract.

Within 30 days after the receipt and approval of the invoices, the Owner will pay the Contractor for the Work covered by said invoices and completed in accordance with this Contract less any applicable retainage as discussed below in Section 8. Contractor agrees to and hereby does waive all rights to interest on retainage.

8. Retainage. The Owner shall retain a maximum of five percent (5%) of each progress payment described in Section 7 of this Agreement.

9. Non-Exclusivity. It is understood and agreed that this Agreement is not exclusive and that the Owner shall have the right to employ other persons or entities to perform work for it similar to that herein provided for and shall also have the right to perform such work for itself.

10. Warranty. The Contractor warrants and guarantees for a period of one (1) year from the Completion Date that the Contractor's Work is free from any and all defects. The Contractor shall promptly make all repairs or other corrections necessary as a result of said defects, including repairs to any other portion of the Project that are necessitated by said defects. If the Contractor fails to promptly make such repairs or corrections, the Owner may make, or contract with a third party to make, said repairs or corrections, and charge the Contractor the cost incurred by the Owner. The Contractor's Performance Bond shall remain in full force and effect during the warranty period. This Section shall survive the termination of this Agreement.

11. Insurance: The Contractor shall provide to the Owner proof and scope of insurance coverage in the form of a certificate of insurance currently in force. The Contractor shall maintain said insurance coverage during the entire time period of the Contractor's performance of this Contract and warranty period. The certificate of insurance must list The Board of Water, Light and Sinking Fund Commissioners of the City of Dalton, Georgia d/b/a Dalton Utilities and the City of Dalton as an additional named insured. The insurance shall not be cancelled or materially altered unless at least 30 days prior written notice has been given to the Owner. This coverage must include but is not limited to:

A. Worker's Compensation Insurance: Worker's Compensation for every person engaged in any work on the Project.

B. General Liability: Comprehensive General Liability for products and completed operations shall be XC, U, and the ISO Broadform General Liability endorsement or its equivalent. This coverage shall include:

1. Bodily Injury Insurance in an amount not less than $1,000,000 for bodily injury, including accidental death, to any one person, and subject to the same limit for each person, in an amount not less than $2,000,000 on account of one accident.

2. Property Damage Insurance in an amount not less than $1,000,000 for any one damage claim, and in an aggregate amount up to $2,000,000 during a period of 12 months.

3. Automobile Liability including bodily injury and property damage of aforesaid amount.

4. Owner's Protective Liability Insurance to be issued in the name of the Owner for liability and property damage in an amount to be determined by the owner.

5. Umbrella Policy to provide for increase in coverage of basic policies to an amount not less than $5,000,000.

6. Builder's Risk or Installation Floater Insurance for fire and increase of coverage in the amount at all times at least equal to the amount paid on account of work and materials to be set up in the names of Owner and Contractor as their interest may appear.

12. Indemnification: The Contractor shall indemnify and hold harmless the Owner and its agents and employees from and against all claims, damages, losses and expenses including claims for consultants' and attorneys' fees, arising out of or resulting from the failure to perform the Work in a good and workmanlike manner by the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable.

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

13. Termination of Contract. In the event the Contractor shall violate any of the provisions of this Contract or any of the other Contract Documents, or if the quality or quantity of the Work performed is, in the sole judgment of the Owner, substandard or unsatisfactory, the Owner shall have the right to terminate this Contract upon 10 days written notice to the Contractor. If this Contract is terminated by the Owner pursuant to the provisions of this Section, Contractor shall be responsible for payment of all damages incurred by the Owner as a result of said termination, including but not limited to the cost of completing the Work on the Project.

14. Other Remedies. If the Contractor defaults under any of the provisions of the Contract Documents, the Owner shall be entitled to pursue all remedies permitted by law, including but not limited to those remedies set forth elsewhere in the Contract Documents. All remedies of the Owner are cumulative and non-exclusive.

15. Liquidated Damages for Delay in Completion of Project. The Contractor shall proceed with the Work at a rate of progress that will insure completion of the Project by the Completion Date. It is expressly understood and agreed by and between the Contractor and the Owner, that the time for Project completion described is a reasonable time, taking into consideration the average climatic and economic conditions, and other factors prevailing in the locality of the Project. It is further agreed that time is of the essence of each and every portion of this Project.

If the Contractor shall fail to complete all of the Work required by the Completion Date, or extended time if authorized by a Change Order, then the Contractor shall pay to the Owner the full amount of liquidated damages of $ 1,000.00 for each calendar day that the Contractor shall be in default after the time stipulated in the Contract Documents. The Contractor acknowledges that the actual dollar amount of liquidated damages is difficult to determine, but the dollar amount of liquidated damages set forth above is a reasonable estimate of said damages incurred by the Owner.

The Contractor shall not be charged with liquidated damages or any excess cost when the delay in the completion of the Work is due to the following and the Contractor has promptly given written notice of such delay to the Owner (and Engineer if there is an Engineer on the Project):

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

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

C. To any delays of subcontractors occasioned by any of the causes specified in paragraphs A and B above.

16. Approval of Subcontractors. The Contractor acknowledges and agrees that any person, firm or other party to whom it is proposed to award a subcontract under this Contract must be approved in writing by the Owner prior to the subcontractor performing any work on the Project.

17. Entire Agreement. This Contract and the Contract Documents constitute the entire agreement between the parties hereto with respect to its subject matter and there are no representations, warranties, agreements, undertakings or conditions, express or implied,

except as set forth herein. In the event of any conflict between the provisions of the Contract and the other Contract Documents, the provisions of the Contract control.

18. Modification to Agreement. This Contract may not be amended, supplemented or otherwise modified except by written instrument signed by each of the parties hereto.

19. Notices. Any notices or other communications required or permitted to be given and instruments referred to herein must be given in writing and personally delivered or mailed by prepaid certified mail to the following addresses:

If to Owner: Dalton Utilities
Attn: President/CEO
PO Box 869
1200 V.D. Parrott, Jr. Parkway
Dalton, Georgia 30722

If to Contractor: _____
_____
_____
_____

Any such notice or other communication shall be deemed to have been given (whether actually received or not) on the day it is mailed (postmarked) or personally delivered as aforesaid. Any party may change its address for purposes of this Contract by giving notice of said change to the other parties pursuant to this Section.

20. Non-Waiver. No delay or failure by either party to exercise any right under this Contract, and no partial or single exercise of that right shall constitute a waiver of that or any other right, unless otherwise expressly provided herein.

21. Severability. Every provision of this Contract is intended to be severable, and, if any term or provision is determined to be illegal or invalid for any reason whatsoever, such illegality or invalidity shall not affect the validity of the remainder of this Contract.

22. Governing Law. This Contract shall be deemed to have entered into in and shall be construed in accordance with and governed by the laws of the State of Georgia.

23. Binding Effect. The provisions of this Contract shall be binding upon and shall insure to the benefit of each of the parties hereto and their respective and permitted successors and assigns.

24. Time is of the Essence. Time is of the essence of each and every provision of this Contract.

25. No Third-Party Beneficiaries. Except as may be otherwise expressly provided in this Contract, nothing contained herein, express or implied, is intended to, nor shall it (1) confer

on any entity other than the parties hereto and their respective and permitted, successors and assigns, any rights, remedies, obligations under or by reason of this Contract.

26. Captions. The sections and captions contained herein are for convenience and reference only, and are not intended to define, extend, extend, or limit any provision of this Contract.

27. Confidentiality. To the extent not prohibited by law, the Contractor shall keep confidential the terms of the Contract Documents.

28. Assignment. This Contract may not be assigned by the Contractor without the prior written consent of the Owner.

29. No partnership. This Contract shall not be interpreted or construed to create an association, joint venture, partnership, or employer-employee relationship between the Parties, nor to impose any such obligations or liability on either party. Furthermore, neither party shall have nay right, power, or authority to enter into any agreement or undertaking for or on behalf of, to act as, or be an agent or representative of, or to otherwise bind the other party.

30. Counterparts. This Contract may be executed in one or more counterparts, each of which shall be deemed an original, and all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have executed this Contract under their respective seals on the day and date first above written in two (2) counterparts, each of which shall without proof or accounting for the other counterparts be deemed an original Agreement.

ATTEST: (As to Contractor)

CONTRACTOR

(Contractor.)

By:_____L.S.

Title: _____

(SEAL)

ATTEST:

_____
Chief Watershed Services Officer

BOARD OF WATER, LIGHT AND SINKING FUND COMMISSIONERS
OF THE CITY OF DALTON, GEORGIA

By:_____L.S.
(SEAL)

Date:_____

John Thomas
CEO

PERFORMANCE BOND

006113.13

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, **CONTRACTOR NAME AND ADDRESS** (hereinafter called the "Principal") and **SURITY NAME AND ADDRESS** (hereinafter called the "Surety") are held and firmly bound unto The Board of Water, Light and Sinking Fund Commissioners of the City of Dalton, Georgia d/b/a Dalton Utilities (hereinafter called the "Owner") and its successors and assigns, in the penal sum of **AMOUNT ($xxx,xxx),** lawful money of the United States of America, for the payment of which the Principal and the Surety binds themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract with the Owner, dated _____ ____ ***, 2024*** which is incorporated hereby by reference in its entirety (hereinafter called the "Construction Contract"), for the ***Patterson Farms Phase 4***, more particularly described in the Construction Contract (hereinafter called the "Project"); and

NOW, THEREFORE, the conditions of this obligation are as follows, that if the Principal shall fully and completely perform all the undertakings, covenants, terms, conditions, warranties, and guarantees contained in the Construction Contract, including all modifications, amendments, changes, deletions, additions, and alterations thereto that may hereafter be made, then this obligation shall be void; otherwise, it shall remain in full force and effect.

Whenever the Principal shall be, and declared by the Owner to be, in default under the Construction Contract, the Surety shall promptly remedy the default as follows:

1. Complete the Construction Contract in accordance with the terms and conditions; or

2. Obtain a bid or bids for completing the Construction Contract in accordance with its terms and conditions, and upon determination by the Surety and the Owner of the lowest responsible bidder, arrange for a contract between such bidder and Owner and make available as the work progresses (even though there should be a default or succession of defaults under the Construction Contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the penal sum set forth in the first paragraph hereof, as may be adjusted, and the Surety shall make available and pay to the Owner the funds required by this Paragraph prior to the payment of the Owner of the balance of the contract price, or any portion thereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by the Owner to the Contractor under the Construction Contract, and any amendments thereto, less the amount paid by the Owner to the Contractor; or, at the option of the Owner,

3. Allow Owner to complete the work and reimburse the Owner for all reasonable costs incurred in completing the work.

In addition to performing as required in the above paragraphs, the Surety shall indemnify and hold harmless the Owner from any and all losses, liability and damages, claims, judgments,

liens, costs and fees of every description, including reasonable attorney's fees, litigation costs and expert witness fees, which the Owner may incur, sustain, or suffer by reason of the failure or default on the part of the Principal in the performance of any or all of the terms, provisions, and requirements of the Construction Contract, including any and all amendments and modifications thereto, or incurred by the Owner in making good any such failure of performance on the part of the Principal.

The Surety shall commence performance of its obligations and undertakings under this Bond promptly and without delay, after written notice from the Owner to Surety.

The Surety hereby waives notice of any and all modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and any other amendments in or about the Construction Contract, and agrees that the obligations undertaken by this bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, alterations, extensions of time, change in payment terms, and amendments.

The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment to the Construction Contract, so as to bind the Principal and the Surety to the full and faithful performance of the Construction Contract as so amended or modified, and so as to increase the penal sum to the adjusted Contract Price of the Construction Contract.

No right of action shall accrue on this Bond to or for the use of any person, entity, or corporation other than the Owner and any other obligee named herein, or their executors, administrators, successors or assigns.

This Bond is intended to comply with O.C.G.A. Section 36-91-70, and shall be interpreted so as to comply with the minimum requirements thereof. However, in the event the express language of this Bond extends protection to the Owner beyond that contemplated by O.C.G.A. Section 36-91-70, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the Owner, whether or not such protection is found in the applicable statutes.

IN WITNESS WHEREOF, the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this _____ day of _____, 2024.

Contractor

By:_____

Title:_____

Attest:

_____ (SEAL)

Title: _____

SURETY

By: _____

Title:_____

By:_____

Title:_____

By:_____

Title:_____

Attest:

_____ (SEAL)

Title: _____

[Attach Power of Attorney]

PAYMENT BOND

006113.16

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, CONTRACTORS NAME & ADDRESS (hereinafter called the "Principal") and **SURITY NAME AND ADDRESS** (hereinafter called the "Surety") are held and firmly bound unto The Board of Water, Light and Sinking Fund Commissioners of the City of Dalton, Georgia d/b/a Dalton Utilities (hereinafter called the "Owner") and its successors and assigns, in the penal sum of **AMOUNT ($xxx,xxx),** lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract with the Owner, dated _____ ____***,2024*** which is incorporated hereby by reference in its entirety (hereinafter called the "Construction Contract"), for the **Patterson Farms Phase 4**, more particularly described in the Construction Contract (hereinafter called the "Project"); and

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to all persons working on or supplying labor or materials under the Construction Contract, and any amendments thereto, with regard to labor or materials furnished and used in the Project, and with regard to labor or materials furnished but not so used, then this obligation shall be void; but otherwise it shall remain in full force and effect.

1. A "Claimant" shall be defined herein as any subcontractor, person, party, partnership, corporation or other entity furnishing labor, services, or materials used, or reasonably required for use, in the performance of the Construction Contract, without regard to whether such labor, services, or materials were sold, leased or rented, and without regard to whether such Claimant is or is not in privity of contract with the Principal or any subcontractor performing work on the Project, including, but not limited to, the following labor, services or materials: water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Construction Contract.

2. In the event a Claimant files a claim against the Owner, or the property of the Owner, and the Principal fails or refuses to satisfy or discharge it promptly, the Surety shall satisfy or discharge the claim promptly upon written notice from the Owner, either by bond or as otherwise provided in the Construction Contract.

3. The Surety hereby waives notice of any and all modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and any other amendments in or about the Construction Contract and agrees that the obligations undertaken by this Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and amendments.

4. The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment or modification to the Construction Contract, so as to bind the Principal and Surety, jointly and severally, to the full payment of any Claimant under the Construction Contract, as amended or

modified, provided only that the Surety shall not be liable for more than the penal sum of the Bond, as specified in the first paragraph hereof.

5. This Bond is made for the use and benefit of all persons, firms and corporations who or which may furnish any materials or perform any labor for or on account of the construction to be performed or supplied under the Construction Contract, and any amendments thereto, and they and each of them may sue hereon.

6. No action may be maintained on this Bond after one (1) year from the date the last services, labor or materials were provided under the Construction Contract by the Claimant prosecuting said action.

7. This Bond is intended to comply with O.C.G.A. Section 36-91-90, and shall be interpreted so as to comply with the minimum requirements thereof. However, in the event the express language of this Bond extends protection to the Owner beyond that contemplated by O.C.G.A. Section 36-91-90, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the Owner, whether or not such protection is found in the applicable statutes.

IN WITNESS WHEREOF, the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this _____ day of _____, 2024.

CONTRACTOR

By:_____

Title:_____

Attest:

_____ (SEAL)

Title: _____

SURETY

By:_____

Title:_____

By:_____

Title:_____

By:_____

Title:_____

Attest:

_____ (SEAL)

Title: _____

[Attach Power of Attorney]

GENERAL REQUIREMENTS AND CONDITIONS

007213

GENERAL REQUIREMENTS AND CONDITIONS

Contract Scope of Work: Work to be done consists of furnishing all materials, equipment, and labor necessary for the Project described within the Contract Specifications and Drawings to include, but not limited to:

The project consist of constructing the **Patterson Farms Phase 4** as shown in the drawings and specifications. The project will consist of 4,100 ft of DIP water main including services, Manhole, fittings, valves, flushing valves, installing future connections, etc. The Project also includes 2,800 LF of gravity sewer main including setting man-holes, installing laterals, testing, ect.

The Contractor's work also includes all erosion, sedimentation, and pollution control necessary for the project. The cost of any permits required for erosion control and land disturbing will be borne by the Owner. The Contractor will be responsible for the cost of any other permits or licenses required to complete the work. The Contractor will complete all necessary clean-up and restoration work to include filling, finish grading, grassing, landscaping, pavement repairs, driveway repairs, culvert repairs, drainage ditch restoration and other necessary restoration activities such that post construction conditions are **EQUAL TO OR BETTER** than those conditions that existed prior to any construction activity occurring.

The Owner is authorized to issue change orders, without the necessity of additional requests for bids, within the scope of the Project when appropriate or necessary in the performance of the contract. No additional work shall be performed unless authorized by the Owner. The bidder declares that it understands that the unit price quantities shown in the proposal are subject to adjustment by either increase or decrease, by the Owner, and that should the quantities of any of the items of the work be increased, the bidder proposes to do the additional work at the unit prices stated herein; and should the quantities be decreased, the bidder also understands that payment will be made on actual quantities at the unit price bid and will make no claim for anticipated profits for any decrease in the quantities, and that 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.

Contractor's Obligations:

The Contractor shall, in good workmanlike manner, perform all Work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary and proper to complete all Work required by the Construction Documents within the time specified, in accordance with the provisions of the Construction Documents and any and all supplemental plans and drawings of the Work, and in accordance with the directions of the Owner as given from time to time during the progress of the Work. The Contractor shall furnish, erect, maintain, and remove such permanent and temporary construction works as may be required. The Contractor alone shall be responsible for the safety, efficiency, and adequacy of its

methods, workmanship and materials, and for any damage which may result from its failure or its improper construction, maintenance, or operation. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the Contract Documents Specifications, and shall do, carry on, and complete the entire Work to the satisfaction of the Owner.

Note: The Contractor shall immediately notify the Owner upon becoming aware of any circumstances/factors that may negatively impact the Project Completion Date or bid amount so that the circumstances/factors can be reviewed/evaluated and a joint corrective action plan developed.

Owner's Authority:

The Owner shall determine the amount, quality, acceptability, and fitness of the several kinds of Work and materials. The Owner shall decide the meaning and intent of any portion of the Contract Documents where the same may be in dispute. The Owner's decisions shall be final and conclusive, except as herein otherwise expressly provided.

Any difference or conflicts in regard to the Work, which may arise between the Contractor under this Construction Contract and other contractors performing work for the Owner, shall be determined by the Owner.

The Owner is not, in any way, responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

Time Period for Performance of the Work:

The time period for completion of the work is specified in the Construction Contract. Additionally, the Contractor shall comply with specified order of work requirements and intermediary completion dates as specified below for specific tasks to be accomplished as part of the overall Project. Meeting the overall Completion Date, as well as, any task-specific completion dates are ESSENTIAL CONDITIONS of this Contract. Work shall begin on the agreed date specified in the Notice to Proceed. The Contractor shall deploy labor, materials and equipment such that work is prosecuted regularly, diligently, and uninterruptedly at a rate of progress that will ensure meeting all final or task specific completion dates. Specified order of work requirements and intermediary completion dates are as follows:

- Once commenced, this work shall be completed in the shortest time possible such that the disturbance time period is minimized and the project can be inspected, a punch list developed and completed, as-built drawings provided, and the project designated as complete by the Owner.
- All disturbed areas shall be backfilled, finish graded, grassed, and seeded as soon as possible such that the area is "stabilized", from a storm water perspective, as soon as possible.

Project Schedule:

The Contractor shall deliver to the Owner at the pre-construction meeting a Proposed Project Schedule outlining the order of Work and associated timeframes such that the

required scope of Work can be successfully completed by the completion date. The Proposed Project Schedule shall incorporate any intermediary deadlines for completion of particular items of Work as outlined herein. This Project Schedule shall be in a form satisfactory to the Owner, showing the proposed dates of commencement and completion of each of the various subdivisions of Work required under the Contract Documents and the anticipated amount of each monthly payment that will become due by the Contractor in accordance with the progress schedule. This Project Schedule is subject to review and approval by the Owner. Activity codes shall be provided on the progress schedule to match cost center codes on the periodic estimate. The Contractor shall submit an updated progress schedule at each scheduled progress meeting such that progress can be routinely monitored and tracked.

At the Preconstruction Meeting the contractor shall provide the owner with their scheduled work hours for the project. Any deviations from these standard hours will require a minimum of 48 hours notice and approval by the owner.

Environmental, Health and Safety:

The Contractor shall perform all necessary action at all times during the construction period to ensure the protection of all persons performing Work on the Project, the general public and the environment. In emergencies affecting the safety of persons, the work or property at the Project site or adjacent thereto, the Contractor, without special instruction or authorization from the Owner, shall act to prevent threatened damage, injury or loss. The Contractor shall make prompt written notice to the Owner of any changes in the work or deviations from the Contract Documents caused thereby.

Safety and health facilities and procedures shall be in accordance with the requirements of the National Occupational Safety and Health Act of l970, as amended. The Contractor shall comply with the Department of Labor's Safety and Health Regulations for construction promulgated under the National Occupational Safety and Health Act of l970, as amended (P. L. 9l-596), and under Section l07 of the Contract Work Hours and Safety Standard Act (P. L. 9l-54).

All construction debris and construction waste shall be properly stored and disposed in accordance with applicable Federal, State and Local regulations/ordinances. All chemicals used during Project construction or furnished for Project operation, whether herbicide, pesticide, disinfectant or of other classification, must show approval of either Environmental Protection Agency (EPA) or United States Department of Agriculture (USDA). Use of all such chemicals and disposal of residue shall be in strict conformance with manufacturer’s instructions and applicable Federal, State and Local regulations/ordinances.

The Contractor shall utilize best management practices for erosion, sedimentation, and pollution control during all phases of construction.

At the pre-construction meeting, the Contractor shall provide the Owner with a copy of the Company’s Environmental, Health and Safety Program and a Project specific plan as to how the Contractor is to complete the Project in a safe and environmentally protective manner.

Laws of the Place:

The Contractor shall complete the Project in accordance with the applicable national, state, county, and municipal laws, ordinances, and regulations. The Contractor shall keep itself fully informed of those laws, ordinances, and regulations which would, in every way, affect those engaged and employed in the Project, the materials used in the Project, and the conduct of the Project; and the Contractor shall keep itself fully informed of all orders and decrees of bodies and tribunals having jurisdiction and authority over the Project. If discrepancies or inconsistencies, or both, should be discovered in the Construction Documents, in relation to laws, ordinances, regulations, orders, and decrees, the Contractor shall forthwith report the fact, in writing, to the Owner. The Contractor shall protect and indemnify the Owner, its officers, agents, and employees, against claims and liabilities arising from, or based on, the violation of those laws, ordinances, regulations, orders, and decrees, whether by the Contractor or by its employees, agents or subcontractors.

Licensing/Permits:

The Contractor shall have all necessary licenses and permits to complete the Project by the Completion Date. All licenses and permits must provide the Contractor authority to perform the Work including similar licensing for reference in the Contractor's state of origin. This includes any permits required by local government authorities. Subcontractors are required to have a current Georgia Utility Contractor’s License.

Certifications:

The Contractor shall possess all necessary certifications for the Contractor as an entity, for individuals in its employ, and for all associated equipment to complete the Project by the Completion Date. Necessary certifications include but are not limited to conforming to the standards of all applicable technical societies, organizations, bodies, codes and standards. All materials shall meet or exceed these necessary certifications including material fabrication. In a case where the Owner establishes a more stringent qualification, the more stringent qualification shall prevail. In addition, necessary qualifications shall include all applicable requirements of local codes, utilities, and any other authority having jurisdiction.

Competent Labor:

The Contractor shall only employ competent and skilled personnel to perform the Work. The Contractor shall at all times have a superintendent who is satisfactory to the Owner and who is capable of acting as the Contractor's agent on this work. This superintendent shall receive instructions from the Owner or its authorized representative. The superintendent shall have full authority to execute the orders and directions of the Owner without delay, and to promptly supply materials, tools, plant equipment, and labor as may be required. The Contractor shall upon demand by Owner, immediately remove that superintendent, foreman, and/or workman whom the Owner may consider to be incompetent or undesirable, or both.

Subcontracting:

The Contractor may utilize the services of specialty subcontractors on those parts of the Work which, under normal contracting practices, are performed by specialty subcontractors.

The Contractor shall not subcontract the complete Work, or more than 50% of any portion of the work unless the work in question is to be performed by a specialty subcontractor, or any major portion thereof, and shall not award any Work to any subcontractor without prior written approval by the Owner, which approval will not be given until the Contractor submits to the Owner, a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as the Owner may require.

The Contractor shall be as fully responsible to the Owner for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as the Contractor is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to the Contractor by the terms of the Contract Documents insofar as applicable to the Work of subcontractors and to give the Contractor the same power in regard to terminating any subcontract that the Owner may exercise over the Contractor under any provisions of the Contract Documents.

The Contractor will indemnify and save the Owner or the Owner's agents harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the Work.

Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the Owner. Subcontractors are required to have a current Georgia Utility Contractor’s License.

Materials, Services and Facilities:

The Contractor acknowledges that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to complete and deliver the Work within the specified time.

Materials and equipment shall be stored in a manner to insure the preservation of their quality and fitness for the work. Contractor shall provide the Owner’s inspector with confirmation that authorization was granted from any property owner prior to storing any Project materials on private property. Owner’s inspector may verify such authorization with the property owners.

Quantities of Estimate:

The estimated quantities of Work to be done and materials to be furnished under these Contract Documents, including the Proposal, are given for use in comparing bids, and to

indicate approximately the total amount of the Construction Contract; and the right is especially reserved, except as herein otherwise specifically limited, to increase or decrease them as may be deemed reasonably necessary or desirable by the Owner to complete the Work contemplated by the Construction Contract.

Extras:

Without invalidating the Construction Contract, the Owner may order extra work or make changes by altering, adding to, or deducting from the Work, the Contract sum being adjusted accordingly, and the consent of the Surety being first obtained where necessary or desirable. All Work of the kind bid upon shall be paid for at the price stipulated in the Proposal, and no claims for any extra Work or materials shall be allowed unless the Work is ordered in writing by the Owner and the price is stated in such order.

Owner's Right to Withhold Certain Amounts and Make Application Thereof:

The Contractor agrees that he will indemnify and save the Owner harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies including commissary, incurred in the furtherance of the performance of the Construction Contract. The Contractor shall furnish satisfactory evidence that all obligations of the nature herein above designated have been paid, discharged, or waived. If the Contractor fails so to do, then the Owner, may after having served written notice on the said Contractor, either directly pay said unpaid bills, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payment to the Contractor shall be resumed, in accordance with the terms of the Construction Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor or its Surety. The Owner shall not be liable to the Contractor for any such payments made in good faith.

Payments by Contractor:

Payments by the Contractor to vendors for all materials, tools, and other expendable equipment in an amount not less than ninety percent (90%) of the cost thereof, shall be made not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at the site of the Project.

Payments by the Contractor to Subcontractors shall be made not later than the 5th day following each payment to the Contractor, for the respective amounts allowed the Contractor on account of the Work performed by its subcontractors.

Changes/Deviations from Plans and Specifications:

Should the Contractor encounter, or the Owner discover, during the progress of the Work, subsurface or latent conditions at the site materially differing from those shown on the Drawings or indicated in the Specifications, or unknown conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as

inherent in work of the character provided for in the Drawings and Specifications, the attention of the Owner shall be called immediately to such conditions before they are disturbed. The Owner shall thereupon promptly investigate the conditions, and if it finds that they do so materially differ, the Contract shall be modified, with the written approval by the Owner, to provide for any increase or decrease of costs or difference in time resulting from such conditions. No changes in Work shall be made without prior written approval by the Owner.

The Contractor shall proceed with the performance of any changes in the Work so ordered in the field by the Owner unless the Contractor believes said change entitles it to a change in Contract price and/or time, in which event the Contractor shall give the Owner written notice thereof within seven days after receipt of the field order and shall not execute the field change pending the execution of a Change Order unless the change is for accident prevention as cited herein.

Upon request, the Contractor shall furnish the Owner an itemized breakdown of the quantities and prices used in computing the value of any change that might be ordered. Source point documentation of claimed costs is required. In figuring these changes, instructions for measurement of quantities set forth in the Specifications shall be followed.

Charges or credits for the Work covered by the approved change shall be determined by one or more, or a combination of the following methods. All charges or credits must be pre-approved in writing by the Owner.

Unit Prices

Unit prices contained in extra work items or as subsequently approved. The unit prices shall include allowances for overhead and profit. This is the Owner preferred method.

Lump Sum

An agreed lump sum to include all labor, materials, equipment, overhead and profit.

Actual Cost

The actual cost, verified by daily approved time sheets, to include all labor, materials, equipment, overhead and profit.

Contractor Fees for Overhead and Profit:

The fixed percentage for overhead and profit shall not exceed fifteen percent (15%) of the actual cost of the labor, materials, and equipment, except that only actual cost will be allowed for Social Security, Old Age and Unemployment Insurance. Among the items considered as overhead are costs for insurance other than above, bonds, superintendence, time keeping, clerical work, watchman, use of small tools, general office expense and miscellaneous. The allowance for combined overhead and profit thus calculated should be the only such allowance included in the total cost of the Work performed by the

Contractor or its Sub-Contractors. If the Work was performed by a Sub-Contractor, the Contractor may add a negotiated fixed fee for overhead and profit not to exceed five percent (5%) of the sub-contract cost.

Claims for Extra Cost:

No claim for extra work or cost shall be allowed, unless the same was done in pursuance of a prior written approval by the Owner and the claim is presented with the first estimate after the changed or extra work is done.

Any Work necessary to be performed after regular working hours, on Sundays, or legal holidays, shall be performed without additional expense to the Owner.

Inspection and Testing of Materials:

Unless otherwise specifically provided for in the Specifications, the inspection and testing of material and finished articles to be incorporated in the Work at the Project site shall be made by bureaus, laboratories, or agencies arranged for by the Contractor and as approved by the Owner. The Contractor shall furnish all such extra quantities of materials and items as may be required for testing, and shall deliver it to the laboratory. The cost of furnishing and delivering samples to the laboratory shall be paid for by the Contractor.

Where the Detailed Specifications calls for certified copies of mill or shop tests to establish conformance of certain materials with the Specifications, it shall be the responsibility of the Contractor to assure the delivery of such certifications to the Owner.

No materials or finished articles shall be incorporated in the Work until such materials and finished articles have passed the required tests. The Contractor shall promptly segregate and remove rejected material and finished articles from the site of the work.

The testing and approval of materials by the laboratory or laboratories approved by the Owner shall not relieve the Contractor of any of its obligations to fulfill its Contract and warranty of workmanship and materials. The Contractor may, at its option, and at its expense, cause such other tests to be conducted, as it may deem necessary to assure suitability, strength, and durability of any material or finished articles.

"Or Equal" Clause:

Whenever a material or article required is specified or shown on the Plans by using the name of the proprietary product or of a particular manufacturer or vendor, any material or article which will meet the design criteria and is equal in function and durability may be submitted to the engineer for approval. The engineer will determine if the material or article can be substituted for the named product. Equipment named in the proposal section of the contract documents shall be furnished as named.

Pre-Construction Meeting/Notice to Proceed:

Upon signing of the Contract Documents, a pre-construction meeting shall be scheduled by the Owner. At this pre-construction meeting, the Notice to Proceed will be provided

to the Contractor and specific administrative, technical and logistical issues associated with the Project shall be discussed. The Contractor shall provide the Owner the following at the pre-construction meeting:

1. Copies of all required licenses, permits, and certifications or a plan acceptable to the Owner for obtaining said licenses, permits and certifications.
2. A copy of the Contractor's Environmental, Health and Safety Program.
3. A copy of the Contractor's Damage Prevention Program.
4. Proposed Project Schedule and order of work meeting the requirements specified herein.

Progress Meetings:

Regular progress meetings will occur between the Owner and the Contractor to routinely assess progress and proactively resolve issues until the project is complete to the satisfaction of the Owner. A frequency (usually bi-weekly or monthly) and schedule for progress meetings will be established at the pre-construction meeting.

Shop Drawings or Material Submittals:

Working drawings shall consist of detailed drawings which may be necessary for the performance of the Work, but which are not included in the Contract Drawings. Three copies all working drawings shall be submitted by the Contractor to the Owner for review. One copy shall be returned to the Contractor. Working drawings shall include details of all equipment fabrication and installation, pumps and pump curves, masonry lay out, bending diagrams for reinforcing steel, piping lay out, electrical lay out, mechanical lay out and all other drawings as may be required by the specifications, and as may be required for successful completion of the Work. Review by the Owner must be obtained before Work involving working drawings may be performed.

A. Review by Contractor: The Contractor shall review all working drawings for accuracy of dimensions and details, and for conformance with Contract Drawings and Specifications before submitting working drawings to the Owner for review. Notation in the form of a stamp verifying that the Contractor has reviewed the working drawings shall be included on all copies of the submittal to the Owner.
B. Payment: The unit prices bid by the Contractor shall include the cost of furnishing all working drawings, and the Contractor shall be allowed no additional compensation for furnishing those drawings.

Working Drawings will be required for any and all materials supplied by the Contractor to perform the Work as specified.

Inspection:

The Contractor shall furnish the Owner 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 Drawings. No Work shall be performed

or materials used without suitable inspection by the Owner or his representative. Failure by the Owner to reject defective Work and materials shall neither prevent later rejection when those defects are discovered, nor obligate the Owner to accept defective Work. The representatives of all state, local, and federal regulatory agencies will have access to the Work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and inspection. Where special safety equipment is required for inspection, the inspector shall be furnished this equipment by the Contractor.

Authority and Duties of Owner's Inspector(s):

Owner's inspector(s) ("Inspector") shall be authorized to inspect all work done and all materials furnished, including preparation, fabrication, and manufacture of the materials to be used. The Inspector shall not be authorized to alter or waive requirements of the Drawings and/or Specifications. The Inspector shall inform the Contractor of failures of the Work and/or materials to conform to the Drawings and Specifications. The Inspector may reject materials or suspend Work until questions at issue can be decided by the Owner. The presence of the Inspector shall in no way lessen the responsibility of the Contractor. The Inspector's failure to notify the Contractor of failures of the Work and/or materials to conform to the Drawings and Specifications shall not relieve the Contractor of any liability for faulty Work and/or materials provided by the Contractor.

Rejection of Work and Materials:

All materials furnished or Work done which is not in accordance with the Specifications and Drawings will be rejected. Such materials or Work, which have been rejected, shall be immediately removed. Work shall then be done and materials furnished in accordance with the Specifications and Drawings. If the Contractor fails to remove the Work and materials within forty-eight hours after having been ordered to do so, the Owner shall have the authority to immediately suspend the Contractor's Work. The Owner shall also have the authority to supply personnel and materials, at the cost and expense of the Contractor, in order to remove that Work and/or those materials, which are found not to be in accordance with the Specifications and/or Drawings.

Defective Materials and Work:

The inspection of the Work shall not relieve the Contractor of any of its obligations to fulfill the Contract. Defective Work shall be corrected even though the Work and materials have been previously inspected by the Owner and accepted or estimated for payment. Previous failure by the Owner to condemn improper materials and/or workmanship shall not be considered a waiver of defects, nor will this previous failure to condemn improper materials prevent the Owner at any time subsequently from recovering damages for Work actually defective. Corrections:

Should any portion of the Drawings and Specifications be obscure or in dispute, they shall be referred to the Owner who shall decide as to the true meaning and intent. The Owner shall also have the right to correct errors and omissions at any time when those corrections are necessary for the proper fulfillment of the Drawings and Specifications.

Disagreement:

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

Land and Rights-of-Way:

The Owner will furnish all land and rights-of-way necessary for the carrying out of this Construction Contract. The Contractor shall take every precaution to inconvenience as little as possible the owners or tenants of adjacent property. Public highways shall not be obstructed in such a way to cut off traffic. The Contractor shall, at its own expense, repair any damage or injury to either private or public property during progress of the Work.

Sanitary Facilities:

Necessary sanitary facilities shall be the responsibility of the Contractor. No temporary sanitary facilities shall be located on private property without first obtaining property owner permission and providing such to the Owner's inspector. Facilities shall be maintained in a sanitary condition, and in strict accordance with local regulations. No unsanitary act shall be committed outside sanitary facilities.

Roads, Streets, Driveways and Walks:

Access to all driveways, entrances, parking lots, buildings and equipment shall be available at all times. All driveways, roads, streets, and walks shall maintained in good condition at all times. If damage occurs, repairs shall be effected immediately. Cleaning, either by washing or sweeping or combination thereof, shall be employed at whatever frequency necessary to keep driveways, roads, streets and walks clean of mud, dirt and other construction debris. Streets, roads and drives used by the Contractor for access to and from material storage areas job site shall be protected from damage in excess of that caused by the normal traffic of vehicles used for, or in connection with, construction work. All access drives shall have a construction apron to prevent material carry-over onto public roads and streets.

Flagging/Signage/Protective Works:

The Contractor shall furnish and install all necessary temporary works for the protection of the Work and the general public including trained flagmen, warning signs, barricades, and lights at night. The Contractor shall provide signage at all times at the location of Work identifying the Contractor and that the Contractor is performing Work for the Owner.

Existing Utility Protection:

The Owner has determined that the proposed work may be in conflict with several existing, private water and other utility services. The Contractor shall be responsible for proper notification to the Utility Protection Center prior to any excavation and maintaining a copy of the excavation permit associated with each particular excavation

such that it is readily available for review/inspection at the job site. The Contractor shall be prepared to repair any lines damaged during construction to maintain service to existing customers at all times. The cost for this work shall be included in the unit prices provided.

At the pre-construction meeting, the Contractor shall provide the Owner a copy of the Contractor's Damage Prevention Program outlining how the Contractor intends to protect existing utilities during construction.

Any damage done to existing utility lines, drains, power and telephone cable, poles, and structures of every nature, not indicated to be replaced and/or abandoned shall be repaired or replaced by the Contractor at its own expense. The approximate position of certain known underground lines and structures are shown on the Drawings according to available information. Existing small lines are not shown. The Contractor shall locate, excavate and expose all existing underground lines in advance of trenching and other construction operations. Where connections are to be made at underground structures and pipelines, elevations and locations shall be verified prior to construction of the pertinent Work. Where underground utilities or obstructions are encountered which conflict with the new Work, the location and/or alignment of the new or existing lines may be changed to avoid interference upon written approval of the engineer or Owner.

Operation of Existing Infrastructure:

No component of the Owner's existing operating systems (valves, piping, pumps, etc.) may be operated by anyone other than Owner's personnel unless express written permission is provided by the Owner in each and every instance. All connections to existing facilities shall be scheduled and planned with the Owner and Engineer.

Interruption of Service:

All Work shall be performed in such a manner so as to minimize and/or eliminate service interruptions to the Owner's customers. The Contractor shall coordinate all utility work through the Owner and all service interruptions must be reviewed and planned in advance with the Owner. As a general rule, no service interruption shall occur without the Owner being able to provide a 2-day advance notice to customers as to the date, time and expected duration of any outage. No outage shall last longer than 4 hours unless otherwise approved in writing by the Owner. If the work cannot be accomplished in this manner, the Contractor must plan to accomplish the required Work via other methods approved by the Owner. The Contractor shall perform any Work requiring outages during periods of low customer demand, some night work and weekend work may be required at the request of the Owner, there will be no additional compensation for this work.

Demolition:

Should the Contractor be required to perform any demolition, the structures shall be removed to grade. All structures demolished shall be filled to finished grade with compacted fill or crushed stone. Basement and pits of buildings to be demolished shall be filled with compacted fill or compacted crushed stone to finished grade level.

All materials shall be removed from the Project site and disposed of a legal landfill or sold for reuse. The Contractor shall provide information to the Owner concerning the disposition of materials from demolished buildings.

Blasting:

If the scope of the Project requires blasting or the Contractor contemplates conducting blasting at some point during the project, the Contractor shall obtain additional insurance to cover such work in an appropriate dollar amount to be determined by the Owner. In addition, a pre-blast survey shall be conducted on all utility structures and substructures checking for leaks, service connections in the vicinity, and potential problems that might arise from blast disturbances. Seismic recorders must be set up at all structures in the vicinity determined by the pre-blast survey to be possibly affected from blasting conforming to all local, state and federal codes. Immediately after blasting is completed, a post-blast survey will be conducted on all utility related structures and substructures checking for leaks, service interruptions and facility weakening caused by blasting.

Housekeeping:

The Contractor shall keep Project locations and material storage areas clean and orderly at all times. Trash, construction debris, litter etc shall not be allowed to accumulate. Clean-up shall occur on a frequent enough basis to ensure the aforementioned is achieved.

Before the work is considered as complete all rubbish and unused material related to the Work must be removed and the premises left in a condition satisfactory to the Owner. Streets, curbs, crosswalks, pavements, sidewalks, fence, and other public and private property disturbed or damaged shall be restored to their former condition or better on an on-going basis by the Contractor at no additional cost to the owner. This shall be done prior to the final inspection and any discrepancies noted on the inspection must be completed before final payment.

As-Built Drawings:

The Contractor shall provide to the Owner a complete set of as-built drawings for the Work performed. The as-built drawings shall be provided on an ongoing basis throughout the Project as agreed during the pre-construction meeting. As-Builts shall comply with the following requirements:

1. As-built drawings shall graphically depict the location and elevation of all construction including underground piping. Changes of dimension and detail shall be shown on the drawings. Changes made by requests for information, field orders, clarification memorandums or change orders shall be shown on the drawings. Dimensions, distances and coordinates shall be shown to the nearest 0.1 foot. Elevations shall be shown to the nearest 0.01 foot. Underground piping location shall be dimensioned from the edge of pavement or, if no pavement is present, some other visible and established landmark(s).

a. As-built drawings shall graphically depict location and approximate elevation for all project equipment and apparatus such as manholes, pump/lift stations, air relief valves, in-line valves, flush valves, blow-off valves, fire hydrants, meters, etc. Location(s) shall be depicted using Geographic Positioning System (GPS) coordinates meeting the following specifications: GPS equipment shall have a MS Windows-based office processing software that supports GIS/CAD formats such as; ARC/INFO, AutoCAD and ArcView. GPS points shall be taken by recording ten (10) points at the equipment or apparatus' location with a minimum of four (4) satellites and accuracy based on a maximum Position Dilution of Precision (PDOP) of 6.0.

2. The address shall be noted above or adjacent to all service or tap locations.

3. All service lines shall be shown on the plans and indicate the nominal size and geographic location of each service line.

4. Any other non-standard construction features are to be noted.

5. All abandoned lines shall be labeled as such on the drawings with the points of isolation clearly identified.

6. Electrical wiring diagrams.

7. Instrumentation location and control loop configurations.

8. All as-built drawings shall be reviewed and approved prior to final payment being made.

Acceptance of Work and Final Payment:

Before final acceptance of the Work and payment to the Contractor of the retainage held by the Owner, the following requirements shall be complied with:

Final Inspection:

Upon written notice from the Contractor that final Work is ready for inspection, the Owner will make a final inspection of the Work, and shall notify the Contractor of instances where its Work fails to comply with the Contract Drawings and/or Specifications via creation and distribution of a "Punch List" of work remaining to be completed and/or deficiencies requiring remedy. The Contractor shall immediately make such corrections as are necessary to make the Work comply with the Contract Drawings and Specifications to the satisfaction of the Owner. All parties shall complete a "Certificate of Substantial Completion" in a format as prescribed by the owner.

Special Conditions for this project:

Contractor has **240** days to complete the entire project.

As-Built Drawings:

Final retainage payment will be withheld until the Contractor has provided the Owner as-built drawings meeting the requirements specified herein.

Sales Tax Refund:

Final retainage payment shall be withheld until the Contractor has provided sufficient assistance, as determined by the Owner, to enable it to procure a sales tax refund for Georgia sales tax paid on materials purchased by the Contractor and installed by the Contractor and /or their sub-contractors

Dalton Utilities is a municipality of the State of Georgia and has an official Sales and Use Tax Certificate of Exemption.

Liens:

Final acceptance of the Work will not be granted and the retainage will not be due or payable until the Contractor has furnished the Owner proper and satisfactory evidence under oath that all claims for labor and materials employed or used in the construction of the Work under the Construction Contract have been settled, and that no legal claims can be filed against the Owner for such labor or materials.

Final Estimate:

Upon completion of all clean up, alterations and repairs required by the final inspection or operating test, the satisfactory completion of the operating test, and upon submitting proper and satisfactory evidence to the Owner that all claims have been settled, the Owner will issue a certificate of final acceptance of the Work. The Contractor shall then prepare his final estimate. After review and approval by the Owner, the payment shall then become due net 30 days.

Acceptance of Final Estimate:

The acceptance of payment by the Contractor regarding the final estimate shall operate as a release to the Owner from all claims and liabilities to the Contractor for all Work done or materials furnished, or for any act of the Owner or its agents affecting the Work.

ALLOWANCES

012100

SECTION 012100 - ALLOWANCES

Scope

The Contractor shall install the material/items identified in the Allowances. Items identified in the Allowances shall be subject to all provisions of these contract documents. Contractor will work with Owner to ensure that the Allowances are utilized to ensure the proper installation of the work.

Costs

The Contractor shall include, in the Bid Total, the Allowance items and Surveying Allowances specified in the Bid. These allowances shall cover the cost of the materials and services, as specified in the indicated Specification Sections.

The Contractor's applicable taxes, unloading, storage, handling, labor, installation, and overhead costs plus profit and other expenses contemplated for the allowances shall be included in the costs for the other items in the bid sheet and not in the allowances.

Schedule of Allowances

Removal of Rock

Removal of Rock: Any rock removal deemed by the owner and meets the criteria as specified in Trench Excavation and Backfill Section 312333 shall be paid under this allowance.

OWNER SUPPLIED MATERIALS

012126

SECTION 012126 – OWNER SUPPLIED MATERIALS

Scope:

This Section of the Specifications is to identify materials which will be or have been purchased by the Owner for use on this Project. The Contractor shall be responsible for scheduling the delivery of the materials to the Project site, as well as, establishing the hours of delivery and method of delivery to the Project site. The Contractor shall also be responsible for unloading, storage, installation, start-up, testing, training, and coordination with the manufacturer or supplier regarding all of these items except where specifically noted otherwise in the specifications or drawings.

Costs:

The Contractor's pick-up from Dalton Utilities storage yard, handling, labor, installation, overhead, profit, and any other expenses contemplated for the pre-purchased materials in this allowance shall be included in the Cost of Installation on the Bid.

Products:

1. Approximately **4,100** linear feet of 8 inch DIP Class 350
2. Approximately **2,100** linear feet of 6 inch DIP Class 250
3. Approximately **2,800** linear feet of 8 inch DIP Class 250
4. Manholes with ring and cover
5. Gravel
6. 6 inch and 8 inch MJ Fittings, MJ Valves, Fire Hydrants, Stone, Concrete & Asphalt.
7. Tracer Wire

END OF SECTION

TECHNICAL SPECIFICATIONS

TRENCHING AND BACKFILLING

312333

SECTION 312333 – TRENCHING AND BACKFILLING

Scope:

The work under this Section consists of furnishing all labor, equipment and materials and performing all operations in connection with any trench excavation and backfilling required to install the pipe and appurtenances shown on the Drawings and as specified.

Quality Assurance:

The Contractor shall perform all excavation and backfilling operations in such a manner as to ensure a proper installation of the pipe and appurtenances shown in the Drawings and specified herein.

A. Density: All references to "maximum dry density" shall mean the maximum dry density defined by the "Maximum Density – Optimum Moisture Test", ASTM D 698. Determination of the density of foundation, bedding, haunching, or backfill materials in place shall meet with the requirements of ASTM D 1556, ASTM D 2937 or ASTM D 2922.

B. Sources and Evaluation of Testing: Testing of materials to certify conformance with the Specifications shall be performed by an independent testing laboratory at no cost to the Owner. The Contractor's testing laboratory shall perform tests upon change of source materials and at sufficient intervals to certify conformance of the materials used for backfill with the Specifications.

C. Depth of Bury: All new water and sewer infrastructure must be installed with a minimum of 4 feet of cover over the pipe, unless otherwise shown on plans or approved by the engineer of record for the project.

Safety:

Perform all trench excavation and backfilling activities in accordance with the Occupational Safety and Health Act of 1970 (PL 91-596), as amended. The Contractor shall pay particular attention to the Safety and Health Regulations Part 1926, Subpart P "Excavation, Trenching & Shoring" as described in OSHA publication 2226.

Products and Implementation:

The Contractor shall perform the work in accordance with the following sections:

A. Removing and Resetting Fences, Mailboxes and Property Pins: At all locations where existing fences, mailboxes, property pins or other appurtenances exist, the Contractor shall restore these items to preconstruction conditions as follows:

(1) At all locations where existing fences must be removed to permit construction of the utility line, the Contractor shall remove the fences and, as the construction progresses, reset the fences in their original location and to their original condition. During construction, the Contractor shall provide temporary fencing, or employ other safeguards, which will prevent livestock from wandering to other property.

(2) All mailboxes removed during construction operations shall be replaced immediately after construction has passed these conflicts. Or, if construction progress is limited the mailboxes shall be temporarily reset until construction operations require the removal of such interferences.

(3) Any property pins excavated during construction operations will be the responsibility of the contractor to reset the pin to its exact location. Any costs associated with

replacing the pins shall be the responsibility of the contractor. Wherever possible, contractor should avoid removing property pins.

(4) Payment: No extra payment will be made for removing and resetting fences, mailboxes, or property pins, the cost thereof to be included in the prices bid for utility installations.

B. Protection of Other Utilities and Structures: Damage to existing utility lines, services, poles, and structures shall be repaired or replaced by the Contractor at his own expense.

(1) The approximate positions of certain known underground lines are shown for information. The Contractor shall call the Utilities Protection Center (UPC) (800-282-7411 or 811 in the State of Georgia) as required by Georgia Law (Code Section 25-9-1 through 25-9-13) and all utilities, agencies, or departments that own and/or operate utilities in the vicinity of the construction work site at least 72 hours prior to construction to verify the location of existing utilities. Due to the size of the project, a large project ticket may be required for the project. It will be the contractor's responsibility to coordinate with the UPC and to comply with the requirements of the large project ticket and the associated agreements. The contractor will be responsible for setting up the large project meeting with all the affected utility companies at a convenient site, preparing a large project agreement with the affected utility companies specifying the area and time frame that each locate should be performed, and coordinating with the utility companies during the project any changes to the agreement and making sure the locates are being performed as stated in the agreement.

(2) Contractor shall have available and utilize an electronic pipe locator and a magnetic locator, in good working order, to aid in locating existing pipe lines or other obstructions.

(3) A minimum clearance of ten feet (10') horizontal and eighteen inches (18") vertical must be maintained between new water mains and existing sewer lines and new sewer lines and existing water lines. If a water main must be installed below a sewer line, it shall be encased in concrete with a minimum 6" concrete depth to the first joint in each direction.

(4) Water mains shall not come into contact with or cross any sewer manholes.

(5) Existing private lines are not shown. The Contractor shall locate existing private lines and other possible existing unknown utility lines with an electronic pipe finder and shall excavate and expose all existing underground lines in advance of trenching operations.

(6) Removing and relaying of those lines and appurtenances which constitute an obstruction to the completed line and grade of the new work, in the opinion of the Owner, will be made at the expense of the Owner, unless otherwise shown on Drawings to be altered by the Contractor.

C. Protecting Trees, Shrubbery, and Lawns: Trees and shrubbery along trench lines crossing developed private property shall not be disturbed unless absolutely necessary, subject to approval by the Owner. Any alterations to private property must be restored to an equal or better status by the contractor at no cost to the owner.

(1) Trees and shrubbery to be removed shall be properly heeled-in and replanted. Heeling-in and replanting shall be done under the direction of an experienced nurseryman.

(2) Where utility trenches cross through or adjacent to private property with well established lawns, sod shall be cut removed, stacked and maintained in suitable condition until replacement is approved by the Owner. Topsoil underlying lawn areas shall likewise be removed and kept separate from general excavated materials and shall be replaced at the surface of the trench in back filling. In lieu of removing and replacing sod, the Contractor may, if approved by the Owner, re-grass lawns by seeding or sprigging with grass of the same type as the established lawn. Before planting, lime and fertilizer will be applied in accordance with permanent grassing requirements in Section 312500 Erosion and Sedimentation Controls. All of the other requirements for permanent grassing in Section 312500 shall be followed including acceptable dates for seeding, mulching, watering and preparation of the soil.

(3) Payment: All cost of equipment, labor and materials required for the work shall be included in the price bid for same. The removal and replacing of sod or re-grassing by seeding and all other related work will be paid for on a linear foot basis of pipe lines and shall include, in addition to the pipe trench width, all areas adjacent to the pipe trench where existing grass has been disturbed or destroyed by the Contractor's operations.

D. General Trench Excavation: Excavation is unclassified. Perform all excavation of every description and of whatever substance encountered to the depth and width shown on the Drawings or specified, or both, for all utility lines, manholes, piers, conduits, and other appurtenances. Excavation shall be accomplished by open cut, unless otherwise directed. No tunneling shall be done, except that approved by the Owner; if approved, the tunnel shall be of the height, width, and cross section approved by the Owner.

(1) The top portion of the pipe trenches may have sloping or vertical sides to widths which will not cause damage to adjoining structure, roadways, pavements, utilities, and private property.

(2) For untimbered trenches and trenches held by stay bracing only, the width of the lower portion of the trench to a height of two feet (2') above the top of the pipe shall not exceed the trench widths specified in the "Trench Widths" paragraph. Where skeleton and solid sheeting is used, trench width may be increased to dimensions approved by the Owner, but shall not be greater than that necessary to clear the walers when lowering pipes into the trench.

(3) Where, in the opinion of the Owner, trench excavation may damage adjoining poles, roadways, utilities and private property, the Owner may order the Contractor to install suitable sheeting for their protection. Such order shall in no way relieve the Contractor from his responsibility of protection of the facilities, nor shall the lack of those orders relieve the Contractor from that responsibility.

(4) No extra payment for sheeting will be made, except for the sheeting which the Owner orders to remain in place. If trenches are excavated to widths in excess of the above limitations, or collapse because of insufficient bracing and sheeting, the Contractor will be required to use special methods of constructing pipe foundations and backfilling as specified herein at his own expense.

(5) Trench excavation shall not advance more than two hundred -fifty feet (250') ahead of pipe laying, unless approved by the Owner.

(6) Excavation in excess of depth required for proper bedding shall be corrected by one of the special methods specified herein, as directed by the Owner. Bell holes shall be

excavated in a manner which will relieve pipe bells of all load, but holes shall be small enough to insure that support is provided throughout the length of the pipe barrel. Excavation in excess of the depths required for manholes and other structures shall be corrected by placing a sub-foundation of Class "C" concrete or crushed stone, at no additional expense to the Owner.

E. Excavation in Solid Rock: Solid rock is defined as those materials in the original bed and in well-defined ledges which, in the opinion of the Owner, cannot be removed with pick, shovel ditching machine, backhoe, and other similar devices, and which requires drilling, blasting, jack hammering, and bullpointing. Concrete and masonry structures to be removed which require drilling and blasting for removal shall be considered rock unless otherwise provided for herein. Boulders, and detached pieces of rock, having volumes of more than 8 cubic feet, shall be considered as rock.

(1) Ledge rock, boulders, and large stones shall be removed to provide a clearance of not less than six inches (6") in every horizontal direction from all parts of pipe, fittings, and other appurtenances.

(2) Where rock is encountered at grade in trenches, the trench shall be excavated not less than six inches (6") below the bottom of the pipe bell, refilled with crushed stone thoroughly tamped in-place, and shaped to the pipe.

(3) Payment will be made for crushed stone bedding in rock excavation as part of the stone backfill line item. If there is not a line item for crushed stone backfill on the bid sheet, the cost shall be included in the unit price bid for water and/or sewer mains and service lines.

(4) Excavated rock shall not be mixed with material selected for tamped backfilling under and around the pipe up to a level at least two feet above the pipe.

(5) Where utility lines are constructed across streets, pastures, and cultivated fields, excavated rock shall not be mixed with backfill material used to complete the final twelve inch (12") layer of backfill at the original ground surface.

(6) Surplus rock shall be removed and wasted at locations determined by the contractor, but approved by the Owner. No separate payment will be made for removal and wasting of rock. All waste material disposal must be in compliance with appropriate Erosion and Sedimentation Control rules.

(7) The cost of such work, and all cost incidental thereto, shall be included in the unit prices bid for pipeline installation.

F. Excavation for Vaults or Manholes: Excavate to a minimum of 12-inches below the planned elevation of the base of the vault or manhole. Place or compact crushed stone bedding material to the required grade before placing the vault or manhole.

G. Blasting: Blasting operations shall be conducted in strict accordance with all applicable ordinances and regulations. All exposed structures shall be carefully protected from the effects of blast and all blasts shall be covered with heavy timbers or other suitable material. The Contractor shall limit amounts of explosives and timing of blasts to minimize noise and concussion and to prevent damage to existing structures, pavements and utilities. The blasting shall be done only by experienced men. Damages shall be promptly repaired by the Contractor at his own expense. No blasting will be permitted adjacent to existing buildings and structures. Rock at those locations shall be removed with jack hammers and bull-points. If rock is encountered that requires removal by blasting the Contractor shall retain and employ a qualified blasting consulting Engineer, approved by the owner, to supervise the work. The

Blasting Engineer's duties shall be to advise the blaster of hole spacing and loading and to make seismic and concussion measurements. The Contractor shall cooperate with the Blasting Engineer by uncovering and exposing pipe and structures for instrument mounting. The contractor shall also advise the Owner when each shot is ready and how it is loaded. No loaded holes shall be left unattended at any time for any reason. All blasting shall be done during daylight hours.

(1) Blasting and Ordinances: All blasting operations shall be conducted in strict accordance with existing ordinances and regulations, and shall be done only with the Blasting ENGINEER'S APPROVAL AND UNDER ENGINEER'S SUPERVISION.

(2) Protection of Surroundings: All exposed structures shall be protected from the effects of blasts and all blasts shall be covered with blasting mats, dirt, heavy timbers, or other suitable material. They shall be restricted to the extent that no appreciable shock will be transmitted to existing structures, pipe lines, sewers, or other public or private facilities. The blasting shall be done by experienced personnel. Any damage done shall be promptly repaired by the Contractor at the Contractor's expense.

(3) Storage of Blasting Supplies: All blasting supplies shall be stored in a magazine which complies with all Local, State, and Federal Laws, and a watchman shall be stationed at all times at the place of storage. In no case shall caps or other exploders be kept at the place where dynamite or other explosives are kept.

(4) Delay of Shots: All shots shall be delayed so as to minimize ground vibrations with a maximum peak particle velocity, as measured to the nearest structure (embankment, pipes, etc.) not to exceed 2 inches per second. The overpressure noise or concussion shall be minimized and stemming and matting shall be used to prevent over pressure in excess of 120 db. Precautions shall be taken to minimize flying rock and sufficient matting used to prevent rocks from striking any person or structure.

(5) Vibration Recording Instruments: Vibration recording instruments shall be used on all shots. These shall be of type which records on direct reading tape the three (3) components of velocity. The analysis of these recordings is to be signed by a Registered Professional Engineer in Georgia. Blasting is not to be conducted which will produce a Scaled Distance less than previously recorded for at least three (3) different shots deemed to be safe. The scaled distance is to be determined by the distance from the shot to the nearest structure subject to potential damage from ground vibration. Owner reserves the right to require multiple recording devices as determined by the owner at no cost.

(6) Overpressure: (Concussion) Overpressure is to be recorded on direct recording tape, preferable on the same recording as the vibration. The instrument used for measuring concussion shall be the type specifically designed for impact-type overpressure from blasting.

(7) Record of Shots: The blaster is to maintain an accurate log of each shot, listing as a minimum the following: date, time, weather conditions including temperature and humidity, station number, manufacture and type of explosive, method of detonation, total weight of explosive per shot, number of delays, number of holes, hole depth, maximum weight of explosives per delay, amount of explosives per hole number, amount of stemming, type and amount of blast matting, and a sketch of the hole pattern with hole number for each shot.

H. De-watering Trenches: All excavations shall be dewatered properly before laying pipe.

(1) Where running sand is encountered, dewatering shall be done by well pointing whenever possible.

(2) Where soil conditions are not favorable for use of well points, french drains of graded stone shall be constructed to suitably locate sumps and the water removed by bailing or pumping.

(3) No extra payment will be made for dewatering. All costs of equipment, labor, crushed stone and other materials required for dewatering shall be included in the price bid for pipeline installation.

I. Trench Stabilization: Wherever the subgrade is, by nature, too soft and mucky, in the opinion of the Owner, for the proper installation of the water or sewer main, the Owner may order the Contractor to undercut the ditch and backfill with crushed stone conforming to the latest revision of ASTM C 33, as amended to date, graduation #67 (ASTM #67) varying in sizes ¼" through ¾". The stone shall be brought to grade and compacted. Payment for crushed stone backfill, only where ordered by the Owner, will be made at the unit price bid, measured before placing, and shall include the removal of unsuitable subgrade materials.

J. Bracing and Sheeting: The sides of all trenches and excavation for water and sewer mains and structures shall be securely held by stay bracing, or by skeleton or solid sheeting and bracing, as required by the soil conditions encountered. Examples of soil or site conditions requiring bracing and sheeting include where sloping of the trench walls does not adequately protect persons within the trench from slides or cave-ins; in caving ground; in wet, saturated, flowing or otherwise unstable materials; where necessary to protect adjoining buildings, roadways, structures, utilities or trees; and where necessary to maintain the top of the trench within the available construction easement or right-of-way.

(1) Timber: No timber for shoring, bracing, or sheeting exceeding that size customarily used, will be paid for unless the use of larger sizes shall have been ordered by the Owner, in writing. Timber sheeting near the bottom of trenches over ten feet (10') deep, for water mains 15-inch size and larger shall remain in place and shall be cut off not less than two feet (2') above the top of the completed water main. When, in the opinion of the Owner, sheeting and bracing cannot be safely removed above this level, it shall be left in place. Sheeting so left in place shall be cut off at least two feet (2') below the surface. Payment will be made for timber sheeting ordered to be left in place in accordance with the unit bid price for the item.

(2) Steel Sheeting: Continuous interlocking steel sheeting may be substituted for timber bracing or sheeting, when approved by the Owner. Steel sheeting may be removed without cutting, provided the rate of removal is kept in pace with tamping and backfilling operations to assure complete filling of the void created by the withdrawal of the sheeting. Complete withdrawal of the sheeting in advance of tamping and backfilling will not be permitted. Sheeting, where ordered to be left in place by the Owner for reasons of safety, shall be cut off where directed. No payment will be made for the general use of steel sheeting where it is used in lieu of timber sheeting and where it is not ordered to be cut off. Where ordered to be left in place and cut off, steel sheeting will be paid for in accordance with the unit bid for the item.

K. Selected Backfilling: All trenches shall be backfilled immediately after pipes are laid therein and joints have been inspected, unless other protection of the pipe line is directed. Selected backfill material shall consist of finely divided earth, stone dust, sand, crushed stone, or other approved material carefully placed about the pipe and up to a height of at least eighteen

inches (18") above the top of the pipe barrel, in uniform layers not exceeding six inches (6") in thickness. Each layer shall be uniformly placed and tamped with proper hand tools in a manner which will not disturb or injure the pipe. Backfilling shall be carried on simultaneously on both sides of the pipe in a manner which will prevent injurious side pressures from occurring. If suitable select materials are not available from trench excavation, the Contractor will be required to obtain them elsewhere. No extra payment will be made for selected backfill, the cost thereof to be included in the prices bid for pipelines.

L. General Backfilling: After selected backfill material has been placed and tamped, the remainder of the trench may be backfilled with general excavated material, except that no rock, unless in small shattered fragments, will be permitted to be mixed with other backfill material.

(1) Street and Road Right-of Ways, Yards, and Other Traveled Areas: In street and road right of ways, yards and other traveled areas open to vehicular or pedestrian travel the ditch shall be backfilled and each layer shall be tamped to a density equivalent to at least 95% of the Standard Proctor maximum dry density in accordance with ASTM D 698, as amended to date.

a. Backfill material shall be placed in uniform layers not exceeding six inches (6") in thickness, with each layer thoroughly compacted with heavy duty tampers ("Whacker" or equal) to a height of at least thirty six inches (36").
b. The remainder of the ditch may be backfilled and tamped in the same manner or if the Contractor so elects he may place backfill in layers not exceeding twelve inches (12") and use wheel loading or heavy duty power tamping equipment ("Hydro-Hammer" or equal).
c. Pipe shall have at least thirty six inches (36") of cover before wheel loading and at least forty-eight inches (48") of cover before using heavy duty tamping equipment ("Hydro-Hammer" or equal).

(2) Areas Requiring Pavement Replacement: Backfilling in areas that require pavement replacement shall be done in accordance with Section 340113 of the specifications.

(3) Other Areas: Other areas, including woodland, fields, pastures and areas not open to vehicular travel, the remainder of the ditch may be backfilled by placing fill in ditch and "walking-in" with wheel loaded equipment. Backfill material may be windrowed and maintained in a suitable manner so as to concentrate and pond rainfall runoff over the trench. After sufficient settlement has been obtained the Contractor shall complete surface dressing, remove surplus material and clean up in accordance with these Specifications. Wherever trenches have not been properly filled, or if settlement occurs, they shall be refilled, smoothed and finally made to conform to the surface of the ground. Backfilling shall be carefully performed and the original surface restored as specified herein. Surplus material shall be disposed of by the Contractor. No extra payment will be made for general backfill, the cost thereof to be included in the prices bid for pipelines.

M. Construction Along Highways, Streets, and Roadways: The Contractor shall install pipe lines and appurtenances along highways, streets, and roadways in accordance with the applicable regulations of the Georgia State Department of Transportation, Whitfield County and permits obtained by the Owner with reference to construction operations, safety, traffic control, road maintenance, and repair.

(1) Protection of Traffic: The Contractor shall provide suitable signs, barricades, and lights for protection of traffic in locations where traffic may be endangered by construction operations. All signs removed by reason of construction shall be replaced as soon as the condition which necessitated their removal has been cleared.

No highway, street, or roadway shall be closed for any amount of time without first obtaining permission from the proper authorities.

(2) Construction Operations: The Contractor shall construct all work along highways, streets, and roadways using the following sequence of construction operations so as to least interfere with traffic.

a. Stripping: Where the pipe line is laid along road shoulders, all sod, topsoil, and other material suitable for shoulder restoration shall be stripped and stockpiled for replacement.

b. Trenching, Laying, and Backfilling: The Contractor shall open trenches, install pipe line, and backfill. The trench shall not be opened ahead of pipe laying operations any further than is necessary for proper laying operations. Trenches shall be progressively backfilled and consolidated; excess material shall be removed immediately behind laying operations.

c. Shaping: The Contractor, immediately after completing back-filling operations, shall re-shape damaged cut and fill slopes, side ditches, and ditch lines. Topsoil, sod, and other materials removed from shoulders shall be replaced. This work shall be done in accordance with the requirements, and to the full and complete satisfaction, of the proper Highway personnel and the Owner. The Contractor, when installing pipe lines and appurtenances, shall provide sufficient personnel and equipment so as to simultaneously carry out all of the above operations.

(3) Excavated Material: Excavated material shall not be placed along highways, streets, and roadways in a manner which would cut off traffic. No scattered excavated material shall be allowed to remain on the pavement; all such material shall be kept swept away. The owner reserves the right to require the contractor to wash with high pressure water and roadways where spoils or equipment have been placed or operated.

(4) Drainage Structures: All pipe, side ditches, culverts, cross drains, and other drainage structures shall be kept clear of excavated material and be free to drain at all times.

(5) Maintaining Highways, Streets, Roadways and Driveways: The Contractor shall furnish proper construction equipment, which shall be available for use at all times, for maintaining highways, streets, and roadways upon which work is being performed. All such highways, streets, and roadways shall be maintained in suitable condition for movement of traffic until completion and final acceptance of the work.

(6) Payment: No separate payment will be made for the above work. The cost of such work, and all costs incidental thereto, shall be included in the unit prices bid for the item to which the work pertains. Permits for such work will be obtained by the Owner. The Contractor shall be responsible for fully informing himself with regard to all regulations relating to pipeline installation along roadways.

END OF SECTION

EROSION AND SEDIMANTATION CONTROLS

312500

SECTION 312500 – EROSION AND SEDIMENTATION CONTROLS

Scope:

This specification section covers the requirements for erosion, sedimentation, and pollution control during construction. During construction, temporary and permanent protective structures and measures as detailed in the following paragraphs shall be implemented and maintained by the Contractor to minimize erosion and sedimentation as a result of the work being performed.

General:

A. The Contractor shall fully comply with the guidelines as specified in the Georgia Erosion and Sedimentation Control Act of 2003 (as amended).

B. Land disturbance activity shall not commence until the Land Disturbance Permit has been obtained by the Owner from the Local Issuing Authority, provided that a permit is required for the project.

C. The Contractor shall fully comply with the requirements of the Erosion, Sedimentation and Pollution Control Plan (the Plan) prepared for the Project and approved as a part of the Land Disturbance Permit obtained in item B above and shall sign a certification to that extent on the Plan. Where there are conflicts between the Plan and these specifications, the project specific Plan will control.

D. The Contractor shall fully comply with the Georgia Department of Natural Resources Environmental Protection Division (EPD) General Permit for Stormwater Discharge associated with Construction of Infrastructure GAR1000002.

E. The Contractor will assist Owner in preparing a Notice of Intent (NOI) and the project superintendent, who must be certified in accordance with "Certified Personnel" or "Certified Person" which means any person who has attended the Conservation Commission's "Fundamentals Seminar" (Level 1A) and holds a certificate of successful completion of the training requirements stated in *Rules of the State Soil and Water Conservation Commission Chapter 600-8: Education and Training Certification Requirements for Persons Involved with Land Disturbing Activities* 600-8-1-.04 (2)(a) from the Conservation Commission in the area of inspection of best management practices (BMPs) on construction sites (BMPs are vegetative and structural measures to control and prevent erosion), will sign said NOI as the Operator. Contractor will not start land disturbing activities until 14 days after the NOI has been sent (postmarked) ***return receipt certified mail*** to EPD by Owner. A copy of the NOI and proof of certified mailing will be maintained onsite at all times as a part of the project paperwork.

F. The Contractor will not start land disturbing activities until receiving proof or providing proof that the appropriate land disturbing fees have been submitted to EPD and to the local issuing authority.

G. Use of erosion and sedimentation control measures shall be included in all permanent construction work and temporary construction work where necessary as a result of construction operations and where required in the Erosion, Sedimentation and Pollution Control Plan.

H. The erosion and sedimentation controls shown on the Drawings of which the Erosion, Sedimentation and Pollution Control Plan is included and those in these Specifications are minimal requirements. The Contractor's methods of construction may require additional erosion and sedimentation controls not indicated on the Drawings or in these Specifications. Any additional or different erosion control measures from what is in the Plan required due to the method of construction must be approved by the design professional, approved by the Local Issuing Authority, added to the Plan and approved by the Owner.

I. The Contractor shall be solely responsible for control of erosion within the Project site and prevention of sedimentation or pollution in any adjacent waterways.

J. The Contractor will assist Owner in preparing a Notice of Termination (NOT) and the project superintendent, who must be certified in accordance with "Certified Personnel" or "Certified Person" which means any person who has attended the Conservation Commission's "Fundamentals Seminar" (Level 1A) and holds a certificate of successful completion of the training requirements stated in *Rules of the State Soil and Water Conservation Commission Chapter 600-8: Education and Training Certification Requirements for Persons Involved with Land Disturbing Activities* 600-8-1-.04 (2)(a) from the Conservation Commission in the area of inspection of best management practices (BMPs) on construction sites (BMPs are vegetative and structural measures to control and prevent erosion), will sign said NOT as the Operator.

K. The Contractor shall fully comply with Georgia's Oil or Hazardous Material Spills or Releases Act. Any spill will be reported to the Owner immediately.

L. The Contractor will install stormwater management systems in accordance with the Plan and the contract documents, as well as any local permits.

M. The Contractor will install and maintain all other controls required under the Plan including controls related to waste disposal practices, off-site vehicle tracking, sanitary sewer and septic system regulations, petroleum spills and leaks, and concrete wash down procedures.

Submittals:

Submittals are required in accordance with this section to allow the Owner to review all aspects of the work under this specification and ensure the work is conducted in full accordance with the Plan and local, State and Federal requirements. A minimum of three copies of each submittal shall be provided to the Owner for review. The Contractor shall review and stamp all submittals prior to sending to the Owner and make the certification statement that the submittal meets the requirements of the contract documents. The Owner will return one copy of each submittal to Contractor stamped "No Exceptions Taken", "Make Corrections Noted", "Amend & Resubmit", or "Rejected – See Remarks".

For submittals that have been marked as "Amend & Resubmit" or "Rejected – See Remarks", the Contractor shall provide at least three copies of the revised submittal. For these submittals, the Contractor shall reference the specification section, make the certification statement, note any deviations from the specification and list dates that it was previously submitted.

A. Complete shop drawings and manufacturer's data shall be submitted to the Owner for all products to be used in erosion control measures or BMPs at the site.

B. The Contractor will submit to Owner the name of the project superintendent and proof that the person is certified in accordance with "Certified Personnel" or "Certified Person" which means any person who has attended the Conservation Commission's "Fundamentals Seminar" (Level 1A) and holds a certificate of successful completion of the training requirements stated in 600-8-1-.04 (2)(a) from the Conservation Commission in the area of inspection of best management practices (BMPs) on construction sites (BMPs are vegetative and structural measures to control and prevent erosion).

C. The Contractor will submit to Owner a list of all proposed subcontractors on the project. All proposed subcontractors on the project that will have any involvement in land disturbing activities of any sort must be "Certified Subcontractors" which means any person who has attended the Conservation Commission's "Awareness Seminar for Subcontractors" and holds a certificate of successful completion of the training requirements stated in 600-8-1-.04 (2)(d) from the Conservation Commission in the area of erosion and sediment control practices and processes in the state. Proof of this training must be submitted to the Owner.

D. The Contractor will submit to the Owner within 30 days of award of project and prior to any land disturbing activities, the fees associated with the project on the required EPD form for the amount of acreage to be disturbed, if applicable. Payment of fees associated with the NOI will also be made to local issuing authority prior to any land disturbing activities as required under the General Permit, if applicable.

E. The Contractor will submit to Owner a request for inspection by the design professional of the initial erosion control measures. This inspection must be performed seven days after installation of the initial erosion control measures, and a report or letter must be provided to the Contractor by the design professional summarizing the findings of the inspection and listing any deficiencies that must be corrected. All deficiencies identified by the design professional must be corrected within two business days of receipt of the report or letter by the Contractor. This report must be maintained as a part of the Contractor's onsite paperwork, and a copy of this report or letter must be submitted to the Owner for review and approval. In addition, proof that any noted deficiencies were corrected within two business days of receipt must be provided to the Owner.

F. The Contractor will submit to Owner copies of all inspections performed on the site in accordance with the section entitled Quality Assurance.

G. The Contractor will submit details on sampling including proposed sample point labels, geographic positioning system (GPS) coordinates for all proposed sample points shown in the Plan, proposed sampling personnel and certification information on those personnel, proposed sampling equipment, and proposed analytical equipment and result reporting forms. If Contractor plans to use a commercial laboratory for the required analytical testing, the name, location, and certification status of the proposed laboratory must be provided.

H. The Contractor will submit to Owner copies of all sampling results and reports for sampling performed at the site in accordance with the Plan. These results must be submitted to the Owner within five days of collection. The Owner will submit all sampling results to EPD by the fifteenth day of the month following the reporting period in accordance with the requirements in the General Permit, GAR100002.

I. The Contractor will provide to the Owner as-built drawings of all permanent stormwater management systems and controls constructed as a part of this project in accordance with Section 007213.

Quality Assurance:

The purpose of this section is to ensure that erosion control measures are effective in minimizing erosion, sedimentation, and pollution to State waters and that all measures taken fully comply with the approved Plan, and local, State and Federal requirements. The Contractor will have a Certified Person perform, at a minimum, the following inspections:

A. Daily inspections of all areas where petroleum products are stored, used, or handled; all locations where vehicles enter and leave the site; and the rain gage for the site.

B. Fourteen day inspections of disturbed areas that have not undergone final stabilization, areas used for storage of materials that have not undergone final stabilization, and structural control measures identified in the Plan.

C. End of storm inspections will be conducted after any storm producing 0.5 inches of rain or greater of disturbed areas that have not undergone final stabilization, areas used for storage of materials that have not undergone final stabilization, and structural control measures identified in the Plan.

D. Monthly inspections of all areas that have undergone final stabilization until the NOT is filed with EPD.

E. Any additional inspections required in the project specific Plan.

Based on the results of these inspections, the Contractor will have seven calendar days from the date of inspection to correct any deficiencies. Corrections to any deficiencies should be documented in the onsite paperwork.

To ensure compliance with these specifications and the Plan, the Owner will engage a "Certified Inspector" which means any person who has attended the Conservation Commission's "Advanced Fundamentals Seminar" (Level 1B) and holds a certificate of successful completion of the training requirements stated in 600-8-1- .04 (2)(b) from the Conservation Commission to inspect land-disturbed areas for compliance with the state laws in the afore mentioned inspections.

Any deficiencies found by the Owner will be immediately brought to the attention of the Contractor. Correction of these deficiencies must be completed by the Contractor within five calendar days of identification.

The Owner must be made immediately aware of any inspections performed by the Local Issuing Authority or the EPD. Any compliance issues identified in any inspection by either of these entities will require the Contractor to **Stop Work** on all other work except correcting the deficiency identified. Certification that any such deficiency has been corrected must be submitted to the Owner within five days of the inspection.

In addition to inspections, the Contractor is required to perform sampling in accordance with the Plan. Sampling points identified in the Plan must be labeled prior to starting land disturbing activities. All sample locations should be marked with an approved sign with the writing "Dalton Utilities, Project Name, Sample # (from the Plan)". The Contractor shall notify Owner of any outfalls not shown on the Plan. Owner shall have these outfalls added to the Plan by the design professional. Sampling points will be confirmed by Owner prior to land disturbing with the Contractor in the field. The Contractor is required to collect GPS coordinates for all sampling points in accordance with Section 007213.

All sampling by the Contractor will be performed in strict accordance with the Plan, methodology and test procedures in 40 CFR Part 136 and the guidance document entitled "NPDES Storm Water Sampling Guidance Document, EPA 833-B-92-001". The Contractor is responsible for providing sampling and analytical equipment as required in the Plan. All monitoring results shall include at a minimum the sampling date, exact place, time of sampling, name of sampling personnel, analytical date, time of the analyses, personnel who performed the analyses, the analytical methods, and the results of the analyses, as well as any additional information required by the project specific Plan.

Products and Implementation:

The Contractor will implement Erosion, Sedimentation, and Pollution Control Plan (the Plan) in strict accordance with the Drawings and these Specifications and as required by the Owner and design professional. Any changes, amendments, deviations, additions, or other alterations from the Plan must be approved and certified in writing by the design professional. These changes will also require review and approval by the local issuing authority.

Products and methods not listed in these Specifications may be used by the Contractor if they meet the requirements of the Georgia Soil and Water Conservation Commission (GaSWCC) as outlined in the *Manual for Erosion and Sediment Control in Georgia* (as amended as of January 1 of the year in which the land disturbing activity is being conducted), are approved and certified by the design professional, are approved by the local issuing authority, are added to the Plan, and are approved prior to use by the Owner.

A. Buffer Zones (Bf): The Plan will show all buffer zones. At a minimum, buffers of 25 feet along the banks of all State waters must be maintained free of construction activity, as measured horizontally from the point where vegetation has been wrested by normal stream flow or wave action. Buffer zones will be, at a minimum, in accordance with the requirements of the *Manual for Erosion and Sediment Control in Georgia* (as amended as of January 1 of the year in which the land disturbing activity is being conducted), however, the Plan must be consulted as local buffer zones may be more stringent and these more stringent requirements, if applicable, will be shown in the project specific Plan. The Contractor will be required to mark these buffer zones in accordance with the Plan prior to starting work with flags or signs to be approved by Owner. The Contractors employees and subcontractors will be educated as to the importance of avoiding any land disturbing activity inside the buffer zones. Where land disturbing activity is shown on the Plans in accordance with activities allowed in the buffer zone due to exemptions as outlined in the General Permit or in accordance with a buffer variance obtained by the Owner from the Georgia Environmental Protection Division, the Contractor will notify Owner prior to starting this work. All work in the buffer will be in strict accordance with the Plan. Repair of the buffer zone, in accordance with the Plan and any buffer variance documents, will be performed immediately upon completion of the work. One time water and sewer line crossings of State waters will be allowed in accordance with these specifications, the Plan, and as approved by Owner prior to initiating the crossing. All crossings must be made perpendicular to or within 25 degrees of perpendicular of the flow of the stream, creek or river. In addition, the width of disturbance for these crossings must be less than 50 feet. This 50 foot section of proposed disturbance must be marked by the Contractor in the field prior to beginning any work. The Owner will inspect the proposed crossing and the limits of disturbance prior to initiation of the work to ensure compliance with the Plan and the General Permit. For any crossing not meeting these requirements, a buffer variance will be required from the Georgia Environmental Protection Division before beginning any land disturbing activity in the buffer zone. In addition to a buffer variance, any crossings must also have a Pre-Construction Notification completed to the U.S. Army Corps of Engineers if deemed necessary by the owner.

B. Disturbed Area Stabilization Options (Ds1): The Contractor shall apply mulch to all exposed areas within 14 days of disturbance if the area or the season of the year does not allow stabilization with temporary seeding (Ds2). This BMP can only be used for stabilization of areas for less than six months. For this BMP, disturbed area stabilization must be in accordance with one of the following: dry straw or hay, wood waste, compost, or polyethylene. At a minimum, 90 percent of the disturbed area must be covered by one of the disturbed area stabilization alternatives. If straw, hay, wood waste or compost are used, it must be applied in a layer of between 2 and 4 inches thick, properly anchored and maintained. All disturbed areas along any pipelines shall be mulched as soon as possible after backfilling operations have been completed, but in no case shall this time period exceed 14 days.

C. Disturbed Area Stabilization with Temporary Grassing (Ds2): The Contractor shall apply temporary seeding to all exposed areas within 14 days of disturbance. Temporary grassing can be applied to rough graded areas that will be exposed for less than six months. If an area will be exposed for longer than six months, then permanent disturbed area stabilization will be performed. Temporary grassing for erosion control shall consist of planting temporary grass of a quick growing species such as millet (pearl or browntop), oats, rye, ryegrass, sudangrass, lovegrass or lespedeza (annual) suitable to the Mountain, Blue Ridge or Ridge and Valley Major Land Resource Area. The specific species to be planted should be as identified in the Plan and approved by the Owner. Planting dates, broadcast rates and methods, fertilizer, lime, mulch and periodic watering shall be as noted in the Plan. Seed, fertilizer, lime, mulch and periodic watering shall be applied in adequate quantities to assure a full, healthy ground cover over the entire disturbed area of construction operations. All materials shall be of first class quality. All disturbed areas along any pipelines shall be grassed as soon as possible after backfilling operations have been completed, but in no case shall this time period exceed 14 days.

D. Disturbed Area Stabilization with Permanent Grassing (Ds3): Permanent grassing will be installed once all soil disturbing activities at the site have been completed or if an area will not be disturbed further for in excess of six months. For pipeline installations, after completion of pipe laying operations, the Contractor shall grass disturbed areas immediately and within 14 days of completion of backfilling. All yards and ditches shall be returned to original condition or better within a timely fashion. The Contractor shall grass all areas that were disturbed by clearing or construction operations. Before seeding commences, the Contractor shall smooth the entire area with a drag and break up all clods. All deleterious material, large stones, roots, limbs, and other debris shall be removed to leave a smooth area suitable for mowing, use of a rock hound or similar piece of equipment may be required in order to achieve this standard. Grass species for permanent grassing shall match the existing grass species at the site before land disturbing activities commenced where work is in the road right of way. Permanent grassing for erosion control shall consist of planting grass such as Bermuda, Fescue, Lespedeza, Bahia or Lovegrass suitable to the Mountain, Blue Ridge or Ridge and Valley Major Land Resource Area. Rye grass seed may be required as part of the permanent grassing depending on the time of year. This requirement is at the owners discretion. The specific species to be planted should be as identified in the Plan and as approved by the Owner for the particular location and time of year. Planting dates, broadcast rates and methods, fertilizer, lime, mulch and periodic watering shall be as noted in the Plan. Seed, fertilizer, lime, mulch and periodic watering shall be applied in adequate quantities to assure a full, healthy ground cover over the entire disturbed area of construction operations. All materials shall be of first class quality.

(1) Contractor shall submit data on percent germination and percent purity for all seed proposed for application. In addition, Contractor shall submit proposed bulk seeding rates, seeding method, inoculants (if applicable), mulch type and application rate, lime type and application rate, fertilizer type and application rate, proposed anchoring method, and any other data requested by Owner to confirm that permanent grassing implementation will meet minimum requirements in the Plan.

(2) Agricultural lime meeting the specifications of the Georgia Department of Agriculture shall be spread at the rate of one to two tons per acre unless soil tests indicate lime is not required.

(3) Mulch is required for all permanent grassing installations and shall be applied to achieve 100% soil cover. Dry straw or hay of good quality can be used for conventional seeding and shall be applied at a rate of 2 and ½ tons per acre. For hydraulic seeding, Contractor shall use wood cellulose mulch or wood pulp fiber at a rate of 500 pounds per acre followed by dry straw or hay at the above indicated rate. Mulch shall be applied within 24 hours of seeding and will be anchored.

(4) Fertilizer including total Nitrogen, available Phosphoric Acid, and water-soluble Potash shall be applied as required in the Plan depending on the grass species and time of the year.

(5) Grassing (by seeding) shall be completed as soon as practical after finish grading is completed in order to minimize erosion from rainfall and run-off. Any erosion occurring in grassed areas shall be immediately repaired.

(6) Permanent seeding shall be done only if it can be completed within the appropriate planting season for the Mountain, Blue Ridge, and Valley and Ridge Major Land Resource Areas for the type of grass.

(7) Seed, fertilizer, mulch and periodic watering shall be applied in adequate quantities to assure a satisfactory ground cover over the entire area of construction operations. A satisfactory stand of grass is defined as a full cover, over 100% of the soil surface

and seeded area, of live and growing grass with no bare spots and a density of at least 70 percent as determined by the Owner.

(8) Permanent grassing along highway right-of-way shall also comply with Department of Transportation, State of Georgia, Standard Specifications Construction of Roads and Bridges, latest edition and any requirements of the local authority having jurisdiction over the road right of ways.

(9) Permanent grassing through established pastures shall be by seeding with the same type of grass as was disturbed or, if acceptable to the property owner, seeding may be as recommended by the local Soil Conservation Agent as long as application methods, seeding rates, mulching rates, lime application rates, fertilizer application rates, and the other requirements meet the requirements for the type of grass required in the Plan and in *Manual for Erosion and Sediment Control in Georgia* (as amended as of January 1 of the year in which the land disturbing activity is being conducted).

(10) Grassing may be by hydraulic or conventional seeding, but the method selected must be approved by the Owner.

(11) Seed and fertilizer mix shall be as described above. All planting and seeding shall be watered thoroughly as soon as completed and shall be watered as necessary to provide continuous growth without setback until all growth from seed is thoroughly established.

(12) Anchoring must be done immediately after the mulch is spread. Anchoring may be done by various means, one example is driving over the mulch with a piece of equipment. No additional payment shall be made for this process.

E. Disturbed Area Stabilization with Sodding (Ds4): Permanent sodding will be installed once all soil disturbing activities at the site have been completed or if an area will not be disturbed further for in excess of six months and as called for in the project specific Plan. For pipeline installations, after completion of pipe laying operations, the Contractor shall sod disturbed areas immediately and within 14 days of completion of backfilling. All yards and ditches shall be returned to original condition or better within a timely fashion. The Contractor shall sod all areas that were disturbed by clearing or construction operations where the Plan calls for sod or where sod was present before the area was disturbed. Before sodding commences, the Contractor shall smooth the entire area with a drag and break up all clods. All deleterious material, large stones, roots, limbs, and other debris (1" or larger in size) shall be removed to leave a smooth area suitable for sod installation. Grass species for permanent sodding shall match the existing sod at the site before land disturbing activities commenced where work is in the road right of way or on private property. Permanent sodding for erosion control shall consist of planting sod of either Bermuda or Tall Fescue depending on the planting season and the site specific requirements.

F. Silt Fence (Sd-1C): Unless otherwise noted in the project specific Plan, all silt fence installed shall be Type C silt fence. The Contractor shall submit product data to the Owner for approval for any silt fence proposed for installation on the project. Approved silt fence fabrics are listed in the Georgia Department of Transportation Qualified Products List #36 (QPL -36). Silt fence shall be constructed in areas as shown on the Plan and in additional locations as requested by the Owner. Installation shall be by trenching 6 inches below grade and putting in the silt fence with steel posts at 4 foot intervals. When sediment accumulates to a level of one half the height of the silt fence, maintenance must be performed by the Contractor to remove the accumulated sediment.

G. Check Dams (Cd-S and Cd-Hb): Check dams shall be placed as shown on the Plan and as requested by the Owner. A geotextile selected in accordance with AASHTO M288-96 Section 7.3 and approved by Owner shall be used under stone check dams. Stone check dams shall be constructed of graded 2-10 inch stone. The stone shall be placed such that it covers the entire

ditch or swale and the center of the stone check dam is lower than the edges. They shall be maintained at all times by removing sediment when it reaches one half the height of the dam. Hay bales shall only be used where called for in the Plan and approved by the Owner. If used, hay bales must be embedded a minimum of 4 inches into the existing ground surface. As with stone check dams, sediment must be removed from behind the hay bales when it reaches one half the height of the hay bale. If required by the owner, all check dams must be removed once final stabilization has occurred unless the check dam is called out to be a permanent hydraulic control measure on the design drawings.

H. Construction Exit (Co): Construction exits shall be constructed at all points of ingress and egress from the site as shown on the Plan. The location of the exit shall be excavated 3 inches below grade. A geotextile meeting the requirements of AASHTO M288-98 must be placed over the entire area. Stone in accordance with the National Stone Association R-2 (size range of 1.5 to 3.5 inch) will be placed over the geotextile to a thickness of at least 6 inches. The width of the exit will match the largest requirement for vehicular traffic on and off the site, but at a minimum, it will be 20 feet in width and the length will be as shown on the project specific Plan. Maintenance of the exit will be performed as needed on a daily basis to ensure that no tracking of materials from the project site onto the road occurs. Maintenance will include the addition of more stone as required to maintain a thickness of at least 6 inches of clean stone leaving the site.

I. Rip-Rap: The Contractor shall place rip-rap as required and directed by the Owner or Engineer.

(1) Materials: Rip-rap shall be hard, durable rock, concrete rubble, or similar material weighing at least 150 lbs per cubic foot. Rip-rap shall consist of stone or bagged sand-cement to a thickness of approximately twelve inches (12”). Stone shall be hard quarry or field stone of such quality that it will not disintegrate on exposure to water or weathering. Stone shall range in weight from a minimum of 25 pounds to a maximum of 150 pounds with at least 50 percent of the pieces weighing more than 60 pounds. Rip-rap shall be reasonably well graded within the following limits established by the National Crushed Stone Association (NCSA):

Graded Rip-Rap Stone

	Size Inches (Square Openings)		
NCSA No.	Maximum	Average	Minimum
R-1	1-1/2	¾	#8
R-2	3	1-1/2	1
R-3	6	3	2
R-4	12	6	3
R-5	18	9	5
R-6	24	12	7
R-7	30	15	12

(2) Payment: Rip-rap will be paid for on the basis of the number of square yards measured in place to the thickness specified.

J. Limit of Progress: The Owner will limit the area of excavation commensurate with the Contractor’s capability and progress in keeping the finish grading, mulching, seeding and other such erosion, sedimentation and pollution control measures current in accordance with the schedule in the approved Plan. Should seasonal limitations make such coordination unrealistic, special erosion control measures shall be taken immediately to the extent feasible and justified. Any special erosion control measures will be taken only after approval of the Owner, the design professional, and the local issuing authority.

K. Additional BMPs: Specifications and requirements for any additional vegetative or structural BMPs are provided in the project specific Plan. Any vegetative or structural BMP shall meet the construction requirements listed in the *Manual for Erosion and Sediment Control in Georgia* (as amended as of January 1 of the year in which the land disturbing activity is being conducted).

L. Payment: Payment for erosion control programs shown on the drawings will be paid for at the unit prices bid. Otherwise the cost of the above work and all cost incidental thereto shall be included in the unit price bid for the item to which the work pertains.

END OF SECTION

WATER MAIN AND ACCESSORIES

331100

SECTION 331100 – WATER MAINS AND ACCESSORIES

Scope:

This specification covers all aspects of requirements for new water mains, taps, and related accessories including submittals, products, and implementation. All new water infrastructure will be designed to meet required flows of the customer, the fire department responsible for the particular jurisdiction, and the Minimum Standards for Public Water Systems (May 2000) published by the Drinking Water Permitting and Engineering Program of the Georgia Environmental Protection Division. Design flows for new systems and taps will be determined by evaluating similar types of customers using actual metered data and contacting the appropriate fire department. Where data is not available, the Minimum Standards for Public Water Systems (May 2000) published by the Drinking Water Permitting and Engineering Program of the Georgia Environmental Protection Division will be used.

PART 1 - H.D.P.E. Pipe Specifications for Transmission of Potable Water

Scope:

The Contractor will install water mains less than 8-inch in size using SDR 9 HDPE pipe for the transmission of potable water as shown on the Drawings and in accordance with these Specifications. Water mains larger than 8" shall be ductile iron pipe as presented in the applicable part of this Section and on the Drawings. HDPE pipe shall be installed in road right-of-ways or easements obtained by the Owner using trenching or horizontal boring in accordance with these specifications.

Submittals:

A. The Contractor will submit complete product data from named vendor on all products proposed for use in the project.

B. Results from recording of each fuse on HDPE pipe will be submitted to the Owner as part of the installation record.

C. Contractor will submit a proposed method for pigging or cleaning lines for approval by the Owner after installation.

D. Contractor shall provide proof of qualification for all labor involved in fusing of HDPE pipe. Proof of qualification shall be written confirmation of training by a manufacturer involved in the manufacture of HDPE pipe for more than two years. Only individuals with such qualifications will be allowed to perform fusing operations.

E. Contractor shall submit proposed pressure testing methodology for review by the Owner prior to initiating any final pressure testing of pipe.

Products:

This section of the specifications covers the requirements for high density polyethylene pipe (HDPE) for transmission of potable water, fittings, accessories, and service lines. The minimum pipe size allowed is 2-inch for dead ends of less than 600 linear feet. The minimum pipe size for all other water mains is 6-inch.

A. HDPE Pipe: Polyethylene pipe shall conform to ANSI/AWWA Standard C 906-90 (or most recent edition) and NSF 61. The pipe shall be PE 3408 with an SDR of 9 as directed by the owner and be rated for a pressure of 200 p.s.i., respectively. The carbon black content shall measure 2% to 3% by weight when tested according to ANSI/ASTM D 1603 or ASTM D 4211. The pipe shall be provided in ductile iron pipe sizes. The pipe shall be produced by Rinker, J-M PE Corporation Pipe, or equal. All polyethylene pipe shall be blue PRISMA coated or shall have co extruded blue striping for identification. The manufacturer shall have

an ISO 9001 listing covering the HDPE manufacturing facility as well as the corporate office. The Owner at no additional cost may require quality audits. All pipe will be provided in standard straight lengths. No coiled pipe will be accepted for installation on the project. All pipe and fittings must be manufactured in the United States of America.

(1) Quality and Inspection: All pipe shall be smooth on both the interior and exterior surfaces; be free of noticeable imperfections such as cracks, blisters, or kinks in the pipe. The Owner, if he so chooses, shall be able to inspect the pipe at the pipe plant, trench, and other various storage sites. Based on these observations the Owner will have the right to reject any and all piping not conforming to these stated requirements, independent of laboratory tests. Field repair of any damaged piping shall not be permitted. The Owner reserves the right to require the removal of fused connections for destructive testing to verify the integrity of fused joints, etc.

(2) Experience of Manufacturer: The pipe manufacturer shall provide evidence, if requested by the Owner, of having provided quality pipe and joints that have shown satisfactory results in service for a period of no less than two years. Evidence of completion of projects of similar size and timing for HDPE pipe will also be provided upon Owner request. All pipe within any given phase shall be from the same manufacturer.

(3) Fittings: The fittings shall meet all of the requirements of the pipe to which they are to be fused. They shall be homogeneous throughout and essentially uniform in color, opacity, density and other properties. Fittings should also be free of such defects as cuts, cracks, or holes. Fabricated fittings will not be allowed where molded or machined fittings are available. All fittings will be manufactured in accordance with AWWA C906 with a minimum pressure class of 200 psi.

(4) Markings: Markings shall be legible during usual handling of the pipe and be applied in a manner that will not damage the pipe. The following markings shall be provided as shown below:

a. Nominal size and OD base
b. Standard material code designation
c. Dimension ratio
d. Pressure class
e. AWWA designation for this standard (AWWA C 906-90)
f. Manufacturers production code
g. Material test category of pipe
h. NSF 61 approved

B. Locating Wire & Detector Tape: The Contractor will supply all locating wire and detector tape. Locating wire shall be 8 gage, coated wire for the HDPE mainlines and 12 gage, coated wire for the HDPE service lines. Detection tape shall be composed of a solid aluminum foil encased in a protective plastic jacket. Tapes shall be color coded in accordance with AWWA color codes with the following legends: Water Systems, Safety Precaution Blue, “Caution Water Line Buried Below”. Tape shall be permanently printed with no surface printing allowed. Tape width shall be a minimum of 2-inches when buried less than 10-inches below surface and 3-inches when buried greater than 10-inches. Tape shall be equal to Lineguard Type II Detectable, Allen Systems Detectatape, or equal

C. Electrofusion Couplings: Electrofusion couplings and saddles will not be used on this Project without written approval of Owner.

D. Flange Assemblies: Flange assemblies shall consist of a metal back-up flange or ring and a polyethylene flange adapter. The back-up flange shall be slipped over the pipe profile flange adapter and then be fused into the plain end pipe.

E. The service lines shall be polyethylene tubing material with the standard PE code designation of PE 3408. Polyethylene tubing and piping shall SDR 9 as directed by the owner and be rated for a pressure of 200 psi p.s.i. respectively. Service tubing shall comply with all requirements of AWWA C901-02 for Polyethylene Pressure Pipe and Tubing, ½ inch through 3 inch for water service. Tubing dimensions shall be compatible with copper tubing outside dimensions. All tube and pipe shall be smooth on both the interior and exterior surfaces; be free of noticeable imperfections such as cracks, blisters, or kinks in the pipe. The Owner, if he so chooses, shall be able to inspect the tube or pipe at the pipe plant, trench, and other various storage sites. Based on these observations the Owner will have the right to reject any and all piping not conforming to these stated requirements, independent of laboratory tests. Field repair of any damaged tubing or piping shall not be permitted.

Implementation:

A. Unloading: Equipment and facilities for unloading, hauling, distributing and storing materials shall be furnished by the Contractor and shall at all times be available for use in unloading materials. Delays in unloading railroad cars, unloading trucks, or hauling from freight terminal that incur demurrage, truck waiting charges or terminal charges shall be at the expense of the Contractor.

B. Handling: Pipe, fittings and other material shall be carefully handled so as to prevent breaking and/or damage. Pipe may be unloaded individually by hand but shall not be unloaded by rolling or dropping off of trucks or cars. Preferred unloading is in units using mechanical equipment, such as forklifts, cherry pickers or front end loaders with forks. If forklift equipment is not available units may be unloaded with use of spreader bar on top and nylon straps looped under the unit.

C. Distributing: Materials shall be distributed and placed so as to least interfere with traffic. No street or roadway may be closed without first obtaining permission from the proper authorities. The Contractor shall furnish and maintain proper warning signs and obstruction lights for protection of traffic along highways, streets, and roadways upon which material is disturbed. No distributed material shall be placed in drainage ditches.

D. Storage: All pipe, fittings and other materials which cannot be distributed along the route of the work shall be stored for subsequent use when needed. The Contractor shall make his own arrangements for the use of storage areas; except that, with permission, he may make reasonable use of the Owner's storage yards.

E. Joining Methods for HDPE Pipe: The pipe and fittings shall be joined by butt or saddle fusion, mechanical joint adapters, or by flange connections in accordance with manufacturer's recommendations. All joints shall be fused, not including connections to existing utilities, unless otherwise shown on Drawings or requested by the Owner.

(1) Fusion: The pipe shall be joined by heat fusion of the ends. Prior to fusion the pipe shall be clean and the ends shall be cut square. Fusion system operators shall be trained in the use of the equipment by the pipe supplier or manufacturer of the fusing machine and be experienced in the operation of the equipment. All fuses shall be recorded, the recording of the information must be provided to the Owner, and the recorded information must meet the standard requirements of the pipe manufacturer. All fusions failing to meet these requirements shall be removed and refused.

(2) Flange: A flange assembly consists of a metal back-up flange or ring and a polyethylene flange adapter. The back-up flange is slipped over the pipe profile and the stub-end, or flange adapter, is then fused into the plain end pipe.

(3) Connection to Ductile Iron Pipe or Valves and Fire Hydrants: Connections to ductile iron pipe, valves, and fire hydrants shall be by mechanical joints or flanges. All connections to ductile iron pipe, valves or fire hydrants must be restrained.

a. Restrained Mechanical Joints: Restrained mechanical joints shall be made using mechanical joint adapters and shall incorporate a factory installed stiffener manufactured by Rinker, J-M PE Corporation Pipe, or equal.
b. Flange: Flange connections shall be as described above in E (2).

F. Installation of Locating Wire and Detector Tape: The Contractor shall be required to install locator wire along the entire section of pipeline and along all service connections. The locator wire shall be installed simultaneously with the polyethylene piping. Detector tape shall be installed by the Contractor once backfill has been placed and compacted to at least 12 inches above the top of the pipe and not more than 18 inches above the top of the pipe. Wire shall be properly spliced at each end connection and each service connection. Care should be taken to adequately wrap and protect wire at all splice locations. No bare wire shall be accepted. There will be no additional pay item for this work; it should be included in the Unit Price for installing polyethylene pipelines and services.

G. Backfill and Bedding: Contractor will install pipe in accordance with ASTM D 2774 Standard Practice for Underground Installation of Thermoplastic Pipe, AWWA C906-90 (as amended), and the manufacturer's recommendations. Pipe shall not be installed in water or wet mucky soils, on rock or stony soil. When these conditions exist, Contractor shall remove the objectionable material to a depth of 6" below the pipes final grade and install crushed stone or other approved bedding materials.

H. Cold (Field) Bending: Contractor shall not bend the pipe to fit a trench more than that allowed by the pipe manufacturer. For 6" and 8" SDR 9 pipe, the bending radius will not be less than 20 times the outer diameter of the pipe. For SDR 11 pipe, the bending radius will not be less than 25 times the outer diameter of the pipe.

I. Installation by Pulling In: Contractor will submit to Owner maximum proposed pull in length for the pressure class and diameter pipe proposed to be pulled into an open trench. Pull in lengths will not exceed the maximum lengths recommended by the manufacturer for the class and diameter pipe. Final tie-ins should be made one day after pulling in to allow the pipe to recover from the stress of the pulling.

J. Installation by Horizontal Boring or Directional Drilling: This work shall be done in accordance with Section 02229. Contractor shall install pipe under creeks and County Roads using horizontal boring or directional drilling when directed by Owner. Casing pipe will be installed for all creek and road crossings. The pipeline shall then be installed directly into the casing without centering spacers. At casing exit or entry points, pipe should be wrapped with an elastomeric sheet material.

K. Protection of Pipe Openings: During installation, the Contractor will ensure that pipe ends that have not been fused will be protected against dirt, debris, animals, and other foreign materials. Plastic caps held in place with duct tape or other methods as approved by the Owner may be used.

L. Connecting Service Lines to Main Lines: Connection to the main lines shall be made by using self-tapping saddles with integral cutters fused to the main line. Electro-fusion saddles

are not allowed without prior approval of Owner. A curb cock shall be installed on the self-tapping saddle with a compression fitting. The meter connection shall be installed with a compression joint (Compression fittings shall have stiffener inserts listed with NSF for potable water service as made by Romac, Philmac or equal inserted in the tubing before making the connection). The joints must withstand 200 psi test pressure. The curb stop and meter fitting shall be Mueller or equal.

M. Installation of Fire Hydrants: Fire hydrants, in general, shall be installed and jointed as specified above for pipe and fittings. The installation of hydrants shall include the installation of extension sections, if required, and shall include the installation of crushed stone drain as shown on the Drawing Details and/or as specified herein. Class 1 or 2 soil materials will be installed under all fire hydrants to a depth of at least 6 inches as shown in the plans.

N. Blocking and Restraining: Contractor shall fully restrain the pipe through the use of fully restrained joints by means of butt fusion, M-J adapters, or flange adapters. Do not use thrust blocks with HDPE pipe installations.

O. Cleaning: Before acceptance of any line, the line must be clean. If the Contractor fails to close the pipe or debris is found to be in the line, the Contractor shall clean the line by pigging or other suitable means at the Contractor's expense. The Contractor shall be prepared to pig all lines installed within this project in order to remove the HDPE pipe shavings, etc. The successful bidder must propose a method of pigging the lines for approval by Dalton Utilities before proceeding with any pigging operations. This request must be submitted in writing and shall be approved in writing by the Owner prior to line purging.

P. Testing: Testing of HDPE pipe installations will include destructive testing as well as final pressure testing to ensure no leaks are present in the line.

(1) At the direction of the Owner, Contractor will perform destructive strap testing on selected fuses to determine if the fuses meet with manufacturer's requirements. Pipe used in this testing will not be installed in the Project.

(2) The testing of the HDPE pipe will be performed in accordance with AWWA C906-90 (as amended) and the manufacturer's recommendations. Contractor will submit a test protocol to the Owner for approval prior to implementing any testing.

L. Sterilization of Pipe Lines: The AWWA Standard for Disinfecting Water Mains ANSI/AWWA C 651-~~92~~ 14 (as amended to date) and these Specifications shall be the standard used to disinfect all new water lines and any existing lines contaminated during construction. The Contractor shall furnish all equipment and labor of every nature to disinfect new lines and any line contaminated during construction.

(1) Clean Lines: Care shall be taken during construction to keep line free from debris, ground water and dirt.

(2) Cross Connections: Cross connections shall not be allowed during testing, flushing, chlorinating, or dechlorinating of the new lines.

(3) Flushing: All new lines shall be flushed before disinfecting. The recommended velocity by ANSI/AWWA C 651-~~92~~ 14 for flushing is ~~2 ½~~ 3 feet per second.

(4) Chlorination: All pipe and appurtenances, both existing and newly constructed which have been exposed to contamination by reason of the construction shall be sterilized after testing and flushing of the line has been completed. The line shall be filled, using the continuous feed method, with fresh water containing ~~50~~ 25 parts per million of chlorine and allowed to stand for 24 hours. After a 24-hr holding period in the main there shall be a free chlorine residual of not less than 10 mg/L. During

the test, chlorine residuals shall be checked every 1200 feet on new lines, at the end of each new line, and at the end of all new service lines or connections. All super chlorinated water lines shall be flushed by the Owner (DU Lab Personnel) with the assistance of the contractor. Contractor will be responsible for Chemicals (chlorination or de-chlorination) if and when secondary or multiple test are required due to a failed test.

(5) Dechlorination: After the new lines have been chlorinated for 24 hours, the chlorinated water shall be flushed from the lines. The owner (DU Lab) will authorize areas that de-chlorination will be required. Owner will provide initial de-chlore chemicals. Contractor will be responsible for Chemicals (chlorination or de-chlorination) if and when secondary or multiple test are required due to a failed test.

(6) Connections: After the pipe and appurtenances have been flushed, tested, chlorinated, and have passed the bacteriological test, they may be connected to the existing system.

(1) Connections Equal to or Less than One Pipe Length (18 feet): The new pipe, fittings, and valves required for the connections shall be spray disinfected or swabbed with a minimum 1% solution of chlorine just prior to being installed, if the length of connection from the new main to the existing main is equal to or less than 18 feet.

(2) Connections Greater Than One Pipe Length: The pipe required for the connection must be set up above ground, chlorinated and bacteriological samples taken as described above if the length of connection is greater than 18 feet. After the bacteriological tests have proven satisfactory, the new pipe can be used in connecting the new main to the existing system. After the samples have been taken, the ends of the new pipe must be closed with water-tight plugs or caps until the connections are made.

PART 2 - Ductile Iron Pipe Specifications for Transmission of Potable Water

Scope:
The Contractor shall provide all products and perform all labor associated with the installation of Ductile iron pipe in accordance with the Drawings. Ductile iron pipe meeting the requirements of this part of Section 02665 shall be used for all 6” through 30” pipe installed on the Project.

Submittals:
Complete shop drawings and engineering data for all products shall be submitted to the Owner. In addition, the proposed route for laying of the 24” and 30” lines detailed in the Drawings shall be provided to the Owner for approval prior to beginning installation.

Products:

A. Ductile iron pipe shall be a minimum Special Thickness Class 51, unless otherwise specified or shown on the Drawings. All pipe shall be 6 inch through 30 inches in diameter and shall be installed in lengths of 18 to 20 feet. Minimum acceptable working pressure will be 350 psi for 6” through 12” pipe and 250 psi for 24” and 30” pipe. Ductile iron pipe shall be manufactured in accordance with AWWA C 151. All pipe and fittings must be manufactured in the United States of America.

(1) Flanges: Flanged pipe shall have a minimum wall thickness equal to Special Class 53. All flanges shall be furnished by the pipe manufacturer.

(2) Lining and Coating: Pipe and fittings shall be cement lined in accordance with AWWA C 104. Pipe and fittings shall be installed with a bituminous outside coating and interior seal coating.

(3) Joints: Joints shall be push-on for pipe and standard mechanical for fittings, unless otherwise shown or specified. Push-on and mechanical joints shall conform to AWWA C 111.

(4) Flanged Joints: Flanged joints shall meet the requirements of ANSI B16.1, Class 125.

(5) Ductile Iron Pipe Fittings: Fittings shall be ductile iron and shall conform to AWWA C 110 or AWWA C 153 with a minimum rated working pressure of 250 psi.

(6) Gaskets: Appropriate gaskets for mechanical and flange joints shall be installed. Gaskets for flange joints shall be made of 1/8-inch thick, cloth reinforced rubber; gaskets may be ring type or full-face type.

(7) Nuts and Bolts:

a. All bolts and nuts shall be threaded in accordance with ANSI B1.1, Coarse Thread Series, Class 2A external and 2B internal fit. All nuts and bolts shall be manufactured in the U.S.A.
b. Nuts and bolts for mechanical joints shall be Tee Head bolts and nuts of high strength low-alloy steel in accordance with ASTM A 242 to the dimensions shown in AWWA C111/ANSI A21.11.
c. Flanged joints shall be bolted with through stud or tap bolts of required size as directed. Bolt length and diameter shall conform to ANSI/AWWA C 115 for Class 125 flanges shown in ANSI/ASME B16.1.

(8) Glands: Mechanical joint glands shall be ductile iron.

(9) Polyethylene Film: Ductile iron pipe shall be encased with polyethylene film where shown on the Drawings or requested by the Owner. Polyethylene film shall have a minimum thickness of 8 mils, be tubular and meet the requirements of AWWA C105.

(10) Thrust Collars: Thrust collars shall be welded-on ductile iron body type designed to withstand thrust due to 250 psi internal pressure on a dead end.

(11) Welded-On Outlets: Welded-on-outlets shall be fabricated from centrifugally cast ductile iron pipe, manufactured and tested in accordance with ANSI/AWWA C151/A21.51. The outlet shall be furnished with a mechanical joint, restrained joint, flanged or plain end as required for the work. The outlets shall be rated for a minimum working pressure of 250 psi. All welding, fabrication and outlet hole drilling shall be performed by the manufacturer.

(12) Inspection: Final acceptance will be on the basis of the Owner's inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards. Pipe damaged during unloading, transportation or storage shall not be installed.

(13) Mechanical joint restraint devices: Mechanical joint restraint devices nominal pipe sizes 3 inch through 48 inch shall consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of ANSI/AWWA C110/A21.10. The devices shall have a working pressure rating of 350 psi for 3-16

inch and 250 psi for 18-48 inch. Ratings are for water pressure and must include a minimum safety factor of 2 to 1 in all sizes. Gland body, wedges and wedge actuating components shall be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536. Ductile iron gripping wedges shall be heat treated within a range of 370 to 470 BHN. Three (3) test bars shall be incrementally poured per production shift as per Underwriter's Laboratory (U.L.) specifications and ASTM A536. Testing for tensile, yield and elongation shall be done in accordance with ASTM E8. Chemical and nodularity tests shall be performed as recommended by the Ductile Iron Society, on a per ladle basis. All components shall be manufactured and assembled in the United States. Restraint devices shall be Listed by Underwriters Laboratories (3" through 24" inch size) and Approved by Factory Mutual (3" through 12" inch size). Mechanical joint restraint shall be Megalug Series 1100 produced by EBAA Iron Inc. or approved equal.

B. **Copper Pipe Service Lines**: The service lines off of ductile iron pipe water mains shall be copper tubing material conforming to ASTM B 88, Type K. Fittings shall be brass with compression connection inlets and outlets, ANSI B16.26. Adapters shall be brass ANSI B16.18, where required. Unions shall be cast bronze and all joints shall be compression type.

C. **Detection Tape**: Detection tape shall be composed of a solid aluminum foil encased in a protective plastic jacket. Tapes shall be color coded in accordance with AWWA color codes with the following legends: Water Systems, Safety Precaution Blue, "Caution Water Line Buried Below". Tape shall be permanently printed with no surface printing allowed. Tape width shall be a minimum of 2-inches when buried less than 10-inches below surface and 3-inches when buried greater than 10-inches. Tape shall be equal to Lineguard Type II Detectable, Allen Systems Detectatape, or equal.

D. **Curb Stops and Meter Fittings**: The curb stop and meter fitting shall be Mueller or equal.

Implementation:

A. **Unloading:** Equipment and facilities for unloading, hauling, distributing and storing materials shall be furnished by the Contractor and shall at all times be available for use in unloading materials. Delays in unloading railroad cars, unloading trucks, or hauling from freight terminal that incur demurrage, truck waiting charges or terminal charges shall be at the expense of the Contractor.

B. **Handling:** Pipe, fittings and other material shall be carefully handled so as to prevent breaking and/or damage. Pipe may be unloaded individually by hand but shall not be unloaded by rolling or dropping off of trucks or cars. Preferred unloading is in units using mechanical equipment, such as fork lifts, cherry pickers or front end loaders with forks. If fork lift equipment is not available units may be unloaded with use of spreader bar on top and nylon strips or cables (cushioned with rubber hose sleeve) looped under the unit.

C. **Distributing:** Materials shall be distributed and placed so as to least interfere with traffic. No street or roadway may be closed without first obtaining permission from the proper authorities. The Contractor shall furnish and maintain proper warning signs and obstruction lights for protection of traffic along highways, streets, and roadways upon which material is disturbed. No distributed material shall be placed in drainage ditches.

D. **Storage:** All pipe, fittings and other materials which cannot be distributed along the route of the work shall be stored for subsequent use when needed. The Contractor shall make his own arrangements for the use of storage areas; except that, with permission, he may make reasonable use of the Owner's storage yards.

E. **Installation of Pipe:** Contractor shall install ductile iron pipe in accordance with manufacturer's instructions and AWWA C600-99 as amended.

(1) Pipe, fittings, valves and hydrants shall be lowered into the trench in a careful manner using slings and ropes as necessary to avoid damage to the water main or the protective coatings of the water main. Pipe shall in no cases be dropped into the trench.

(2) All lumps, blisters, and excess coatings shall be removed from the socket and the plain ends of each pipe, and the outside of the plain end and the inside of the bell shall be wiped clean and dry to ensure the removal of all dirt, sand, grit and other foreign materials prior to laying the pipe. No pipe containing dirt, debris or other foreign materials shall be laid.

(3) As each pipe length is laid, the Contractor shall assemble the joint and bring the pipe to proper grade and alignment. Pipe shall be secured in place with the proper backfill.

(4) Contractor shall not deflect any joint more than the maximum deflection recommended by the manufacturer. Contractor shall maintain a transit on site to check that deflections allowances are not exceeded.

(5) Joints shall be push-on, mechanical or flange and shall be assembled in accordance with manufacturer's instructions.

(6) Cutting of pipe: Cut ductile iron pipe using an abrasive wheel saw. Remove all burrs and smooth end before jointing. The Contractor shall cut the pipe and bevel the end, as necessary, to provide the correct length of pipe necessary for installing the fittings, valves, and accessories in the correct locations.

(7) Quality and Inspection: All pipe shall be smooth on both the interior and exterior surfaces; be free of noticeable imperfections such as cracks, blisters, or kinks in the pipe. The Owner, if he so chooses, shall be able to inspect the pipe at the trench and other various storage sites. Based on these observations the Owner will have the right to reject any and all piping not conforming to these stated requirements, independent of laboratory tests. Field repair of any damaged piping shall not be permitted.

M. **Bedding of Ductile Iron Pipe**: All pipe shall be laid on foundations prepared in accordance with the following specifications. Pipe shall be laid as specified using the following classes of bedding required for the various type soils and conditions encountered. Bedding for all pipe shall be in accordance with ASTM D 2321, as amended to date, the manufacturer's recommendations and these Specifications.

(1) Bedding Material: Class I, and II, type materials can be used in all conditions for bedding. Type III materials can be used for bedding and haunching in dry ditches. Class IV and V materials will not be permitted for bedding and haunching under any condition.

(2) Depth of Bedding: Trench shall be undercut to allow for a minimum of six inches (6") of bedding material. After joint assembly, Bedding material shall be placed under and up to the spring line of the pipe for the entire length of pipe and compacted. Compaction to the spring line of the pipe shall be of the same material used in the bedding. Selected backfill shall then be carried to a point twelve inches (12") above the top of pipe, using hand tools for tamping. Puddling will not be

allowed as a method of compaction. The remaining backfill shall be as specified in "Selected Backfill" and "General Backfill" paragraphs of these specifications. Pipe shall have at least thirty-six inches (36") of cover before wheel loading and at least forty eight inches (48") of cover before using heavy duty tamping equipment such as a hydrohammer.

(3) Definition of Bedding Material: Class I, II, III, IV, and V materials are defined as follows:

Class I	Angular ¼ to ¾ inches graded stone test revision of ASTM C 33 - Gradation # 67 (ASTM #67) or # 57 (ASTM #57) are acceptable.
Class II	Coarse sands and gravel with maximum particle size of ¾ inches including variously graded sands and gravel containing small Percentages of fines, generally granular and non-cohesive, either wet or dry.
Class III	Fine sand and clayey (clay filled) gravel, including fine sands, sand-clay mixtures and gravel-clay mixtures.
Class IV	Silt, silty clays and clays, including inorganic clays and silts of medium to high plasticity and liquid limits.
Class V	This class includes organic soils as well as soils containing frozen earth, debris, rocks larger than 1-1/2 inches in diameter, and other foreign materials.

(4) Trench Width: The maximum clear trench width at the top of the pipe shall not exceed a width equal to the nominal pipe diameter plus eighteen inches (18"). If this width is exceeded or the pipe is installed in a compacted embankment, pipe embedment shall be compacted to the trench walls.

(5) Trench Depths: Maximum depth of backfill over ductile iron pipe shall be in accordance with manufacturer's recommendations and in any case shall not exceed 30 feet when Class I bedding and compaction to 95% of maximum dry density is achieved.

F. **Connection of New Water Mains to Existing Water Mains:** The Contractor will be required to make connections to existing pipe lines as shown on the drawings. Before laying pipe, locate the points of connection and allow the Owner to confirm the nature of the connection. Contractor shall make connections to existing water mains only when system operations permit. Operation of existing valves shall be only under direct supervision of the Owner. Tapping saddles and tapping sleeves shall be installed as follows:

(1) Holes in new pipe shall be machine cut, either in the field or at the factory. No torch cutting of holes shall be allowed.

(2) Prior to attaching saddles or sleeves, the existing pipe shall be thoroughly cleaned, utilizing a brush and rag to the satisfaction of the Owner.

(3) Before performing field machine cut, the watertightness of the saddle or sleeve assembly shall be pressure tested. The interior of the assembly shall be filled with water. An air compressor shall be attached which will induce a test pressure of 200 psi. No leakage shall be permitted for a period of 10 minutes.

G. **Connections of Services to Main Lines:** Connection to the main lines shall be made by tapping into the main through a corporation stop. A corporation cock must be provided in the

water main for each new service line. The joints shall withstand 200 psi test pressure. Bedding of service lines shall be equal to that used for ductile iron pipe.

N. **Installation of Fire Hydrants**: Fire hydrants, in general, shall be installed and jointed as specified above for pipe and fittings. The installation of hydrants shall include the installation of extension sections, if required, and shall include the installation of crushed stone drain as shown on the Details in the Drawings. Fire hydrants shall be installed in accordance with AWWA C503-88 (as amended).

O. **Blocking and Restraining**: Provide restraint at all points where hydraulic thrust may develop.

(1) Retainer glands shall be used on fire hydrants, fittings and valves in addition to concrete blocking. Retainer glands shall be installed in accordance with the manufacturer's instructions, especially with respect to the torque of set screws. The Contractor shall provide a torque wrench to verify the torque on all set screws which do not have inherent torque indicators.

(2) Provide concrete blocking for all bends, tees, valves and other points where thrust may develop. All piping shall be properly blocked and restrained prior to pressure testing and placing the new line into service. All concrete blocking shall be allowed to achieve initial set prior to any loading of the pipeline. Blocking shall be as shown on the Drawings. Where rodding is required to restrain piping, all thread rods shall be coated as directed by the Owner prior to encasing with concrete and backfilling.

P. **Cleaning**: Before acceptance of any water line, the line must be clean. If the Contractor fails to close the pipe or debris is found to be in the line, the Contractor shall clean the line by pigging or other suitable means at the Contractor's expense. The Contractor must propose a method of pigging the lines for approval by Owner before proceeding with any pigging operations. This request must be submitted in writing and shall be approved in writing by the Owner prior to line purging. No separate payment shall be made for the above work.

Q. **Testing Pressure Lines**: Testing of ductile iron pressure pipe shall be in accordance with AWWA. The pipe line shall be filled with water, air completely exhausted and a leakage test made. The Contractor shall furnish a test pump, and means for accurate measurement of water introduced into a line during testing, and shall furnish and install corporation stops in the line as required for blowing lines free from air and at the test pump location.

(1) Test pressures for the water line shall be 200 lbs per square inch pressure or as otherwise noted. The test pressure shall not be allowed to fall more than five (5) pounds per square inch below test pressure during the test. The water introduced into the line to maintain this pressure shall represent the leakage. Allowable leakage in gallons per hour per 1000 feet of pipeline shall not exceed 0.1062 D (D is the nominal pipe diameter in inches). Minimum test period shall be twenty-four (24) hours. If in the opinion of the Owner additional testing is required, such additional testing shall be performed at no additional cost to the Owner.

(2) The Contractor shall furnish, install, and remove all temporary bulkheads, flanges, or plugs, to permit the required pressure tests, and shall furnish all equipment and labor to properly carry out such tests and to replace defective material.

(3) Any cracked or broken pipe shall be removed and replaced with sound pieces. Joints which leak shall be carefully remade. Remade joints and replaced material shall be re-tested under the same conditions of operation. If joints or materials are then found to be defective, they shall be remade and replaced until the line passes the required test.

R. **Sterilization of Pipe Lines**: The AWWA Standard for Disinfecting Water Mains ANSI/AWWA C 651-~~92~~ 14 (as amended to date) and these Specifications shall be the standard used to disinfect all new water lines and any existing lines contaminated during construction. The Contractor shall furnish all equipment and labor of every nature to disinfect new lines and any line contaminated during construction.

(7) Clean Lines: Care shall be taken during construction to keep line free from debris, ground water and dirt.

(8) Cross Connections: Cross connections shall not be allowed during testing, flushing, chlorinating, or dechlorinating of the new lines.

(9) Flushing: All new lines shall be flushed before disinfecting. The recommended velocity by ANSI/AWWA C 651-~~92~~ 14 for flushing is ~~2 ½~~ 3 feet per second.

(10) Chlorination: All pipe and appurtenances, both existing and newly constructed which have been exposed to contamination by reason of the construction shall be sterilized after testing and flushing of the line has been completed. The line shall be filled, using the continuous feed method, with fresh water containing ~~50~~ 25 parts per million of chlorine and allowed to stand for 24 hours. After a 24-hr holding period in the main there shall be a free chlorine residual of not less than 10 mg/L. During the test, chlorine residuals shall be checked every 1200 feet on new lines, at the end of each new line, and at the end of all new service lines or connections. All super chlorinated water lines shall be flushed by the Owner (DU Lab Personnel) with the assistance of the contractor. Contractor will be responsible for Chemicals (chlorination or de-chlorination) if and when secondary or multiple test are required due to a failed test.

(11) Dechlorination: After the new lines have been chlorinated for 24 hours, the chlorinated water shall be flushed from the lines. The owner (DU Lab) will authorize areas that de-chlorination will be required. Owner will provide initial de-chlorination chemicals. Contractor will be responsible for Chemicals (chlorination or de-chlorination) if and when secondary or multiple test are required due to a failed test.

(12) Bacteriological Tests: After final flushing and before connection of new mains to existing mains, two consecutive sets of acceptable samples, taken at least 24 hours apart, shall be collected from the new main. At least one set of samples shall be collected from each 1200 feet of the new line, plus one set at the end of the line and one set of samples at the end of each branch line. All samples shall be tested for bacteriological quality in accordance with Standard Methods for the Examination of Water and Wastewater (Latest edition), and shall show the absence of coliform organisms. If the bacteriological tests do not pass, the procedure shall be repeated until they are successful. Owner will provide initial de-chlorination chemicals. Contractor will be responsible for Chemicals (chlorination or de-chlorination) if and when secondary or multiple test are required due to a failed test. All samples shall be obtained and tested by the Owner.

(13) Connections: After the pipe and appurtenances have been flushed, tested, chlorinated, and have passed the bacteriological test, they may be connected to the existing system.

(3) Connections Equal to or Less than One Pipe Length (18 feet): The new pipe, fittings, and valves required for the connections shall be spray disinfected or

swabbed with a minimum 1% solution of chlorine just prior to being installed, if the length of connection from the new main to the existing main is equal to or less than 18 feet.

(4) Connections Greater Than One Pipe Length: The pipe required for the connection must be set up above ground, chlorinated and bacteriological samples taken as described above if the length of connection is greater than 18 feet. After the bacteriological tests have proven satisfactory, the new pipe can be used in connecting the new main to the existing system. After the samples have been taken, the ends of the new pipe must be closed with water-tight plugs or caps until the connections are made.

PART 3 - Water Valves and Accessories

Scope:

Contractor shall provide and install all valves as shown on the Drawings or specified herein. Valves shall be of same manufacturer throughout where possible. Manufacturer's name and pressure rating of the valve shall be clearly marked on the valve body. Valves shall comply with ANSI/NSF 61 as related to the Safe Drinking Water Additives Program.

Submittals:

A. Submit complete shop drawings of all valves and appurtenances to the Owner for approval. Clearly indicate make, model, location, type, size and pressure ratings. Include operating and maintenance data for all valves.

B. The valve manufacturer shall include as a part of the submittal package, a written affidavit of compliance with ANSI/NSF 61 and also include specific reference to the authorized certifying agency along with the approval identification detail.

Products and Implementation:

A. **Resilient Seated Gate Valves**: The Contractor shall install resilient seated gate valves as indicated on the Drawings, or specified by the Owner. Resilient seated gate valves size 4-inch through 24-inch shall conform, in general, with AWWA C 509 as amended to date, shall be equipped with O-ring packing and shall be as follows:

(1) General Construction: Resilient seated gate valves shall be of the highest quality and finish, and shall open and close freely and easily. With the valve open, an unobstructed waterway shall be afforded, the diameter which shall not be less than the full nominal diameter of the valve. If guides or guide lugs are used, the design shall be such that corrosion in the guide area does not affect sealing. Resilient seats may be applied to the body or gate and shall seat against a corrosion-resistant surface. The surface may be either metallic or non-metallic. Resilient seats shall be bonded or mechanically attached to either the gate or valve body. The mating surface of the resilient seat shall be machined to a smooth, even finish. All stems shall be forged bronze stems.

(2) Working Pressure: Water working pressure for valves shall be 250 psi.

(3) Operation: All valves shall open left. Valves shall be operated by nut. Operating nuts shall conform to the present standard of the Owner, and shall have an arrow cast on them, indicating the direction for opening the valve.

(4) Marking: Each valve shall be plainly marked with the manufacturer's name or particular mark, the year of manufacture, the size of the valve, and designation indicating working pressure, all cast on the bonnet or body.

(5) Spacing: In-line valve spacing will not exceed 2,400 linear feet for water mains being used for distribution that are less than or equal to 24-inch in size. For transmission mains, valve spacing will be determined in the design of the project.

(6) Vertical Installation: Valves shall be for vertical installation only, with operating nut and N.R.S.

(7) Testing: All gate valves shall be tested in accordance with AWWA standards.

(8) Jointing: All gate valves shall be furnished with mechanical joints, and necessary bolts, glands, and gaskets except valves in hydrant runs and these shall be flange and mechanical joint.

(9) Manufacture: Valves shall be furnished as manufactured by Mueller, Clow, or equal.

B. **Butterfly Valves**: The Contractor shall install the butterfly valves complete with valve operators and accessories as shown on the Drawings or specified on water transmission mains larger than 24-inch in size. Valves and accessories shall be in accordance with the applicable ASTM and/or ANSI/AWWA Specifications, as amended to date, and shall be manufactured by Henry Pratt or equal.

(1) General: The butterfly valves shall be rubber seated and shall fully comply with AWWA Specifications C 504. The seat shall be natural rubber or synthetic rubber compound which shall be mechanically retained or bonded to the valve body or mechanically retained or bonded to the valve body or mechanically retained on the valve disc. All butterfly valves and operators shall be designed for 250 psig operating pressure. Valves shall be bubble tight at rated pressures and shall be satisfactory for applications involving valve operation after long periods of inactivity. Valve discs shall rotate 90^0 from full open position to the tight shut position. A certification attesting to operation and leak test shall be furnished with the valves upon shipment. Wafer type valves are not acceptable.

(2) Valve Body: The valve body shall be of cast iron conforming to ASTM A 126, Class B, with flanged ends and drilling in accordance with ANSI B 17.1, Class 125 or with manufacturer's standard mechanical joints conforming to ANSI 21.11, with necessary nuts, bolts, glands, and gaskets. Drilled and tapped holes are permitted where required at the body bearing trunnions. The body shall be designed to withstand the internal forces acting directly and the forces resulting from the thrust of the operating mechanism. Trunnion bosses shall be located at diametrically opposite points in the valve body which shall be accurately bored to accept permanently self-lubricated shaft bearing bushings. The trunnion box at the outer trunnion shall include a factory set two-way bronze thrust bearing and a cast iron thrust bearing cover.

(3) Valve Shafts: Valve shafts may consist of a one-piece unit or may be the "stub-shaft" type. Valve shafts shall be turned, ground, and polished. Valve shafts shall be constructed of 18-8 Type 304 Stainless Steel (AWWA A 296). Shaft diameters shall meet requirements established by AWWA C 504, or service required. Valve shafts shall be securely attached to the valve disc by means of taper pins. Taper pins shall be mechanically secured.

(4) Valve Disc: Valve discs 20-inches and smaller shall be constructed of alloy cast iron ASTM A 436, Type 1 (Ni-Resist), ductile iron ASTM A 536, Class 65-45-12 or cast iron ASTM A 41. Valve discs 24-inches and larger shall be constructed of ductile iron ASTM A 536, Class 65-45-12 or cast iron ASTM A 48 with 18-8, Type 304 stainless steel seating edges. The valve discs shall be designed to withstand bending and bearing loads resulting from the pressure load and operating forces. The faces to the discs shall be smooth and free of external projections. All retaining or pinning hardware in contact with liquids shall be monel or 316 stainless steel.

(5) Valve Seats: Valve seats shall be natural rubber or Buna "N" rubber. Rubber seats in the valve body shall be retained by 18-8 stainless steel mechanical means, or bonded, without retaining hardware in the flow stream. Rubber seats attached to the disc shall be retained with an 18-8 stainless steel clamp ring and stainless steel bolting. Retaining ring cap screws shall pass through the rubber seat and be self-locking. Mating seat surfaces for resilient seats shall be 18-8 stainless steel. Seats should be a full 360^0 without interruption. Valve seats shall be designed to permit removal and replacement in the field for valves 30-inches in diameter and larger.

(6) Valve Bearings: The valve shall be fitted with sleeve type bearings. Bearings shall be corrosion resistant and self-lubricating. Bearing load shall not exceed 1/5 of the compressive strength of the bearing or shaft material. Bearing material must have coefficient of friction no greater than 0.10 which must be maintained regardless of wear.

(7) Testing: Hydrostatic and leakage tests shall be conducted in strict accordance with AWWA C 504, Section 5, except that the leakage test will be performed after the operator has been mounted on the valve.

(8) Affidavit of Compliance: The manufacturer shall provide an "Affidavit of Compliance" that the valve furnished complies with the applicable provisions of AWWA C 504.

(9) Painting: All surfaces of the valve shall be clean, dry and free from grease before painting. The interior and exterior valve surfaces except for disc, seating and finished portions shall receive two coats of asphalt varnish in accordance with Federal Specification TT-V-51C.

(10) Manufacture: Valves shall be furnished as manufactured by Henry Pratt, or equal.

(11) Spacing: In-line valve spacing for transmission water mains will be determined for as part of the design for each new transmission main.

(12) Valve Operators: Valve operators shall conform to AWWA Specification C 504, as amended to date, and shall be equipped with mechanical stop-limiting devices to prevent over travel of the disc in the open and closed positions.

a. Manual operators, valve sizes 16" and larger, shall be of the totally enclosed oil bath lubricating gear reducing type. Primary gearing shall consist of a self-locking worm gear constructed of high tensile bronze and a worm constructed of hardened alloy steel with the thread ground and polished. Valve sizes smaller than 16" may have the slotted lever or link-lever design.
b. The operators shall be designed to hold the valve in any intermediate position between fully opened and fully closed without creeping or fluttering.

c. Extension stems: Valves shall have extension stems, chain wheels, or floor stands or extension bonnets with handwheels as shown. Extension stems shall extend from the valves to the connections with the operators.
d. Hand wheels for operators shall be mounted in a vertical plane with horizontal shafts and equipped with locking devices and position indicators.
e. Operators: Operators for buried valves shall have extension stems, 2 inch square operating nuts and valve boxes.

C. **Valve Boxes**: Valve boxes shall be two-piece, with covers. The covers shall have the word "WATER" inscribed on the top. The bottom part of the valve box may be 6-inch cast iron pipe. The top part shall be of the sliding type sized to fit over the 6-inch pipe and be 36 inches in length. Valve boxes and covers shall be constructed of cast iron. The 6-inch pipe shall extend not less than 18 inches into the sliding top.

(1) Extension stems shall be furnished for all valves so as to bring the 2 inch square AWWA operating nut of such valve within six inches of the top of the valve box. Operating nuts shall have an arrow cast on the top indicating the direction for opening the valve. Provide ground level position indicator. The Contractor shall also provide concrete valve box markers which shall extend a minimum of 12 inches above finished grade.

(2) Tools: One socket wrench of proper length for valve operation shall be provided by the Contractor.

D. **Tapping Sleeve and Tapping Valve**: Tapping sleeves for all taps on Ductile Iron or Cast Iron Mains shall meet AWWA C223-02 and be split sleeve, mechanical joint type with flanged valve connections furnished by Mueller or equal. Tapping sleeves for taps on existing HDPE Mains shall be as manufactured by JCM Model Number 452 or equal. Tapping gate valves with tapping sleeves shall be furnished in accordance with the specifications for gate valves. Hub connection of valve furnished with tapping sleeve shall be mechanical joint. Tapping Machine: The Contractor shall furnish the valve tapping machine and all other equipment required for installation of the tapping sleeve and valve. Tapping sleeves and valves shall be installed under the supervision of skilled mechanics.

E. **Hydrants**: The Contractor shall install fire hydrants as indicated on the Drawings, and as specified herein. Hydrants will be installed at minimum distances required by the fire department with jurisdiction over the particular area where the new water infrastructure is being installed. Where possible, hydrants will be used for flushing on 6-inch lines for all dead ends. All fire hydrants shall meet the requirements of AWWA C 502, and the standards of the Owner. Fire hydrants furnished shall be Mueller "Centurion Improved", or approved equal. Any variances from the Mueller "Centurion Improved" shall be approved in writing by the Owner prior to bidding. All fire hydrants shall be installed with Tamper Proof kits.

(1) Cover: Hydrants shall be four feet depth of cover over the leader pipe.

(2) Extension Stems: However, if the hydrant is located so as to require additional cover the Contractor shall install the required extension sections.

(3) Valve Opening: Valve opening shall be not less than four and one-half inches (4-1/2"). Hydrants shall open left.

(4) Hose and Pumper Connection: Hose nozzles shall be two (2) in number and two and one-half inches (2-1/2") in size. One (1) Pumper connection shall be provided.

(5) Threads: Threads for hose nozzles shall be "National Standard".

(6) Operating Nut: Operating nut shall be square, flat surfaces and be approximately one inch (1") across.

(7) Shoe Connection: Shoe connection shall be six inches (6"), furnished with mechanical joint for connection to spigot of mechanical joint hydrant lead.

(8) General Construction: Hydrants shall be compressive type, self-coiling, non-freezing, and provided with a safety flange and coupling.

(9) The operating unit shall be totally sealed away from the hydrant barrel and all working parts shall be continuously and automatically lubricated form a large oil reservoir and packing gland. Drain mechanism shall be simple, positive, and automatic in operation.

(10) The safety flange on barrel and safety coupling on valve stem shall operate to prevent damage to barrel and stem in case of a traffic accident. The force of the impact shall break the flange and spread the coupling. The construction of the flange and coupling shall be such as to permit rapid and inexpensive replacement. They shall be located above the ground line. Hydrant shall be so constructed as to permit facing nozzles in any direction at any time without digging up the hydrant or cutting off the water. This shall be accomplished by removing safety flange bolts and revolving the head.

(11) All working parts of the hydrant, including the seat ring shall be removable through the top without digging. Seat rings shall be so shaped and arranged as to be readily removable. Seat rings shall be bronze and shall screw into a bronze bushing in the shoe. An O-ring seal between the shoe and seat ring shall provide a watertight non-wearing, permanent seat between shoe and seat ring. This seal shall always come out with main valve removal. Hose connections shall be either threaded and locked in place or breech-locked into the hydrant.

O. **Pressure Reducing & Sustaining Valve:** The Contractor shall install these where shown on the plans or as directed by the Owner. These valves will be installed where high-pressure systems connect to the lower pressure systems, in particular where the additional pressure would cause line pressure to exceed the rated working pressure of the pipeline material.

(1) The valves shall be installed in 4'-0" or 5'-0" diameter reinforced concrete manholes as directed by the Owner. The Unit Price bid for this work should include the manhole housing structure, etc.

(2) The pressure reducing and sustaining valve shall maintain any desired downstream-delivery pressure for which Reducing Pilot Valve is adjusted provided the upstream head does not drop below a determined head. In event upstream head drops to a minimum pressure for which Sustaining Pilot Valve is adjusted, it will cause the main valve to close to sustain the minimum pressure in the higher pressure system, and not serve the lower pressure system, until the head in the higher pressure system comes back to or more than normal.

(3) The main valve shall operate on the differential piston principle such that the area on the underside of the piston is no less than the pipe area, and the area on the upper surface of the piston is of a greater area than the underside of the piston.

(4) The valve piston shall be guided on its outside diameter by long stroke stationary Vee ports which shall be downstream of the seating surface to minimize the

consequences of throttling. Throttling shall be done by the valve Vee ports and not the valve seating surfaces.

(5) The valve shall be capable of operating in any position and shall incorporate only one flanged cover at the valve top from which all internal parts shall be accessible. There shall be no stems, stem guides, or spokes within the waterway. There shall be no springs to assist the valve operation.

(6) The valve body shall be of cast iron ASTM A-126 with flanges conforming to the latest ANSI Standards. The valve shall be extra heavy construction throughout. The valve interior trim shall be bronze B-62 as well as the main valve operation.

(7) The valve seals shall be easily renewable while no diaphragm shall be permitted within the main valve body.

(8) All controls and piping shall be of non-corrosive construction.

(9) A visual valve position indicator shall be provided for observing the valve piston position at any time.

(10) The valve shall be completely piped ready for installation. The valve shall be as manufactured by GA Industries, Cla-Val or equal and shall be provided in the diameters as shown on the plans or as requested by the Owner.

G. **Air release & Vacuum Break Valve**: Air release and vacuum break valves shall be installed where shown on the Drawings and as specified herein. Air release and vacuum break combination valves shall meet the requirements of AWWA C512-99 as amended.

(1) The air release and vacuum break valve shall be of the compact single chamber design with solid cylindrical H.D.P.E. control floats housed in a tubular stainless steel body with epoxy powder coated cast iron or steel ends secured by means of stainless steel tie rods.

(2) The unit price for air release and vacuum break combination valves shall include concrete vaults as shown in the Drawings and specified herein.

(3) The valve shall have an integral 'Anti – Shock' Orifice mechanism which shall operate automatically to limit transient pressure rise or shock induced by closure to twice the working pressure. The intake orifice area shall be equal to the nominal size of the valve i.e., a 6" valve shall have a 6" intake orifice.

(4) Large orifice sealing shall be effected by the flat face of the control float seating against a nitrile rubber 'O' ring housed in a dovetail groove circumferentially surrounding the orifice.

(5) Discharge of pressurized air shall be controlled by the seating and unseating of a small orifice nozzle on a natural rubber seal affixed into the control float. The nozzle shall have a flat seating land surrounding the orifice so that the damage to the rubber seal is prevented.

(6) The valve construction shall be proportioned with regard to material strength characteristics, so that deformation, leaking or damage of any kind does not occur by submission to twice the designed working pressure.

(7) The valve design shall incorporate an over pressure safety feature that will fail without an explosive effect, such as is normally the case when highly compressed air is released suddenly. The feature shall consist of easily replaceable components such as gaskets, seals or the like.

(8) Connection to the valve inlet shall be facilitated by a screwed NPT male end (1" & 2" only) or a flanged end conforming to ANSI B16.1 Class 125 and Class 250 or ANSI B16.5 Class 300 Standards.

(9) Flanged ends shall be supplied with the requisite number of stainless steel or mild steel screwed studs inserted for alignment to the specified standard.

(10) The valve shall be as manufactured by Vent-O-Mat, or equal.

(11) Valve size shall be 2" for all 6", 8" and 12" water mains and 6" for all 24" and 30" water mains to be installed in this project.

H. **Blow Offs**: Blow offs for flushing dead ends will be minimum 4-inch on mains 6-inch and larger and set inside meter box at grade. Blow offs to be used only when hydrants infeasible.

END OF SECTION

SEWER AND ACCESSORIES

333113.01

SECTION 333113.01 – NEW GRAVITY SANITARY SEWER MAINS AND ACCESSORIES

Scope:
This section describes products to be incorporated into gravity sewers and accessories and requirements for installation and use of these items. The Contractor shall furnish all labor, equipment and materials necessary to fulfill the requirements of these specifications. All products and work shall be performed in accordance with the latest revisions of applicable American Society for Testing and Materials (ASTM), American Water Works Association (AWWA), American National Standards Institute (ANSI), Recommended Standards for Wastewater Facilities (Ten States Standards, 1997 Edition), or other recognized standards.

Submittals:
Complete shop drawings and manufacturer's data shall be submitted to the Owner.

Products:
This section of the specifications covers the requirements for gravity sewer mains, manholes and accessories. Gravity sewer mains shall be ductile iron pipe furnished in accordance with the requirements in this section.

A. **Ductile Iron Pipe**: Pipe shall be centrifugally cast and shall conform to ANSI Specification A 21.51 (AWWA C 110) as amended to date, with mechanical or push-on joints and laying lengths of at least 18 feet. Pipe sizes 4" through 12" shall be standard pressure Class 350, and pipe sizes greater than 12" shall be pressure Class 250 unless otherwise indicated herein or on the Drawings. All pipe and fittings must be manufactured in the United States of America.

(1) Fittings: Fittings shall be cast from gray or ductile iron and shall conform to ANSI Specifications A 21.10 (AWWA C 110) as amended to date. All fittings shall have standard mechanical or push-on joints. Fittings for size 4-inch through 12-inch shall be Class 250 for Gray Iron and Class 350 for Ductile Iron. Fittings for size 14-inch through 48-inch shall be Class 150 for Gray Iron and Class 250 for Ductile Iron. Either Gray Iron or Ductile Iron fittings will be permissible unless otherwise specified or shown on the Drawings.

(2) Lining and Coating: Pipe and fittings shall be cement-lined (standard thickness) inside and bituminous coated outside, in accordance with the applicable provisions of ANSI Specification A 21.4 (AWWA C 104) and, ANSI A 21.51 (AWWA C 151), as amended to date. The inside cement lining shall be treated with a bitiminous seal coat.

(3) Weights and Marking: Weights of pipe and fittings shall conform strictly to the requirements of ANSI Specifications. The class designations for the various classes of pipe and fittings shall be cast onto fittings in raised numerals, and cast or stamped on the outside of each joint of pipe and each fitting after the exterior coating has hardened.

(4) Certification: The manufacturer of iron pipe and fittings shall furnish the Owner with a certified report stating that inspection and specified tests have been made and that the results thereof comply with the applicable ANSI Specifications for each.

(5) Quality and Inspection: Latitudes in workmanship and finish allowed by ASTM notwithstanding, all pipe shall have smooth exterior and interior surfaces; be first quality, be free from cracks, blisters, and other imperfections, and be true to theoretical shapes and forms throughout each length. Pipe shall be subject to inspection by the Owner at the pipe plant, trench, and other points of delivery for the purpose of culling and rejecting pipe, independent of laboratory tests, which does not conform to the requirements of this Section. Pipe which does not conform will be so marked by the Owner, and shall not be used in the work. On-the-job repairing of rejected pipe will not be permitted.

(6) Experience of Manufacturer: The pipe manufacturer shall submit evidence, if requested by the Owner, of having consistently produced pipe and joints of the

quality specified herein, and which have exhibited satisfactory performance results in service over a period of not fewer than two years. The pipe manufacturer and the pipe manufacturing process shall be subject to approval by the Owner.

B. **Steel Pipe for Ditch or Creek Crossings**:

(1) Pipe: Pipe shall conform to AWWA Specifications C-202 as amended to date for electrically welded or seamless steel pipe. The pipe shall have a minimum wall thickness of 0.375 inches and shall be furnished in forty foot (40') joints. All welding shall be performed by certified welders.
(2) Lining and Casing: Pipe and fittings shall be cement-lined (standard thickness) inside and bituminous coated outside, in accordance with the applicable provisions of ANSI Specification A 214 (AWWA C 104) and ANSI A 21.51 (AWWA C 151), as amended to date. The inside cement lining shall be treated with a bituminous seal coat.
(3) Certification: The manufacturer of steel pipe and fittings shall furnish the Owner with certified reports stating that inspection and specified tests have been made and that the results thereof comply with the applicable ANSI specifications.

C. **Precast Concrete Manholes:** Precast concrete manholes shall consist of precast reinforced concrete riser sections, eccentric top section unless shown as concentric in the Drawings and a base section conforming to Typical Details shown on Detail Drawings. Precast manhole sections shall be manufactured in accordance with ASTM C 478, as amended to date, and these specifications. Concrete shall have a minimum compressive strength of 4,000 psi when tested in accordance with ASTM C 39, as amended to date. Steel reinforcement shall be as specified in ASTM C 478, as amended to date. Wall and bottom sections shall have a minimum thickness of five inches (5").

(1) Base Sections: Base sections for precast concrete manholes shall have a bottom poured monolithically with the walls. Base sections shall be furnished with inside diameters of 4, 5, and 6 feet as required. Base sections shall be furnished with a minimum height of 24 inches for pipes having a diameter of 8, 10, or 12 inches and a minimum height of 36 inches for pipes having a diameter of 15 or 18 inches. Minimum height for 5 or 6 foot inside diameters shall be 48 inches regardless of pipe size. Base sections with 5 or 6 foot inside diameters shall be reduced to 4 foot inside diameter by means of an adapter ring or transition top. The openings in the base section for the accommodation of the pipe shall be cast to closely conform to job conditions and shall provide a minimum clearance of three inches (3") between the inside bottom of the base and outside bottom of the pipe barrel.
(2) Riser Sections: The riser sections shall be furnished in a minimum of six inch (6") increments and shall be four feet (4') in diameter with, (a) tongue and groove joint to be sealed with 2complete runs of approved butyl rubber or bitumastic material, similar to "E-Z Stik" as manufactured by Concrete Supply Company or (b) O-ring gasket type joint conforming to ASTM C 443, as amended to date. The gasket joint shall be thoroughly cleaned of all loose materials and brushed with an approved Epoxy to give a smooth surface free of any honeycomb. All manhole joints must be externally sealed with a tar epoxy and plastic seal as shown in the standard details.
(3) Alteration to Manholes: All alterations to manholes must be done using a coring machine and boots for the pipes unless approved by the engineer and owner. In the event that the manhole has to be altered after delivery to job site the Contractor may, with permission of the Owner, connect the pipe to the manhole with a collar of mortar and brick. The opening between the pipe and manhole shall have a minimum clearance of one inch (1") and shall be filled from the inside and outside of the manhole with a non-shrink grout.
(4) Repaired and Patched Sections: Repaired and patched sections will not be acceptable unless each individual section so repaired or patched shall first have been

inspected and approved by the Owner, for repair and patching at the manhole plant. Repairs to and patching of "O"-ring grooves and shoulders will not be permitted.

(5) Absorption: Absorption shall not exceed 9 percent when determined in accordance with ASTM C 497, as amended to date.

(6) Testing and Stamping: An inspection, by an independent testing laboratory approved by the Owner, of the manufacturer's plant and product will be required to assure conformity of the precast manholes to these Specifications, and the minimum requirements of ASTM C 478, as amended to date. Each section of precast concrete manhole shall be stamped with the laboratory's stamp. Each stamped section shall indicate the laboratory's configuration that it was accepted in accordance with applicable ASTM Specifications. A copy of such report will be furnished the Owner with submittal of shop drawings for approval. Job site inspection shall be visual for shape, uniformity, and density.

D. **Miscellaneous Iron and Steel:** Miscellaneous iron and steel for straps, brackets and related items shall be as shown and called for on the Drawings. Bolts and nuts shall be of the best quality high strength steel, unless otherwise shown on Drawings. Bolts and nuts in general shall be United States standard dimension. All anchor bolts exposed to the weather shall be of stainless steel, Type 316, unless otherwise specified. Anchor bolts in general shall be placed in forms prior to pouring concrete. When concrete anchors must be used, they shall be Phillips "Red Head" or Rawl "Saber Tooth" self drilling anchors, or equal. Welding under these Specifications may be done by the MIG, TIG or "Electrode" Method in accordance with AWS-ASTM E 6012, as amended to date, (Electrode Method only).

E. **Iron Castings:** Castings shall be of gray-iron conforming to ASTM A 48, as amended to date. Manhole and step castings shall be as shown on the Detail Drawings unless otherwise specified. Castings shall be tough, close-grained and smooth, free from blow holes, blisters, shrinkage stains, cracks, cold shots and like defects. No plugging of defective castings will be permitted. Castings shall be made accurately to dimensions shown on the Drawings or ordered and shall be planed or ground where necessary, whether marked or not, to secure perfectly flat bearing surfaces. Allowance shall be made in the patterns so that the specified thickness of metal will not be reduced. No casting will be accepted, the weight of which is less than the theoretical weight, based on required dimensions, by more than five percent (5%).

F. **Painting:** Straps, brackets and related items shall be primed in the shop with one (1) coat of Inertol Rust inhibitive Primer 621 FDA, 1.5 dry mil thickness. Coating in the field will be with one (1) coat of Inertol No. 49 Thick, 5.0 dry mil thickness. Manhole frames, covers and steps shall be given one coat of an asphaltic or bituminous paint which results in a smooth and tough well-bonded coating. No separate payment will be made for the above work. The cost of such work, and all cost incidental thereto, shall be included in the unit prices bid for the item to which the work pertains.

G. **Polyethylene Encasement:** Polyethylene encasement shall be 60 mil polyethylene sheet and shall be used to wrap the sewer pipe where required in the drawings or as directed by the owner.

Implementation:

A. **Unloading:** Equipment and facilities for unloading, hauling, distributing and storing materials shall be furnished by the Contractor and shall at all times be available for use in unloading materials. Delays in unloading railroad cars, unloading trucks, or hauling from freight terminal which incur demurrage, truck waiting charges or terminal charges shall be at the expense of the Contractor.

B. **Handling:** Pipe, fittings and other material shall be carefully handled so as to prevent breaking and/or damage. Pipe may be unloaded individually by hand but shall not be unloaded by rolling or dropping off of trucks or cars. Preferred unloading is in units using mechanical equipment, such as fork lifts, cherry pickers or front end loaders with forks. If fork lift equipment is not available units may be unloaded with use of spreader bar on top and nylon strips or cables (cushioned with rubber hose sleeve) looped under the unit.

C. **Distributing:** Materials shall be distributed and placed so as to least interfere with traffic. No street or roadway may be closed without first obtaining permission from the proper authorities. The Contractor shall furnish and maintain proper warning signs and obstruction lights for protection of traffic along highways, streets, and roadways upon which material is disturbed. No distributed material shall be placed in drainage ditches.

D. **Storage:** All pipe, fittings and other materials which cannot be distributed along the route of the work shall be stored for subsequent use when needed. The Contractor shall make his own arrangements for the use of storage areas; except that, with permission, he may make reasonable use of the Owner's storage yards. All pipe must be stockpiled on level ground. Timbers must be placed under the pipe for a base and to prevent dirt and debris from washing into the pipe. No separate payment shall be made for the above work.

E. **Location and Grade:** Where new sewer lines are to be constructed, the line and grade of the sewer, and the position of manholes and other structures, will be given by the Owner or Owner. The grade line shown and specified means the invert of the pipe. The price for trenching shall include the trench for the depth below the grade line necessary to lay the sewer to this grade, but measurements for payment will be made only to the grade line. Subsidiary lines and grades shall be laid out by the Contractor from the controlling lines and benchmarks established by the Owner, or from measurements shown. All lines and grades shall be subject to checking by the Owner, but that checking shall in no way relieve the Contractor from responsibility for correctness. The Contractor shall provide such stakes, materials, labor and assistance as the Owner may require in laying-out work, establishing benchmarks, and checking and measuring the work.

F. All gravity sewer lines must meet minimum grade requirements. These requirements are listed in the following chart:

Pipe Diameter	Minimum Grade
8	0.50%
10	0.30%
12	0.22%
15	0.16%
18	0.12%
21	0.10%
24	0.08%
30	0.06%
36	0.05%

G. For any sewers exceeding an 18.8% slope, concrete anchor blocks are required in accordance with the following:

Slope (%)	Distance Between Anchors (LF)
18.8 to 35%	Not over 36 LF
35 to 50%	Not over 24 LF
> 50%	Not over 16 LF

The anchor blocks must extend a minimum of 19 inches below the main and 6 inches above the main. Crushed stone is also required as a bedding for the sewer pipe.

H. **Order of Work:** The Owner reserves the right to accept and use portions of the work when it is considered to be in the public's interest to do so; the Owner shall have the authority to establish the order in which the lines shall be worked.

I. **Inspection:** All work done and materials furnished shall be subject to inspection by the Owner or his authorized representative. Improper work shall be reconstructed and materials which do not conform to the requirements of this Section shall be removed from the work upon notice being received from the Owner of the rejection of those materials. The Owner shall have the right to mark rejected materials and/or the Contractor shall segregate said materials to distinguish them as such.

J. **Organization of Work**: The Contractor shall so organize the work that backfilling and cleanup shall closely follow pipe laying operations and manhole construction. In general, not more than one block of a street or roadway shall be closed for construction at any one time. Before proceeding with trenching operations in a succeeding block, the preceding section shall be backfilled, cleanup completed and the street opened to traffic. For work outside the streets and roadways, backfilling and windrowing, in accordance with the provisions of "General Backfilling" paragraph of Section 312333 Trench Excavation and Backfill shall be performed in such a manner that not more than five hundred (500') feet of trench shall remain open at any one time. Failure on the part of the Contractor to comply with the above provisions in a reasonable manner, in the opinion of the Owner, shall be sufficient cause for the Owner to order a temporary shut-down of further trenching and pipe laying operations until the provisions have been met.

K. **Bedding and Laying of Ductile Iron Pipe:** All sewer pipe shall be laid upgrade, spigots shall point downgrade. The pipe and specials shall be laid in the trench so that, after the sewer is completed, the invert surface shall conform accurately to the grades and alignment fixed or given by the Owner. The interior of all pipes shall be carefully freed of all dirt and superfluous material of every description, as pipe laying proceeds. Defective joints discovered after laying shall be repaired and made tight. Defective pipe shall be removed and proper replacement made. Ductile iron pipe for gravity sewers and force mains shall be laid as specified using the following type of bedding required for the depth cover for the various sizes of pipe to be installed.

(1) Flat Bottom Trench: New sewer pipe shall not be installed in a flat bottom trench.

(2) Selected Materials: Pipe shall be installed using Type 3, Type 4, or Type 5 trench conditions. A Type 3 trench has a base with a minimum of 4 inches of loose soil with backfill lightly consolidated to top of pipe. A Type 4 trench has a base with a minimum 4 inches of sand, gravel, or crushed stone to a depth of 1/8 the pipe diameter and backfill must be compacted to top of pipe. A Type 5 trench has a base with a minimum of 4 inches of compacted granular material bedded to centerline of pipe with backfill of compacted granular or select material to top of pipe. Backfill shall be as specified in the 'Selected Backfilling' and 'General Backfilling' paragraphs of specification Section 312333.

(3) Cover: Maximum depth of cover for Ductile iron pipe of the various classes and sizes to be installed are as follows:

Pipe Size (Inches)	Pressure Class	Nominal Thickness (In.)	Laying Condition Type 3 Maximum Depth of Cover – ft.	Type 4	Type 5
4	350	0.25	69	85	100+

6	350	0.25	37	47	65
8	350	0.25	25	34	50
10	350	0.26	19	28	45
12	350	0.28	19	28	44
14	250	0.28	15	23	36
	300	0.30	17	26	42
	350	0.31	19	27	44
16	250	0.30	15	24	34
	300	0.32	17	26	39
	350	0.34	20	28	44
18	250	0.31	14	22	31
	300	0.34	17	26	36
	250	0.36	19	28	41
20	250	0.33	14	22	30
	300	0.36	17	26	35
	350	0.38	19	28	38
24	200	0.33	12	17	25
	250	0.37	15	20	29
	300	0.40	17	24	32
	350	0.43	19	28	37
30	150	0.34	9	14	22
	200	0.38	12	16	24
	250	0.42	15	19	27
	300	0.45	16	21	29
	350	0.49	19	25	33
36	150	0.38	9	14	21
	200	0.42	12	15	23
	250	0.47	14	18	25
	300	0.51	16	20	28
	350	0.56	19	24	32
42	150	0.41	9	13	20
	200	0.47	12	15	22
	250	0.52	14	17	25
	300	0.57	16	20	27
	350	0.63	19	23	32
48	150	0.46	9	13	20
	200	0.52	11	15	22
	250	0.58	13	17	24
	300	0.64	15	19	27
	350	0.70	18	22	30
54	150	0.51	9	13	20
	200	0.58	11	14	22
	250	0.65	13	16	24
	300	0.72	15	19	27
	350	0.79	18	22	30
60	150	0.54	9	13	20
	200	0.61	11	14	22
	250	0.68	13	16	24
	300	0.76	15	19	26
	350	0.83	18	22	30
64	150	0.56	9	13	20
	200	0.64	11	14	21
	250	0.72	13	16	24
	300	0.80	15	19	26
	350	0.87	17	21	29

L. **Jointing of Ductile Iron Pipe with Mechanical or Push-on Joints**: Proper and suitable tools and equipment shall be used for the safe and convenient handling and laying of ductile iron pipe. Care shall be taken to prevent damage to the exterior coating and interior cement lining. All pipe shall be carefully examined for cracks and other defects before laying. If any pipe or fitting is discovered to be defective after having been laid, it shall be removed and replaced with sound material at the expense of the Contractor. Whenever pipe is required to be cut, the cutting shall be done by skilled workmen using an abrasive wheel cutter. Use of a cold chisel or oxyacetylene torch will not be permitted.

(1) Mechanical Joints: Mechanical joints shall be made only by experienced mechanics. Sockets and spigots shall be washed with soapy water before slipping the gland and gasket over the spigot end of the pipe. The spigot shall be inserted into the socket full depth, then backed off ¼-inch to provide clearance for expansion. The gasket shall be brushed with soapy water and shall be pushed into position making sure that it is evenly seated in the socket. The gland shall then be moved into position for compressing the gasket. All bolts and nuts shall be made "finger-tight." For joints made in trenches, the bolts shall be tightened to a uniform permanent tightness, using a torque wrench for tightening. Bolts shall be tightened alternately 180 degrees apart. Measurement for payment of sewer lines will be made along the top of the pipe from center to center of manholes. Cast Iron or Ductile Iron fittings will be paid for on the basis of the published weight of the fitting itself, exclusive of the follower rings and gaskets.

(2) Push-On Joints: The groove and bell socket shall be thoroughly cleaned and lubricated before the gasket is inserted. Before inserting the gasket it shall be thoroughly lubricated and manufacturers instructions shall be followed for proper facing and seating of gasket. After the gasket is in place and just prior to joint assembly a generous coating of lubricant shall be applied to the exposed gasket surface. The lubricant used shall be a lubricant supplied by the pipe manufacturer. The plain end shall be inspected and any sharp edges which might damage the gasket shall be removed by means of a file or power grinder. Pipe that is cut in the field must be ground and beveled before assembly. Prior to inserting the plain end of the pipe into bell socket lubricant shall be applied to the beveled nose of the pipe. Small pipe may be pushed home with a long bar but large pipe may require additional power such as jack, lever or backhoe. A timber header shall be used between the bell and bar or other power to avoid damage to the pipe. During assembly of the pipe the joint must be kept straight while pushing. Pipe may be deflected if desired but only after the assembly is completed. Measurement for payment of sewer lines will be made along the top of the pipe from center to center of manholes. Cast Iron or Ductile Iron fittings will be paid for on the basis of the published weight of the fitting itself, exclusive of the follower rings and gaskets.

(3) Mechanical Joint or Push-on Joint Pipe on Piers: Mechanical or Push-on Joint Pipe may be used on piers in gravity sewer lines. Pipe shall be laid with a ¼-inch clearance in each joint to provide for expansion. Jointing of pipe shall be as described above. On mechanical joint pipe the bolts shall be tightened alternately 180 degrees apart but be left "finger-tight" until the sewage is diverted into the sewers; then bolts shall be further tightened to a sufficient amount which will prevent leakage of the joint, but which will not prevent slippage which may occur because of temperature stresses. Measurement for payment of Ductile Iron Pipe constructed on piers will be from end to end of Ductile Iron Pipe.

M. **Precast Concrete Manholes**: Precast concrete manholes shall be bedded on not less than six inches (6") of compacted crushed stone at Contractor's expense. The crushed stone shall extend not less than six inches (6") outside the walls of the manhole, and shall be compacted under entire length of pipe within manhole excavation. Manholes shall be 4, 5, and 6 feet in diameter as determined from the schedule of pipe sizes and line deflections, or as shown. The

top of manholes outside of roads, streets, and highways shall extend a minimum of 12 inches above final grade unless otherwise noted.

(1) Connection of Pipe to Manhole: Connections of pipe to manhole for 4-inch through 15-inch pipe shall be made with a flexible joint system. The joint system shall be a neoprene or synthetic rubber boot or sleeve, either cast or core drilled into the wall of manhole. The boot or sleeve shall be clamped and seated to the pipe with a stainless steel band. The boot or sleeve system shall be "LOCK JOINT FLEXIBLE MANHOLE SLEEVE" as manufactured by Interpace Corporation, Parsippany, New Jersey or "KOR-N-SEAL" as manufactured by National Pollution Control Systems, Inc., Nashua, New Hampshire or equal. Connections of pipe to manhole for 18-inch pipe and above shall be made with a collar of mortar and brick. The opening between the pipe and the manhole shall have a minimum clearance of one inch (1") and shall be filled from the inside of the manhole with a non-shrink grout.

(2) Adjustment: The top of the concentric top section shall have a minimum wall thickness of eight inches (8") to accommodate precast concrete adjustment rings. Precast adjustment rings must be installed using at least 2 rings of bitumastic sealant and bedded in non-shrink grout around the perimeter of the ring. A maximum of three (3) brick courses will be allowed for adjustment of manhole to required grade. The top of manholes outside of roads, streets, and highways shall be built to grade twelve inches (12") above ground surface unless otherwise shown on the Drawings. Manholes in roads, etc. shall be built to grade designated by the Owner. Vented manholes shall be constructed to elevations as shown on the Drawings.

(3) Drop Connections: Drop connections will be required when the drop exceeds 2 feet or where called for on the drawings. Drop pipe shall not be smaller than 8-inches. Generally, drop pipe shall be one size smaller than the sewer which they serve. Openings in walls of precast concrete manholes for drop connections shall not be made at joints. Drop connection fittings and riser pipe shall be encased in brick and mortar or formed Class "C" concrete. Drop connections for both brick and precast concrete manholes shall conform with typical details as shown on the Drawings. Drop connections shall be carefully backfilled to prevent dangerous side pressures.

(4) Manhole Inverts: Manhole inverts shall be carefully constructed with cement grout, Class "B" concrete, or cement mortar brickwork; special care shall be taken to lay the channel and adjacent pipes to grade. Cement mortar shall be made of one (1) part cement and two (2) parts clean sharp sand. Channels shall be properly formed, rounded, and troweled smooth. The connections of the sewer with the wall and the channel of the manhole shall be tight and smooth.

(5) Manhole Steps: Manhole steps shall conform to the details shown. Steps for brick manholes shall be installed along a vertical centerline, on approximately 15" centers. Steps shall be firmly and securely built into manhole walls as brickwork proceeds. Steps for precast concrete manholes shall be installed along a vertical centerline, on approximately 14"to 16" centers.

(6) Future Sewer Connections: Where shown, a twelve inch (12") long pipe stub for future sewers, of such size as may be designated, shall be laid to proper grade and alignment and plugged with a factory plug with same type joint as used on the sewer pipe.

(7) **Manhole Frame and Covers:** Manhole frames and covers shall be "Heavy Duty" and constructed in accordance with ASTM A 48 Class 30. The frame weight shall be 190 pounds and the cover weight shall be 130 pounds. The frame pattern shall be V-1480-10 and the cover pattern shall be V-1480-1 as manufactured by Vulcan

Foundry Corp, or equal. The covers for the manholes shall be cast with the word "SEWER" on the face. All manhole frames must be cast into the manhole riser or attached to the precast manhole using ¾" diameter wedge type anchor bolts. Each frame must be sealed with a minimum of one complete ring of bitumastic sealant between the frame and precast manhole. The outside edge of each frame must be grouted with non-shrink grout, the grout must be tapered from the edge of the manhole to the top of the frame.

(8) Payment: Payment for precast concrete manholes will be made from actual field measurements to the nearest one-tenth foot as stated in the Proposal. Measurement for payment will be made from manhole invert to top of precast concrete cone. Payment for drop connections will be made at the unit prices stated in the Proposal, and shall include all necessary pipe, pipe fittings, brick or concrete encasement of drop pipe and extension of manhole base slab. Measurement for payment shall be from invert of TEE to invert of ELL. Payment for manhole frames and covers will be made in accordance with the unit prices stated in the Proposal for the various types. No extra payment will be made for 6-inches of compacted crushed stone bedding under manhole, for manhole steps, for constructing manhole inverts or for furnishing and laying future sewer connections, the cost thereof to be included in the unit prices bid for manhole construction.

N. **Connections to Existing Manholes**: At locations where new sewers are shown to be connected to existing manholes, the Contractor may temporarily block and/or divert sewage flows to facilitate construction operations. The work shall consist of making the opening in the manhole wall, inserting the new pipe to the elevation shown, filling the space in the wall around the pipe with non-shrink mortar, and constructing and remodeling manhole inverts. High-early strength cement shall be used for mortar in order that proper channels may be formed in manhole bottoms with a minimum interruption of service to the existing sewer. The price bid for this work shall include all costs of labor, material, and equipment required to complete each connection and shall include the costs involved in blocking and/or diverting sewage flows, and shall include all costs of delays, temporary works, and maintaining existing sewers in service. No payment will be made for a connection to an existing pipe or manhole stub.

O. **Connections to Existing Sewers**: At locations where new sewers are shown to be connected to existing sewers at a new manhole, the Contractor shall first expose the existing sewer and install a supporting timber beam with suitable straps around the pipe so as to bridge the excavation for the new manhole. The manhole shall then be constructed complete with invert and frame and cover. Under special conditions the Contractor may temporarily block and/or divert sewage flows to facilitate construction operations. Actual physical connection of the sewers will be made at a later date, as directed. The price bid for this work shall include all costs of labor, material, and equipment required to expose and support the existing sewer, block and/or divert sewage flows, make future physical connections, as well as all costs of delays, temporary works, and maintenance of existing sewers in service. Manholes, manhole frames and covers, and drop connections, if required, will be paid for separately in accordance with the unit prices bid for the various items.

P. **House Service Branches**: House service branch connections may be made with wyes, tees or pipe saddles made of the same material as the carrier pipe. In general, house service branches shall incline upward and should match as closely as possible the alignment of the existing services. The Contractor shall use whatever fittings are necessary and up to 10 linear feet of service pipe to properly align the service connection. Service pipe shall be ductile iron or HDPE pipe of the same size as the existing service, except the minimum size shall be 4". For new sewers, the service shall be 6" ductile iron pipe. The 6" ductile iron pipe will be run to the edge of the road right of way. Then a fernco will be used to connect a short 3 foot stub of 4" PVC with a plug. A 4x4 treated wood post shall be set in the ground at the edge of the

service, painted green and extend at least 3 foot above grade. Where required, short radius bends shall be used to connect the service branch to the house service line. Pipe service branches, together with bends, shall be placed on a compacted bed of crushed stone in such a manner as to be self-supporting and to relieve the strain on branches and bends. Payment for wyes, tees or saddles shall be at the price stated in the Proposal in addition to the prices bid for the completed sewer line. Payment for reconnecting existing services shall be made at the unit price as stated in the Proposal and shall include all work necessary to complete the connection, including, but not limited to, all fittings, pumping, bailing, crushed stone, and up to 10 linear feet of service pipe.

Q. **Channel Excavation**: At locations where storm water drainage is obstructed by sewer construction, the Contractor shall excavate new channels or widen and lower the grade of existing channels in accordance with Drawings and directions given. No separate payment will be made for the work of this section. The cost of such work, and all costs incidental thereto, shall be included in the unit price bid for sewers.

R. **Concrete Encasement of Pipes**: Where directed by the Owner, sewer pipe shall be completely encased with Class "B" concrete. The trench shall first be excavated not less than six inches (6") below the bell of the pipe and the pipe laid to line and grade on concrete blocking or equal. Concrete shall then be placed to the full width of the trench, but in no case less than six inches (6") from the pipe bell on either side of the trench, and to a height of not less than six inches (6") above the top of the pipe bell. No backfill material shall be placed in the trench for a period of at least twenty four (24) hours after the concrete encasement has been placed. Concrete encasement will be paid for at the unit price stated in the Proposal and shall include the costs of the additional depth of excavation, the furnishing of concrete blocking, and the laying of pipe to line and grade on the blocking.

S. **Polyethylene Encasement**: Polyethylene encasement shall be installed where required by the Owner due to corrosive soil conditions or potential stray currents in the soil (e.g. gas line easements) in accordance with ANSI/AWWA A21.5/C105.

T. **Closing Pipe:** When the work of pipe-laying is suspended for the night, and at other times, the end of the sewer shall be closed with a tight cover. The Contractor shall be responsible for keeping the sewer free from obstruction.

U. **Inspection and Testing of Manholes**: Vacuum Testing of precast concrete manholes shall be performed on all manholes on a given project. All testing shall be performed in accordance with the requirements of ASTM C 1244-93. All lift holes and any pipes entering the manhole shall be plugged prior to initiating the vacuum test. A vacuum will be drawn and the vacuum drop over a specified time period will be used to determine the acceptability of the manhole. Procedure: (1) The test head shall be placed at the top of the manhole in accordance with the manufacturer's recommendations, (2) A vacuum of 10 in. of mercury shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. The time shall be measured for the vacuum to drop from 10 in. of mercury to 9 in. of mercury, (3) The manhole shall pass if the time for the vacuum reading to drop from 10 in. of mercury to 9 in. of mercury meets or exceeds the values indicated in Table 1, (4) If the manhole fails the initial test, necessary repairs shall be made by an approved method. The manhole shall then be retested until a satisfactory test is obtained.

Table 1 – Minimum Test Times for Various Manhole Diameters

Depth	Diameter, in.								
(ft)	30	33	36	42	48	54	60	66	72
	Time, s								
8	11	12	14	17	20	23	26	29	33

10	14	15	18	21	25	29	33	36	41
12	17	18	21	25	30	35	39	43	49
14	20	21	25	30	35	41	46	51	57
16	22	24	29	34	40	46	52	58	67
18	25	27	32	38	45	52	59	65	73
20	28	30	35	42	50	57	65	72	81
22	31	33	39	46	55	61	72	79	89
24	33	36	42	51	58	64	78	87	97
26	36	39	46	55	64	75	85	94	105
28	39	42	49	59	69	81	91	101	113
30	42	45	53	63	74	87	96	108	121

V. **Cleaning Up:** Before the work is considered complete, all material not used, and rubbish of every character must be removed from the project. All streets, sidewalks, curbs, fences and other private or public facilities and structures disturbed must be in essentially good condition as existed before the work was done. The Contractor shall replace any subsequent settlement of backfill or pavement over trenches and the surfaces brought to grade.

W. **Inspection and Testing**: Sewer lines and appurtenances will be inspected by one of the following methods hydrostatic infiltration and exfiltration testing as per ASTM C 1091 – 90 or low pressure air test as per ASTM C 829 – 90. The maximum acceptable leakage rate shall not exceed 25 gallons per day per inch diameter per mile of sewer. In addition, the sewer mains shall be inspected using closed circuit television methods approved by the Owner. All storm and underdrain lines shall be inspected for leakage, in the presence of the Engineer or his representative. All visible leaks shall be repaired regardless of whether infiltration, exfiltration or air test is within allowable limits. No sewer will be accepted until leakage tests demonstrate compliance with one of the leakage test methods. All sanitary sewer lines shall be tested for leakage, in the presence of the Engineer or his representative. Tests shall be conducted by one or a combination of the following two methods. Where natural ground water levels stand a minimum of two feet (2') above the top of the pipe, the amount of leakage may be determined from measurements made at the lower end of the sewer section under test. Where natural ground water levels do not stand two feet (2') above the top of the pipe, an exfiltration test shall be conducted on each section of sewer. Tests shall be as follows:

(1). Infiltration Test: The infiltration test shall be performed up to an average maximum hydrostatic head of ten feet (10'). Sewers above the test section shall be closed before testing by the installation of suitable watertight bulkheads. The length of the test section shall be determined by the Engineer. The average of six readings at five-minute intervals will be used to determine the rate of infiltration for any one-test section. The rate of infiltration of ground water into any test section of sewer, including manholes, shall not exceed 25 gallons per day per inch diameter per mile.

(2). Exfiltration Test: For the exfiltration test the ends of the pipe in the test section shall be closed with suitable watertight bulkheads. Inserted into each bulkhead at the top of the sewer pipe shall be a 2-inch pipe nipple with an elbow. At the upper end of the test section a riser pipe shall be installed. The test section of pipe shall be filled through the pipe connection in the lower bulkhead, which shall be fitted with a tight valve, until all air is exhausted and until water overflows the riser pipe at the upper end. Water may be introduced into the pipe twenty-four (24) hours prior to the test period to allow complete saturation. House service lines, if installed, shall also be fitted with suitable bulkheads having provisions for the release of air while the test section is being filled with water. During the test period, which shall extend over a period of thirty (30) minutes, water shall be introduced into the riser pipe from measured containers at such intervals as are necessary to maintain the water level at the top of the riser pipe. The total volume of water added during the thirty- (30) minute test period that should not exceed that shown for infiltration in (1) above.

(3). Air Test: After the pipe has been installed and backfilled, the sewer may be tested between manholes by low pressure air test. The air test may be required by the Engineer instead of or in addition to the infiltration or exfiltration test. The pipe shall be filled with air slowly to a constant pressure of 4.0 psig. The pressure shall then be maintained between 3.5 and 4.0 psig for not less than two minutes. The sewer is acceptable if the loss of air from 3.5 psig to 2.5 psig is not less than the time shown in the following table.

Time per 100 Feet of Pipe		
Pipe Diameter(Inches)	Min.	Sec.
8	1	12
10	1	30
12	1	48
14	2	00
15	2	06
16	2	12
18	2	24
20	2	48
21	3	00
24	3	36
27	4	12
30	4	48
36	6	00
42	7	18
48	8	30
54	9	42

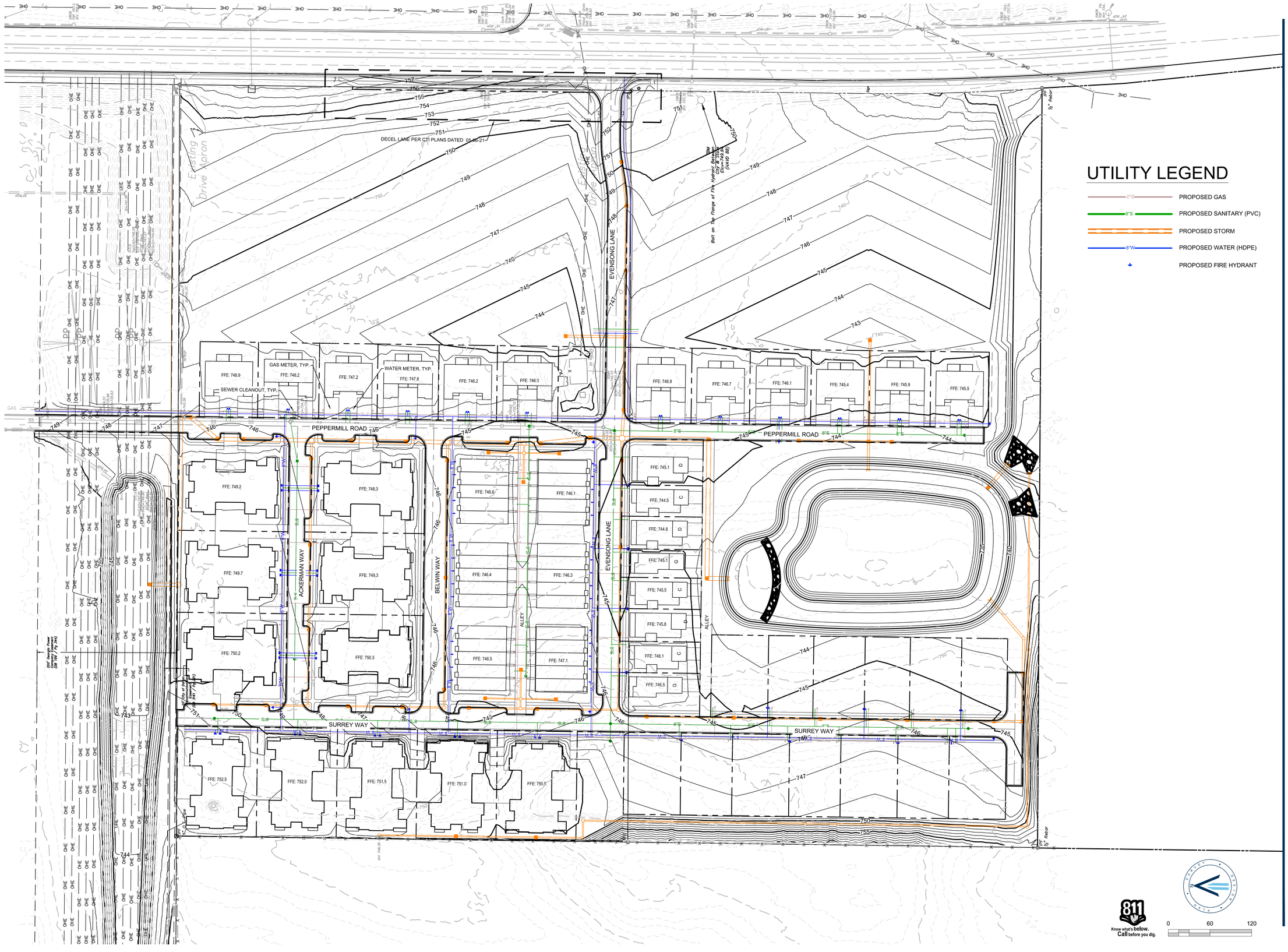
X. **Acceptance of Work**: Sewer lines and appurtenances will not be considered for acceptance until all provisions of the Specifications have been complied with, until all tests have been satisfactorily completed, and until inspection of the work has been made. Sewage flows shall not be diverted into new sewers until after such time as final inspection of the lines has been made by the Owner, and permission granted therefore.

Y. **Cleaning and Internal Inspection**: Before acceptance of any sewer or systems of sewers, lines shall be cleaned and inspected in accordance with these Specifications. Where any obstruction is met, the Contractor will be required to clean the sewers by means of rods, swabs, or other instruments. Lines and manholes shall be clean before final inspection. Final inspection shall be performed by the Contractor with the aid of closed circuit television equipment. The television picture shall be videotaped or recorded on a DVD as an inspection record and written logs prepared which indicate the location of service lines, leaks and other obvious construction defects such as broken sewer pipes, separated joints, etc. Pipe lines shall be straight and show a uniform grade between manholes. The Contractor shall be required to

correct any variations there from or other deficiencies which may be disclosed during the inspection. No extra payment will be made for cleaning, the cost thereof to be included in the prices bid for sewers. Internal inspection by closed circuit television will be paid for on a linear foot basis as stated in the proposal.

Z. **Erosion Control**: All sewers will be installed in accordance with the requirements under Section 312500 Erosion and Sedimentation Control. No separate payment will be made for this work except as provided for in the bid.

END OF SECTION



UTILITY LEGEND

- 2"G — PROPOSED GAS
- 8"S — PROPOSED SANITARY (PVC)
- PROPOSED STORM
- 8"W — PROPOSED WATER (HDPE)
- PROPOSED FIRE HYDRANT

Know what's below. Call before you dig.

0 60 120

RaganSmith
a Pape-Dawson company

GEORGIA REGISTERED No. PE051644 PROFESSIONAL ENGINEER CHARLIE J. JOHNSON 07/19/2024

PATTERSON FARMS PHASE 4

FOR

HOLLIS HOLDINGS, LLC

WHITFIELD COUNTY, GA.

Scale: 1"=60'

Date: 07-18-2024

Approved By: J. JOHNSON

Revisions:

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Drawing Title:

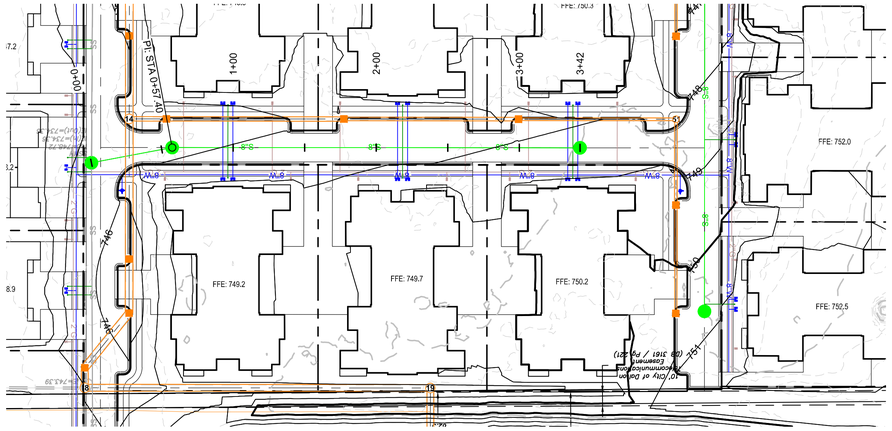
OVERALL UTILITY PLAN

Drawing No.

C4.0

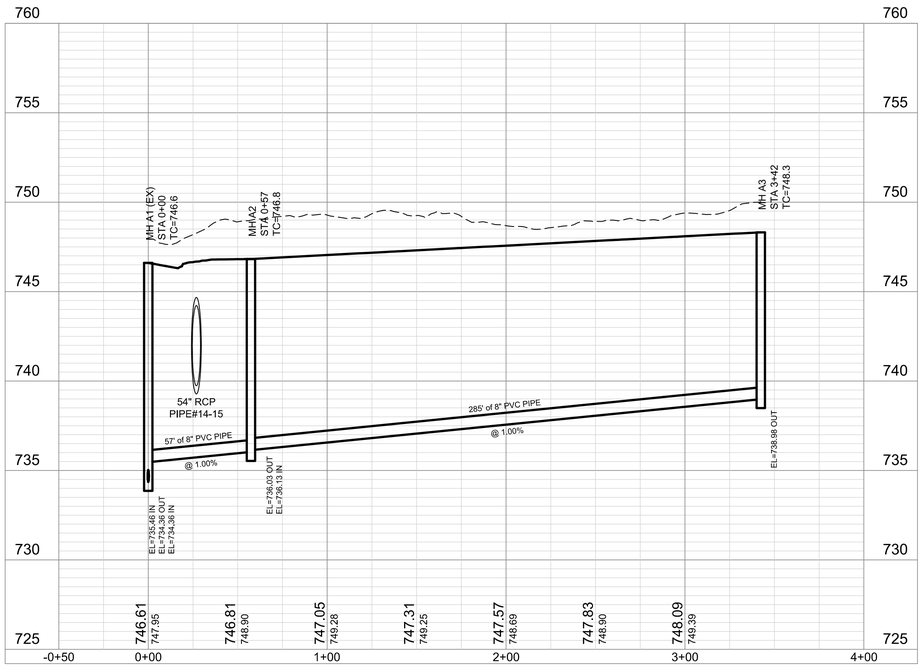
Project No.

21-0130



SANITARY A

PLAN VIEW
1" =50'



SANITARY A

PROFILE VIEW
1" =50' HORIZONTAL
1" =5' VERTICAL

NOTE:

MIN PIPE DEPTH" 36"

MIN VERTICAL SEPARATION
FROM OTHER UTILITIES: 18"

0 50 100

Know what's below. Call before you dig.

RaganSmith
a Pape-Dawson company

GEORGIA REGISTERED No. PE051644 PROFESSIONAL ENGINEER CHARLIE J. JOHNSON 07/19/2024

PATTERSON FARMS PHASE 4

FOR

HOLLIS HOLDINGS, LLC

WHITFIELD COUNTY, GA.

Scale: AS NOTED

Date: 07-18-2024

Approved By: J. JOHNSON

Revisions:

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Drawing Title:

SANITARY P&P - A

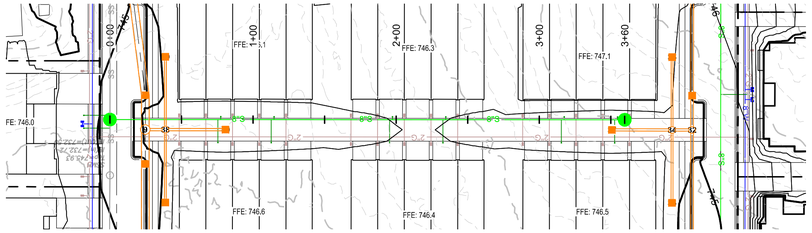
Drawing No.

C4.1

Project No.

21-0130

Know what's below. Call before you dig.



SANITARY B

PLAN VIEW
1" =50'

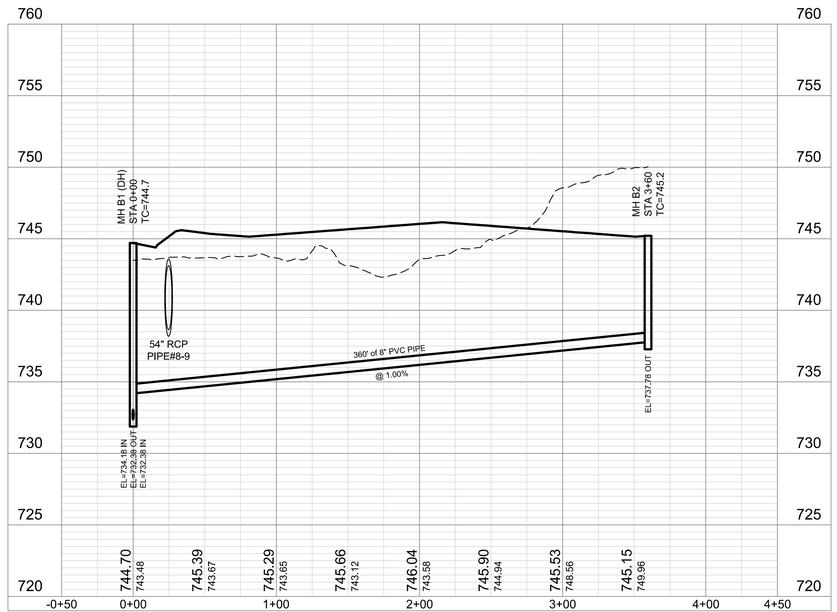
Know what's below. Call before you dig.

0 50 100

NOTE:

MIN PIPE DEPTH" 36"

MIN VERTICAL SEPARATION
FROM OTHER UTILITIES: 18"



SANITARY B

PROFILE VIEW
1" =50' HORIZONTAL
1" =5' VERTICAL

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PLOTTED BY KATHAN BIRD ON: 7/18/2024 1:02 PM LAST UPDATED BY KBIRD ON: 7/18/2024 4:51 PM

RaganSmith
a Pape-Dawson company

GEORGIA REGISTERED No. PE051644 PROFESSIONAL CHARLIE J. JOHNSON 07/19/2024

PATTERSON FARMS PHASE 4

FOR

HOLLIS HOLDINGS, LLC

WHITFIELD COUNTY, GA.

Scale: AS NOTED

Date: 07-18-2024

Approved By: J. JOHNSON

Revisions:

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Drawing Title:

SANITARY P&P - B

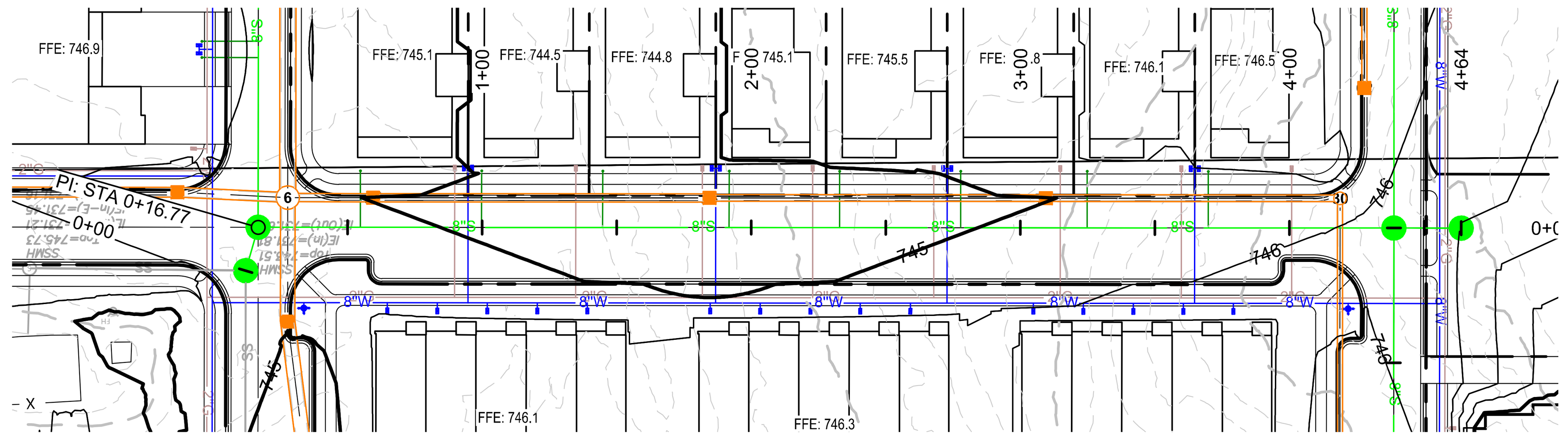
Drawing No.

C4.2

Project No.

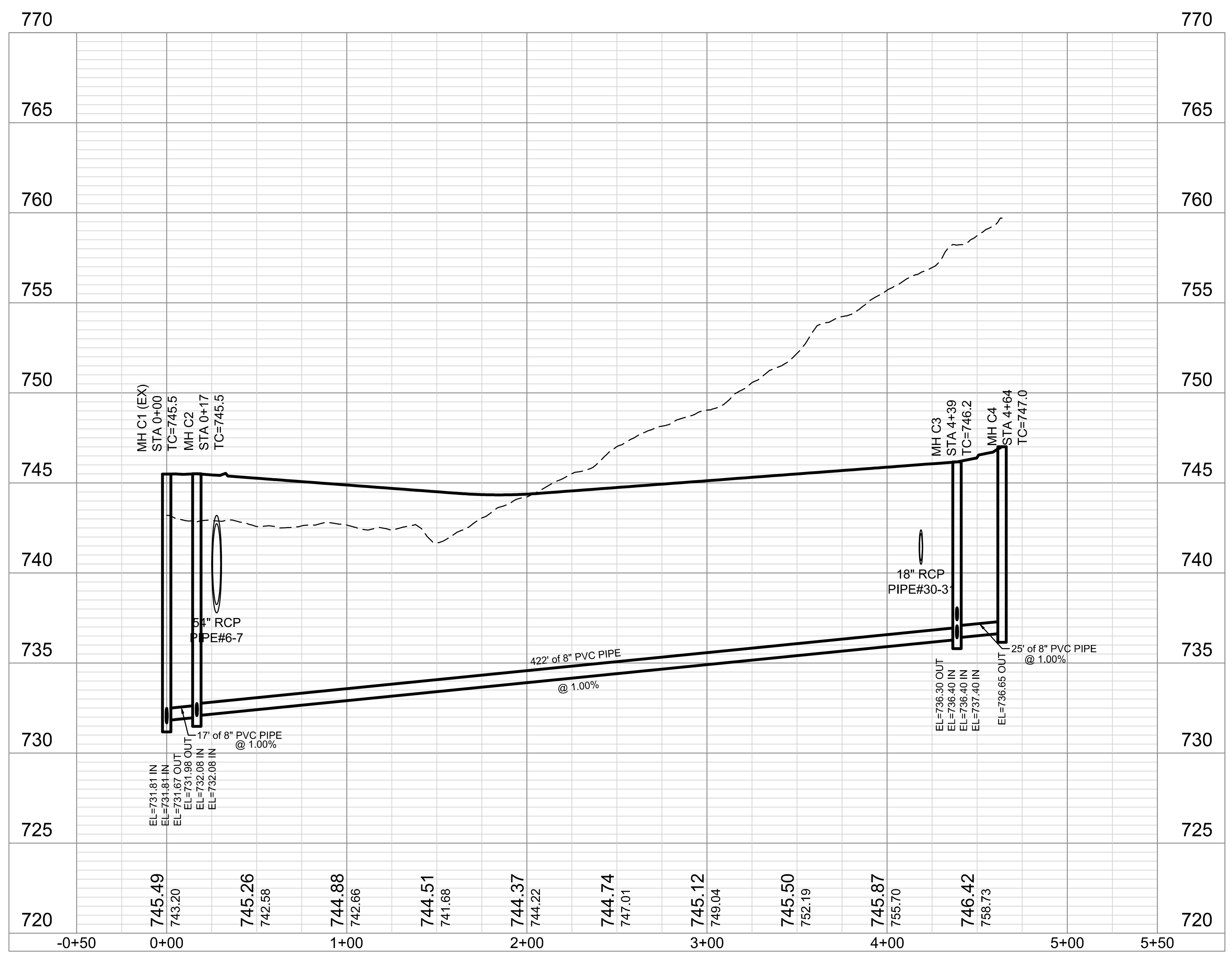
21-0130

Know what's below. Call before you dig.



SANITARY C

PLAN VIEW
1" =50'



SANITARY C

PROFILE VIEW
1" =50' HORIZONTAL
1" =5' VERTICAL

NOTE:

MIN PIPE DEPTH" 36"

MIN VERTICAL SEPARATION
FROM OTHER UTILITIES: 18"

811 Know what's below. Call before you dig.

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GEORGIA REGISTERED PROFESSIONAL ENGINEER No. PE051644 CHARLIE J. JOHNSON 07/19/2024

PATTERSON FARMS PHASE 4

FOR

HOLLIS HOLDINGS, LLC

WHITFIELD COUNTY, GA.

Scale: AS NOTED

Date: 07-18-2024

Approved By: J. JOHNSON

Revisions:

Drawing Title:

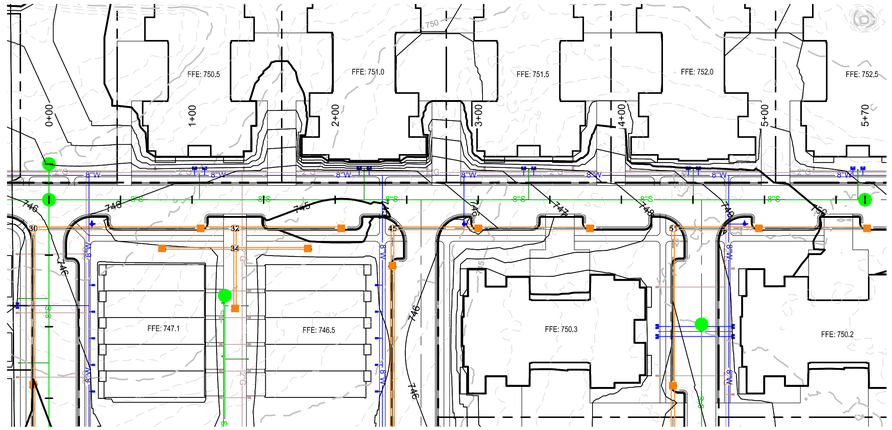
SANITARY P&P - C

Drawing No.

C4.3

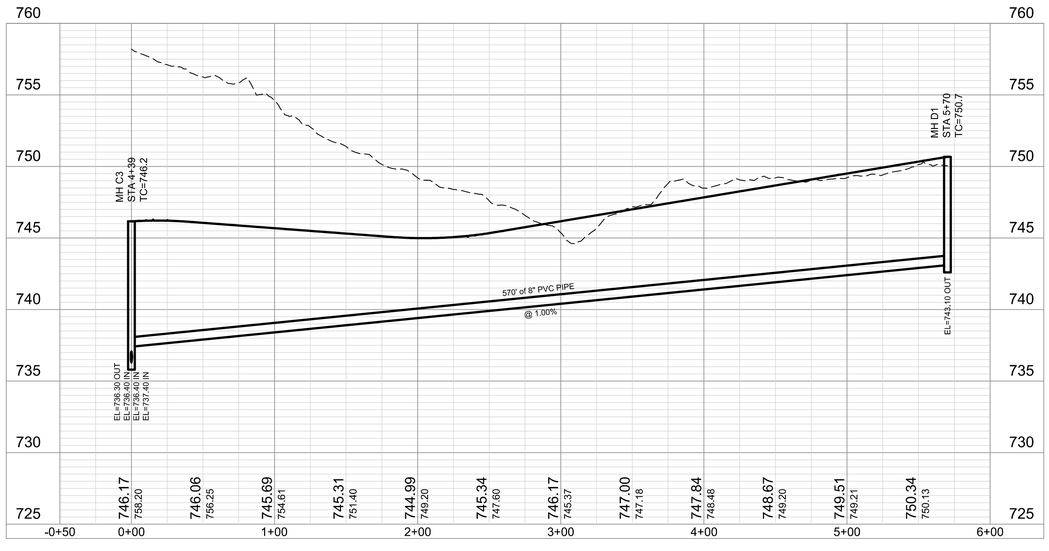
Project No.

21-0130



SANITARY D

PLAN VIEW
1" =50'



SANITARY D

PROFILE VIEW
1" =50' HORIZONTAL
1" =5' VERTICAL

Know what's below. Call before you dig.

0 50 100

NOTE:

MIN PIPE DEPTH" 36"

MIN VERTICAL SEPARATION
FROM OTHER UTILITIES: 18"

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PATTERSON FARMS PHASE 4

FOR

HOLLIS HOLDINGS, LLC

WHITFIELD COUNTY, GA.

Scale: AS NOTED

Date: 07-18-2024

Approved By: J. JOHNSON

Revisions:

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Drawing Title:

SANITARY P&P - D

Drawing No.

C4.4

Project No.

21-0130

Know what's below. Call before you dig.

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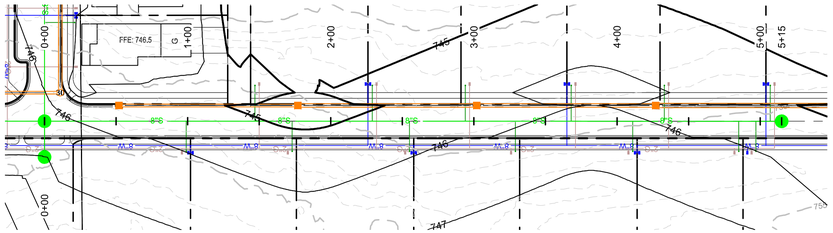
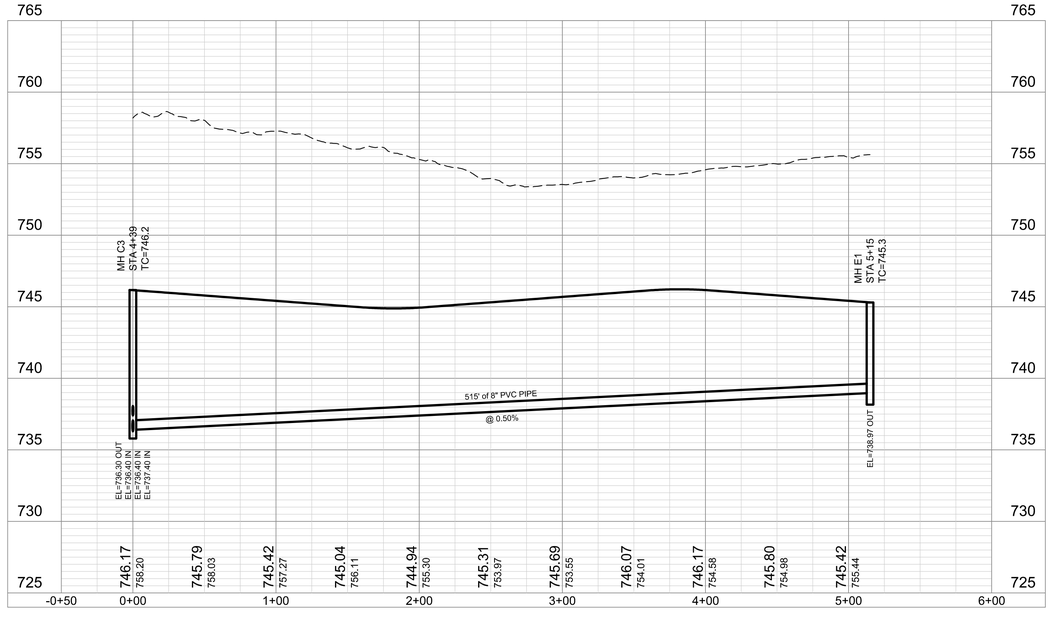


SANITARY E

PLAN VIEW
1" =50'



SANITARY E

PROFILE VIEW
1" =50' HORIZONTAL
1" =5' VERTICAL

Know what's below. Call before you dig.

0 50 100

NOTE:

MIN PIPE DEPTH" 36"

MIN VERTICAL SEPARATION
FROM OTHER UTILITIES: 18"

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a Pape-Dawson company

GEORGIA REGISTERED No. PE051644 PROFESSIONAL ENGINEER CHARLIE J. JOHNSON 07/19/2024

PATTERSON FARMS PHASE 4

FOR

HOLLIS HOLDINGS, LLC

WHITFIELD COUNTY, GA.

Scale: AS NOTED

Date: 07-18-2024

Approved By: J. JOHNSON

Revisions:

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Drawing Title:

SANITARY P&P - E

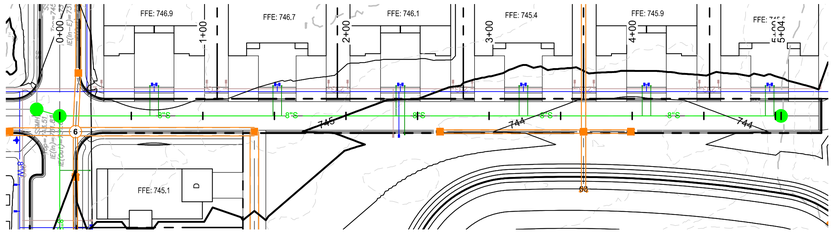
Drawing No.

C4.5

Project No.

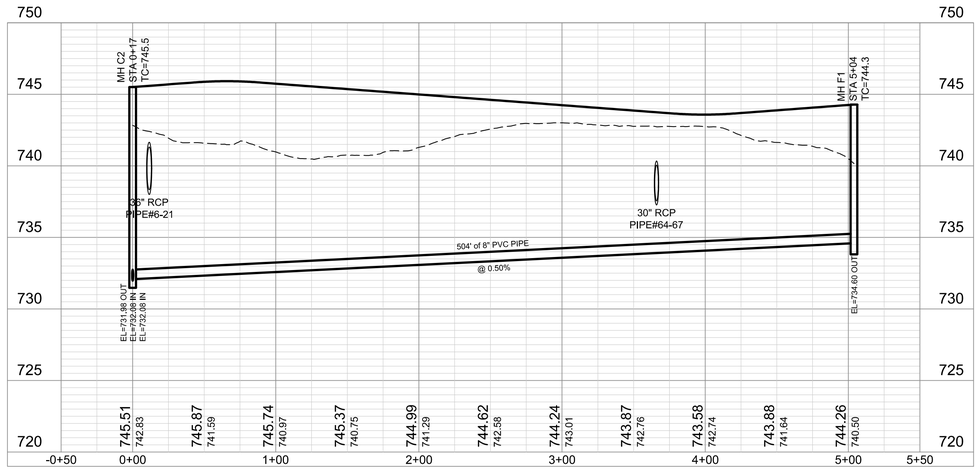
21-0130

Know what's below. Call before you dig.



SANITARY F

PLAN VIEW
1" =50'



SANITARY F

PROFILE VIEW
1" =50' HORIZONTAL
1" =5' VERTICAL

Know what's below. Call before you dig.

0 50 100

NOTE:

MIN PIPE DEPTH" 36"

MIN VERTICAL SEPARATION
FROM OTHER UTILITIES: 18"

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a Pape-Dawson company

GEORGIA REGISTERED No. PE051644 PROFESSIONAL ENGINEER CHARLIE J. JOHNSON 07/19/2024

PATTERSON FARMS PHASE 4

FOR

HOLLIS HOLDINGS, LLC

WHITFIELD COUNTY, GA.

Scale: AS NOTED

Date: 07-18-2024

Approved By: J. JOHNSON

Revisions:

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Drawing Title:

SANITARY P&P - F

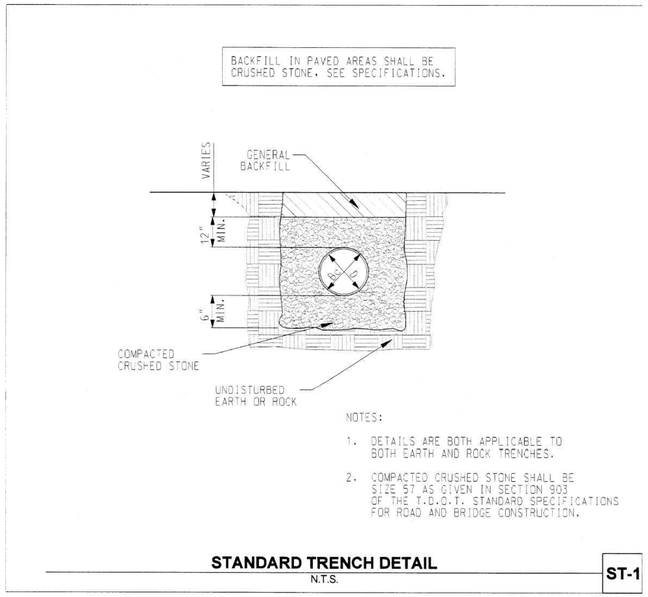
Drawing No.

C4.6

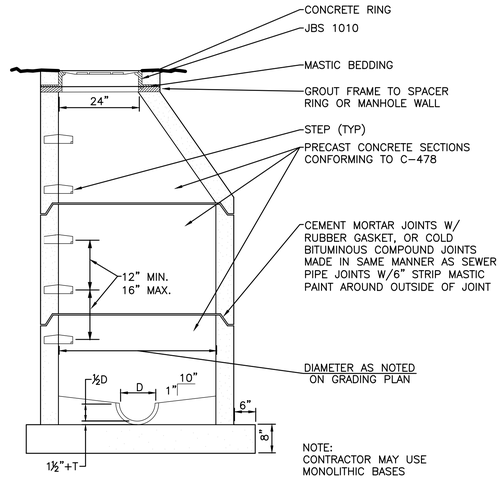
Project No.

21-0130

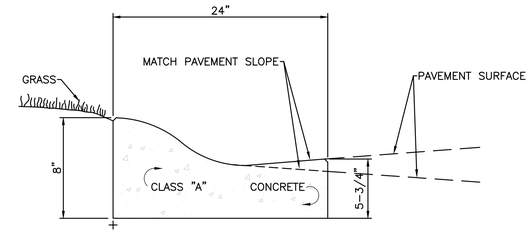
Know what's below. Call before you dig.



STANDARD TRENCH DETAIL ST-1
N.T.S.



JUNCTION BOX
NOT TO SCALE

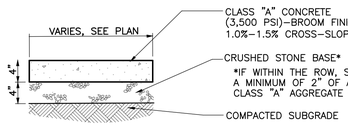


TYPICAL CROSS-SECTION

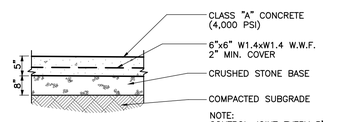
SPECIAL NOTE:
CURB & GUTTER TO BE BUILT AS PER THE DASHED LINES WHEN PAVEMENT SLOPES AWAY FROM CURB, (AREAS OF CURB & GUTTER TO BE BUILT THIS WAY ARE NOTED ON PLAN) CROSS-SLOPES VARY.

1. EXPANSION JOINTS TO BE SPACED A MAXIMUM OF 100' APART OR AS DIRECTED BY THE ENGINEER.
2. EXPANSION JOINTS WILL ALSO BE REQUIRED AT TANGENT POINTS, DRIVE RAMPS AND INLETS.
3. CONSTRUCTION JOINTS ARE TO BE CUT INTO CURB AND GUTTER EVERY 10' TO A DEPTH OF D/4.

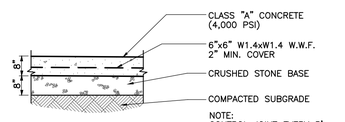
MOUNTABLE CURB WITH GUTTER
NOT TO SCALE



CONCRETE WALK
NOT TO SCALE

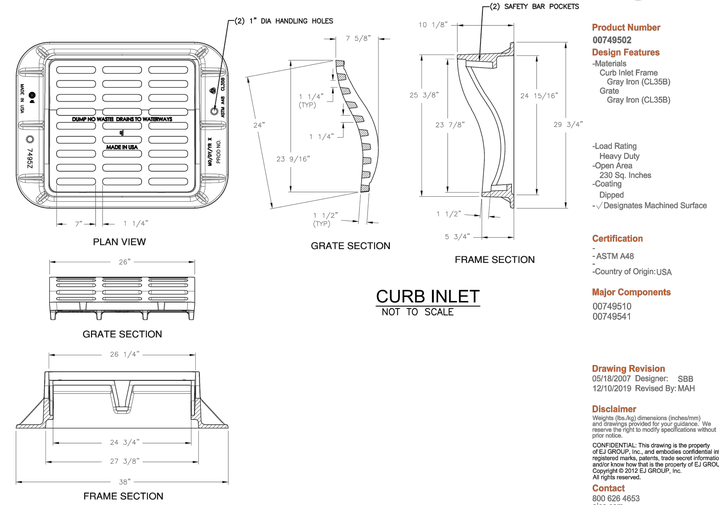


CONCRETE PAVEMENT (FOR DRIVEWAYS)
NOT TO SCALE



CONCRETE PAVEMENT (HEAVY DUTY)
NOT TO SCALE

7495Z 7495M3 Assembly



CURB INLET
NOT TO SCALE

Product Number
00749502

Design Features
-Materials
Curb Inlet Frame
Gray Iron (CL35B)
Grate
Gray Iron (CL35B)

-Load Rating
Heavy Duty
-Open Area
230 Sq. Inches
-Coating
Dipped
-√ Designates Machined Surface

Certification
-
- ASTM A48
-Country of Origin: USA

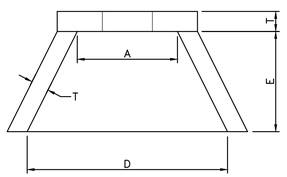
Major Components
00749510
00749541

Drawing Revision
05/18/2007 Designer: SBB
12/10/2019 Revised By: MAH

Disclaimer
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

Contact
800 626 4653
ejco.com

NOTE:
OMIT BASE FLANGE ON ONE SIDE OF FRAME FOR DOUBLE INSTALLATIONS AND END FRAMES OF OTHER MULTIPLE INSTALLATIONS. OMIT ON (2) TWO SIDES (OPPOSITE) FOR CENTRAL UNITS OF MULTIPLE INSTALLATIONS. FOR INSTALLATION WITH CURB INLET TYPE.

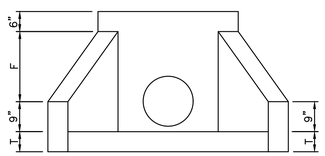


TOP VIEW

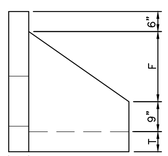
TABLE OF DIMENSIONS					
PIPE SIZES	A	D	E	F	T (MIN.)
15"	2'-6"	5'-0"	2'-6"	1'-9"	6"
18"	2'-6"	5'-0"	2'-6"	1'-9"	6"
21"	2'-6"	5'-0"	2'-6"	1'-9"	6"
24"	4'-0"	6'-6"	3'-0"	3'-3"	6"
30"	4'-0"	6'-6"	3'-0"	3'-3"	6"
36"	5'-6"	8'-0"	3'-6"	4'-5"	6"
42"	5'-6"	8'-0"	3'-6"	4'-5"	6"
48"	5'-6"	8'-0"	3'-6"	4'-5"	6"
54"	7'-0"	9'-5"	4'-6"	5'-9"	6"
60"	7'-0"	9'-5"	4'-6"	5'-9"	6"
66"	8'-6"	11'-0"	5'-6"	6'-11"	6"
72"	8'-6"	11'-0"	5'-6"	6'-11"	6"

CONCRETE: 4000 PSI AT 28 DAYS REINFORCED WITH NO. 4 BARS 10"C.C. EACH WAY WITH WINGS AND TOE SLAB DOGWELLED TO HEADWALL WITH NO.5 BARS.

¾" CHAMFER ON ALL EXPOSED EDGES

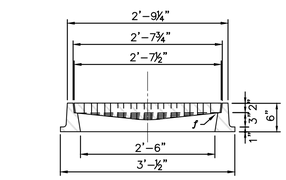


FRONT VIEW



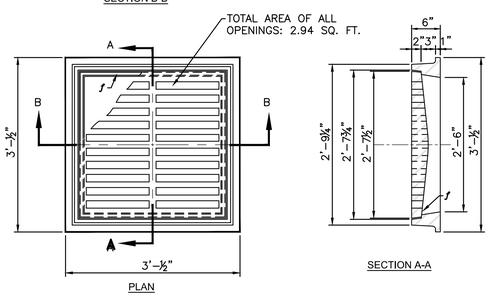
SIDE VIEW

METRO STANDARD DR-160
CONCRETE HEADWALL
NOT TO SCALE



SECTION B-B

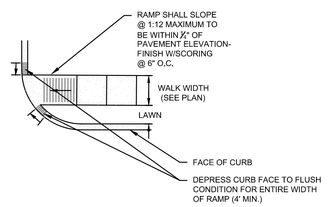
NOTE:
CONTACT SURFACES OF FRAME AND GRATE MARKED "f" ARE TO BE GROUND



PLAN

SECTION A-A

METRO STANDARD DR-132
FRAME AND GRATE FOR SINGLE GRATE INLET
NOT TO SCALE



ACCESSIBLE RAMP
NOT TO SCALE

RaganSmith
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GEORGIA REGISTERED No. PE051644 PROFESSIONAL CHARLIE J. JOHNSON 07/19/2024

PATTERSON FARMS PHASE 4

FOR

HOLLIS HOLDINGS, LLC

WHITFIELD COUNTY, GA.

Scale: #"=##'

Date: 07-18-2024

Approved By: J. JOHNSON

Revisions:

-	-	-
-	-	-
-	-	-
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Drawing Title:

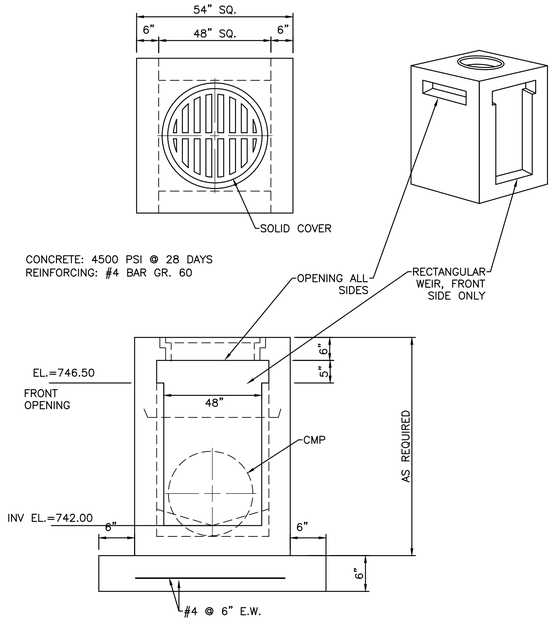
CIVIL DETAILS

Drawing No.

C5.0

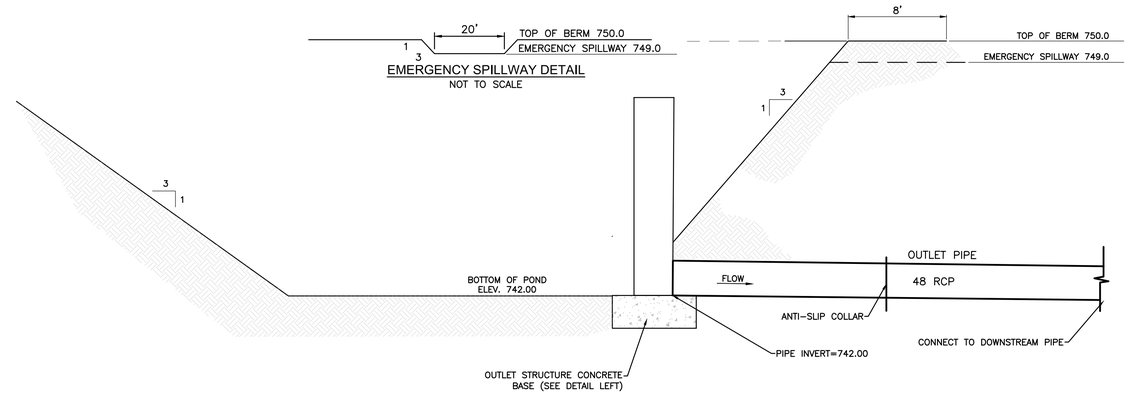
Project No.

21-0130



OUTLET CONTROL STRUCTURE 20

NOT TO SCALE



REVISED DETENTION POND

NOT TO SCALE

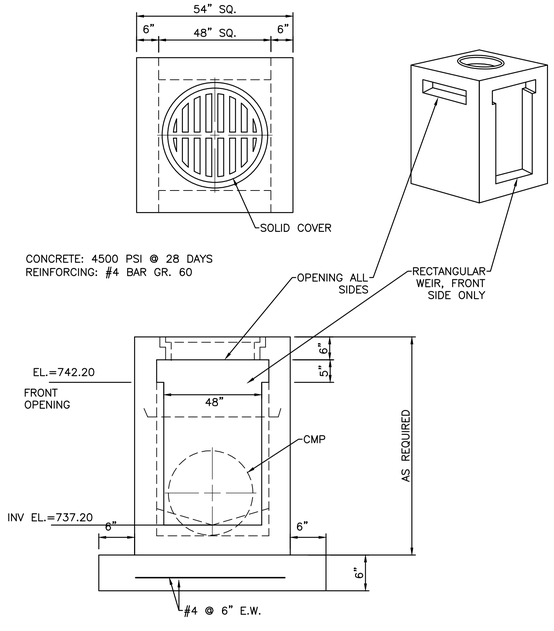
3.2.1.7 Inspection and Maintenance Requirements

Table 3.2.1.1 Typical Maintenance Activities for Ponds
(Source: WMI, 1997)

Activity	Schedule
• Clean and remove debris from inlet and outlet structures. • Mow side slopes.	Monthly
• If wetland components are included, inspect for invasive vegetation.	Semiannual Inspection
• Inspect for damage, paying particular attention to the control structure. • Check for signs of eutrophic conditions. • Note signs of hydrocarbon build-up, and remove appropriately. • Monitor for sediment accumulation in the facility and forebay. • Examine to ensure that inlet and outlet devices are free of debris and operational. • Check all control gates, valves or other mechanical devices.	Annual Inspection
• Repair undercut or eroded areas.	As Needed
• Perform wetland plant management and harvesting.	Annually (if needed)
• Remove sediment from the forebay.	5 to 7 years or after 50% of the total forebay capacity has been lost
• Monitor sediment accumulations, and remove sediment when the pool volume has become reduced significantly, or the pond becomes eutrophic.	10 to 20 years or after 25% of the permanent pool volume has been lost

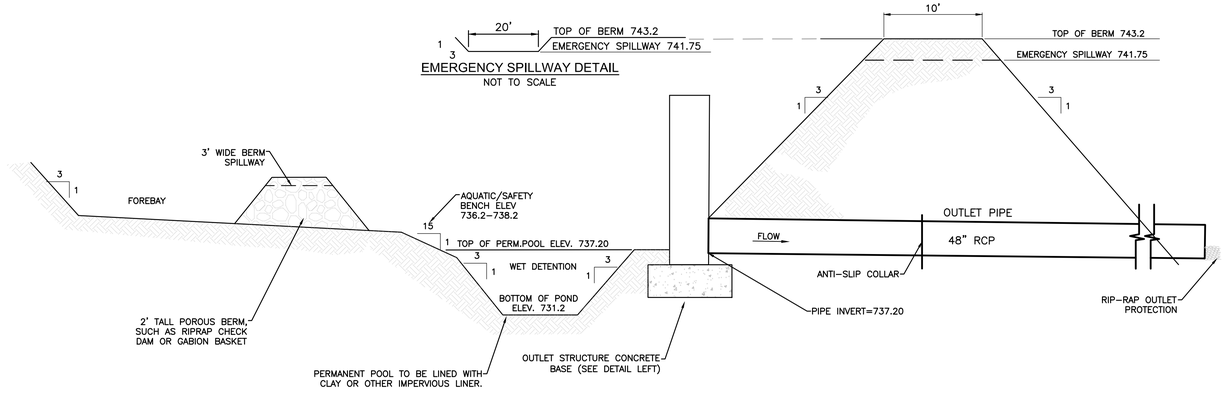
Additional Maintenance Considerations and Requirements

- A sediment marker should be located in the forebay to determine when sediment removal is required.
- Sediments excavated from stormwater ponds that do not receive runoff from designated hotspots are not considered toxic or hazardous material and can be safely disposed of by either land application or landfilling. Sediment testing may be required prior to sediment disposal when a hotspot land use is present.
- Periodic mowing of the pond buffer is only required along maintenance rights-of-way and the embankment. The remaining buffer can be managed as a meadow (mowing every other year) or forest.
- Care should be exercised during pond drawdowns to prevent downstream discharge of sediments, anoxic water, or high flows with erosive velocities. The approving jurisdiction should be notified before draining a stormwater pond.



OUTLET CONTROL STRUCTURE 2

NOT TO SCALE



STORMWATER POND

NOT TO SCALE

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GEORGIA REGISTERED No. PE051644 PROFESSIONAL ENGINEER CHARLIE J. JOHNSON
07/19/2024

PATTERSON FARMS PHASE 4

FOR

HOLLIS HOLDINGS, LLC

WHITFIELD COUNTY, GA.

Scale: N/A

Date: 07-18-2024

Approved By: J. JOHNSON

Revisions:

- - -
- - -
- - -
- - -
- - -
- - -

Drawing Title:

CIVIL DETAILS

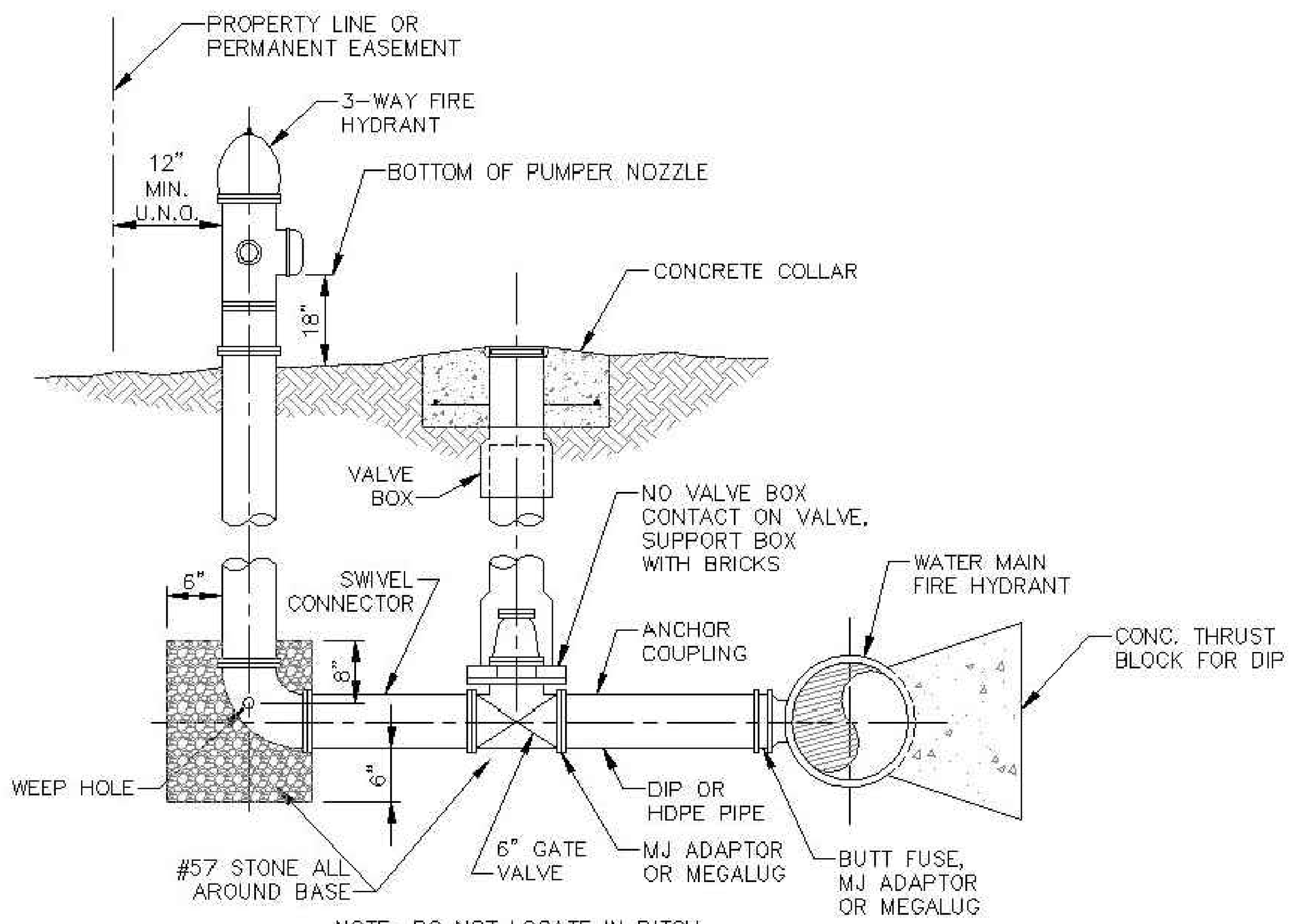
Drawing No.

C5.1

Project No.

21-0130

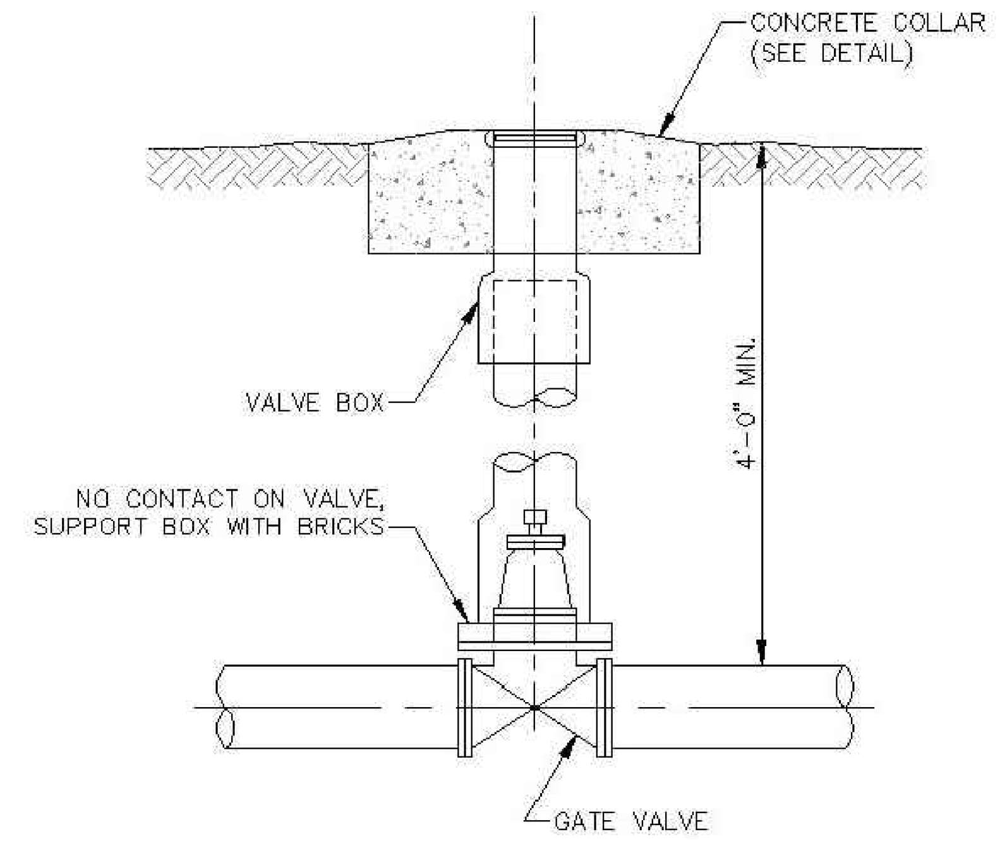
FIRE HYDRANT DETAIL



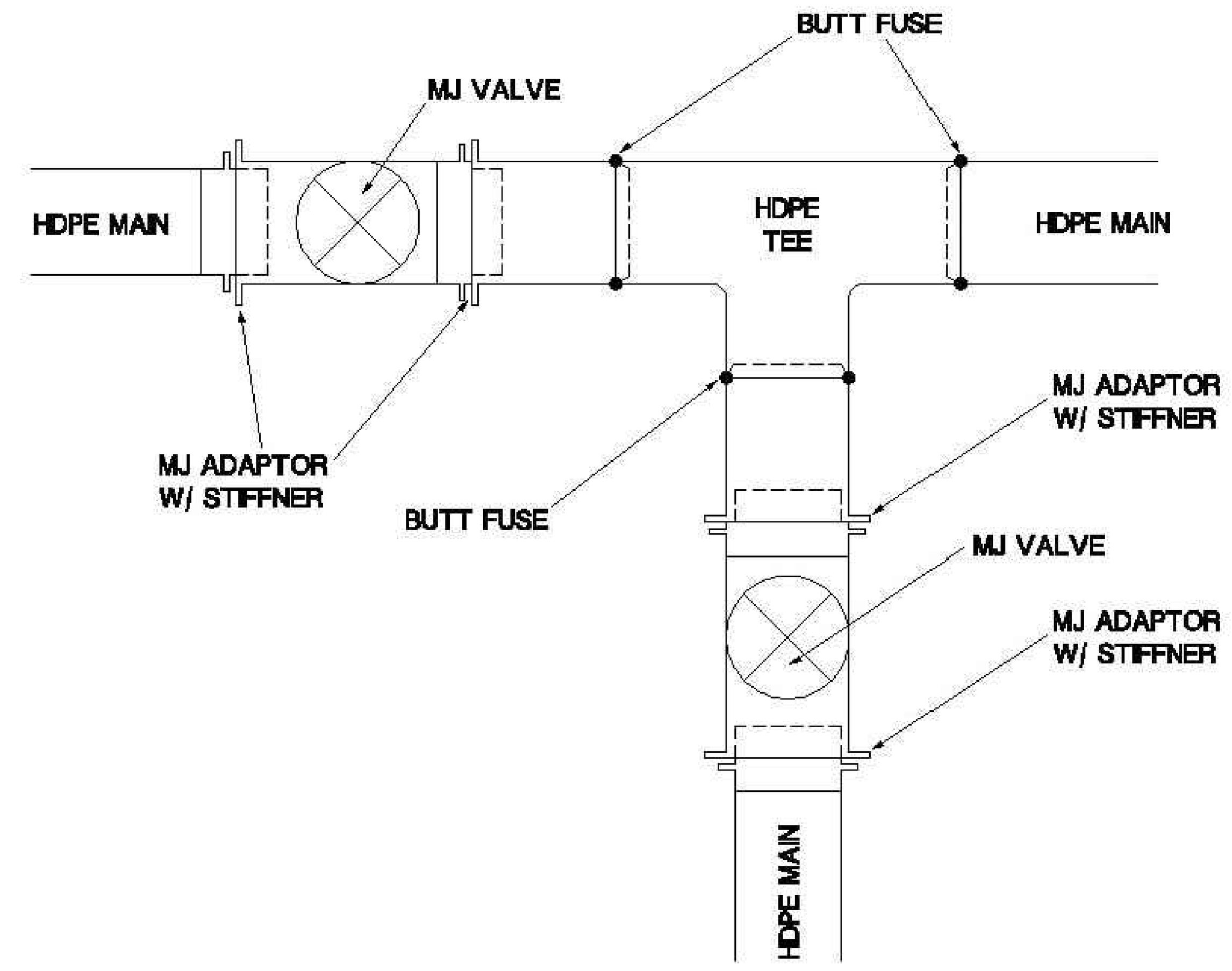
NOTE: DO NOT LOCATE IN DITCH

N.T.S.

GATE VALVE INSTALLATION DETAIL

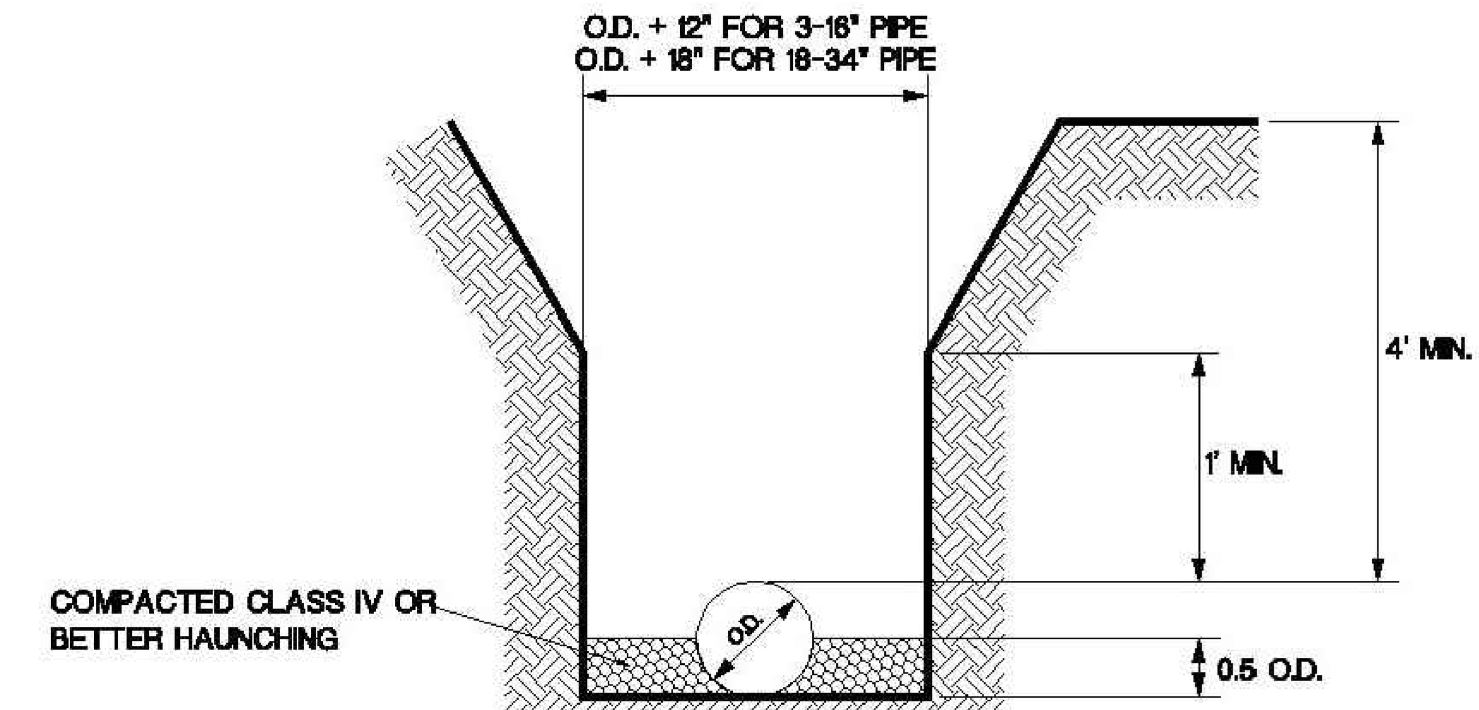


N.T.S.



TYPICAL LINE INTERSECTION 6" & 8" MAINS

N.T.S.



NOTE: USE CRUSHED STONE BEDDING AND HAUNCHING WHERE REQUESTED BY OWNER DUE TO TRENCH CONDITIONS.

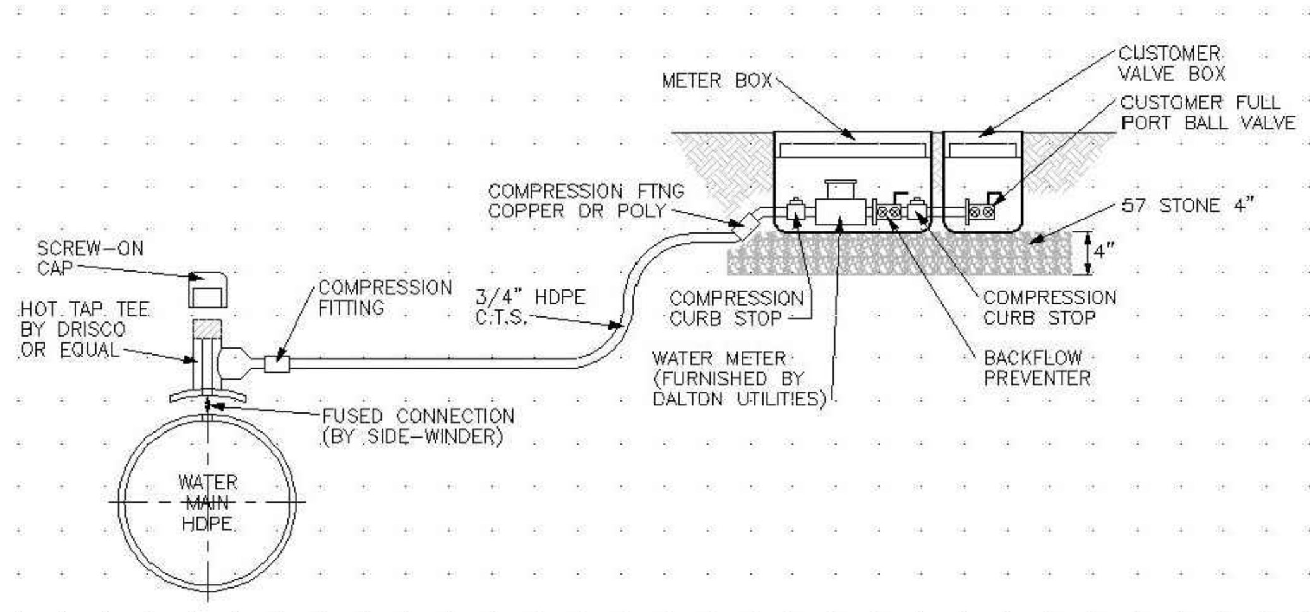
FOR FOUNDATIONS WITH POOR BEARING STRENGTH, PROVIDE 4" OF CLASS I OR II MATERIAL FOR FOUNDATION AND BEDDING.

FOR FOUNDATIONS WHERE RIDGES, HOLLOWS, OR LUMPS ARE PRESENT, REMOVE AND REPLACE WITH 6" OF CLASS I OR II BEDDING.

HDPE WATER MAIN PIPE BEDDING DETAIL

N.T.S.

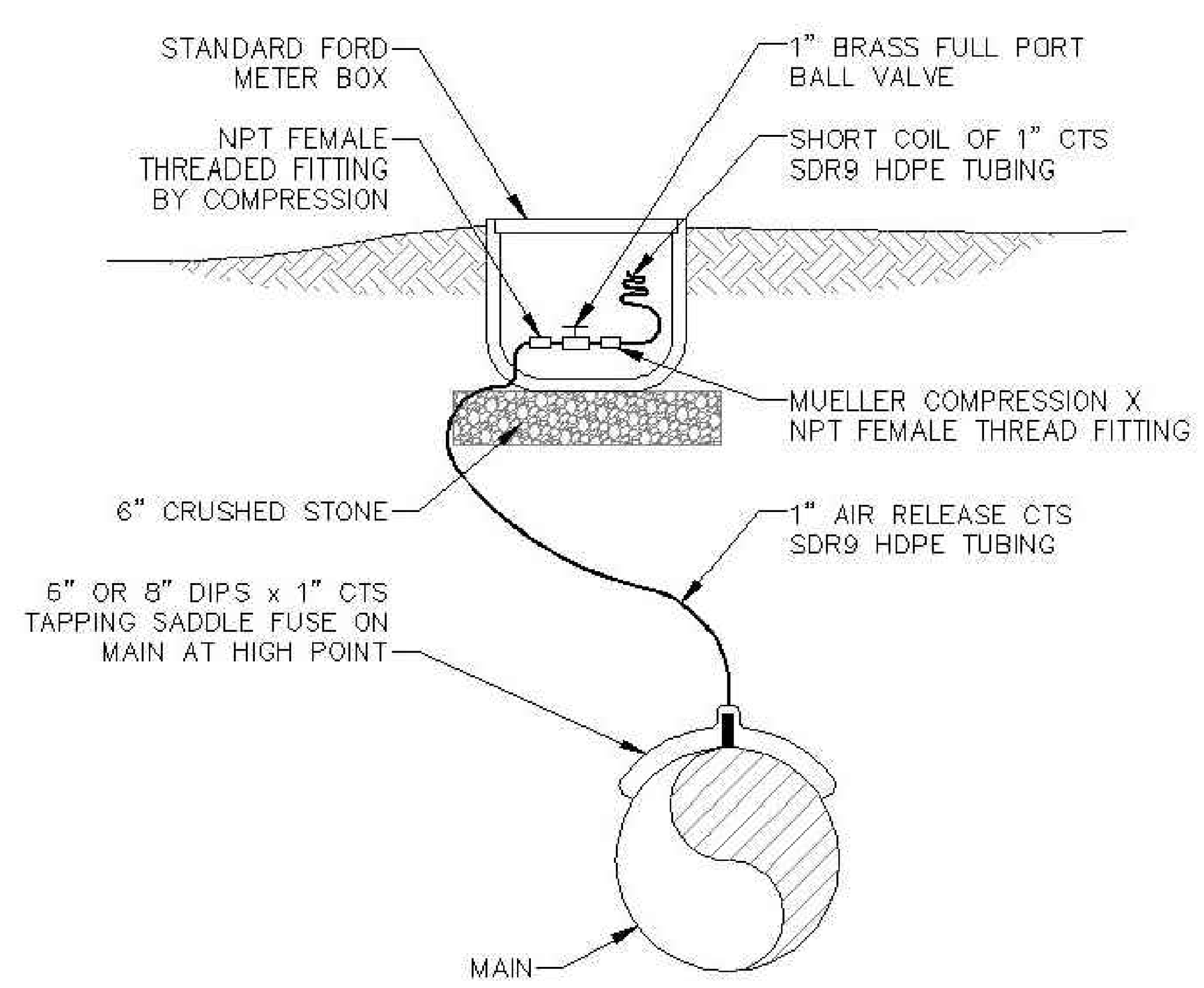
WATER SERVICE DETAIL



TYPICAL SINGLE SERVICE OFF POLYETHYLENE MAIN

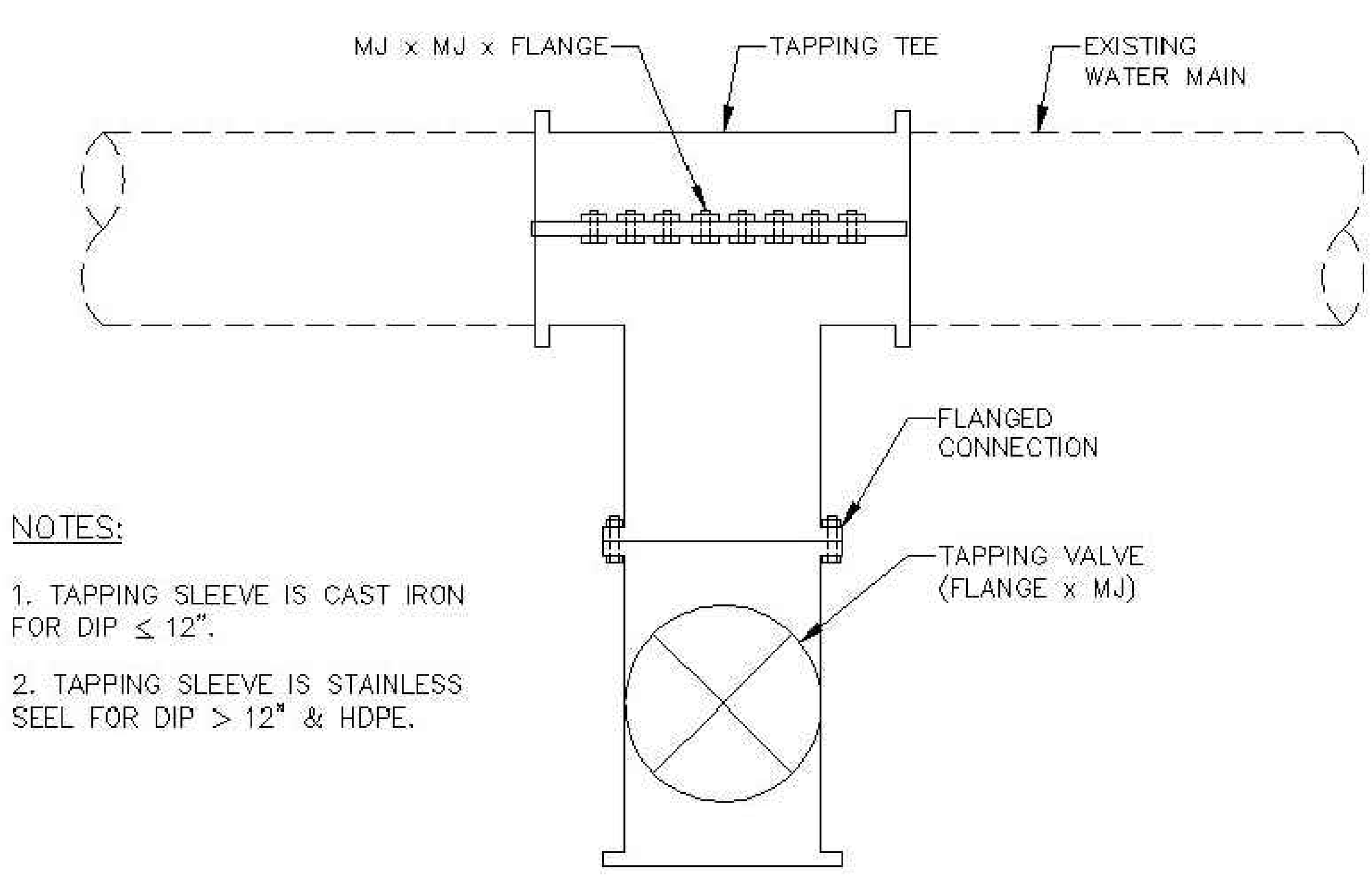
N.T.S.

MANUAL AIR RELEASE VALVE



N.T.S.

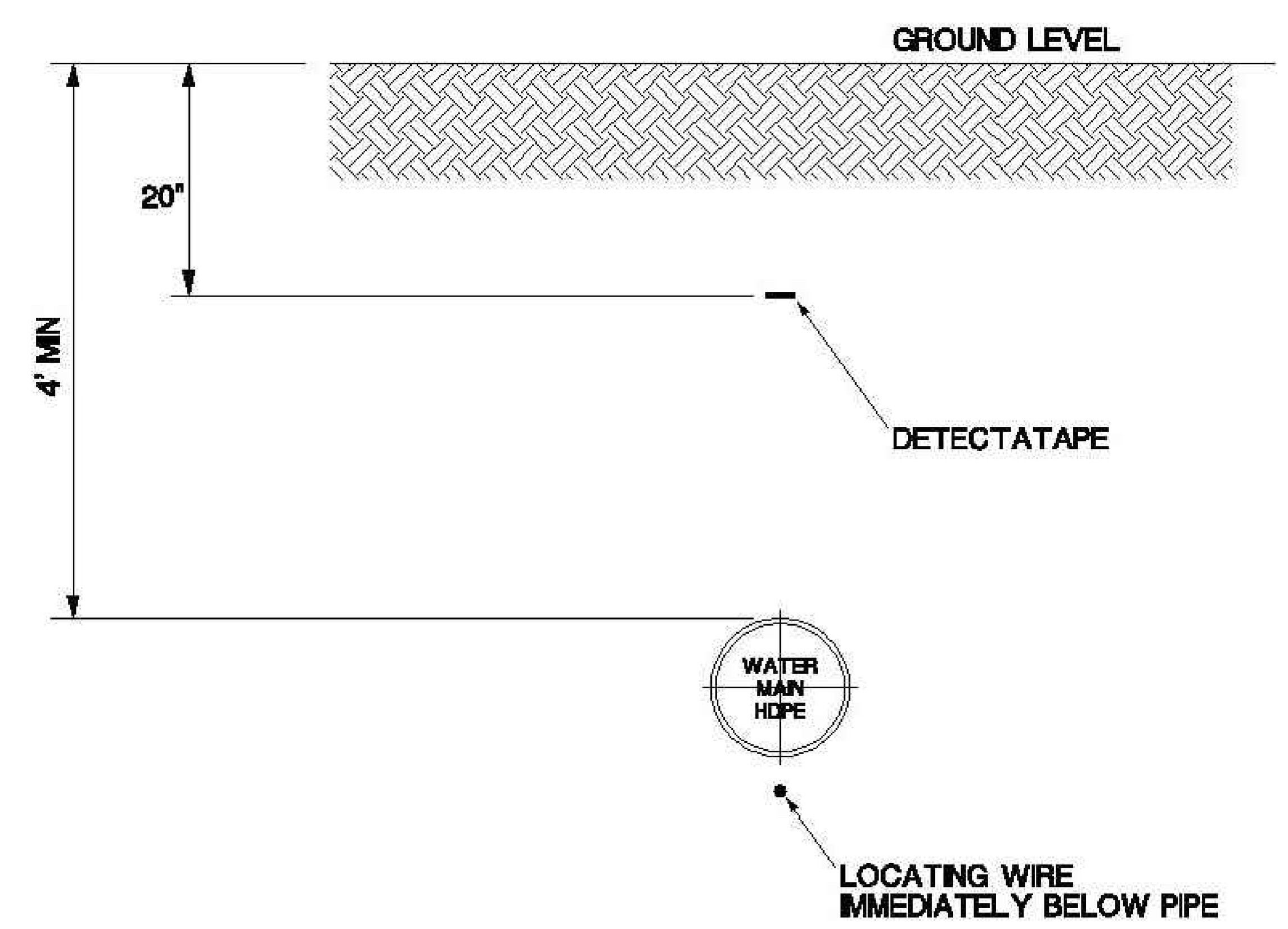
TYPICAL "WET" TAP



NOTES:

1. TAPPING SLEEVE IS CAST IRON FOR DIP ≤ 12".
2. TAPPING SLEEVE IS STAINLESS SEEL FOR DIP > 12" & HDPE.

N.T.S.



NOTE: LOCATING WIRE TO BE CONNECTED USING SILICON FILLED WIRE NUTS.

TYPICAL DETECTATAPE DETAIL FOR HDPE MAINS

N.T.S.

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a Pape-Dawson company

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. PE051644 CHARLIE J. JOHNSON 07/19/2024

PATTERSON FARMS PHASE 4
FOR
HOLLIS HOLDINGS, LLC
WHITFIELD COUNTY, GA.

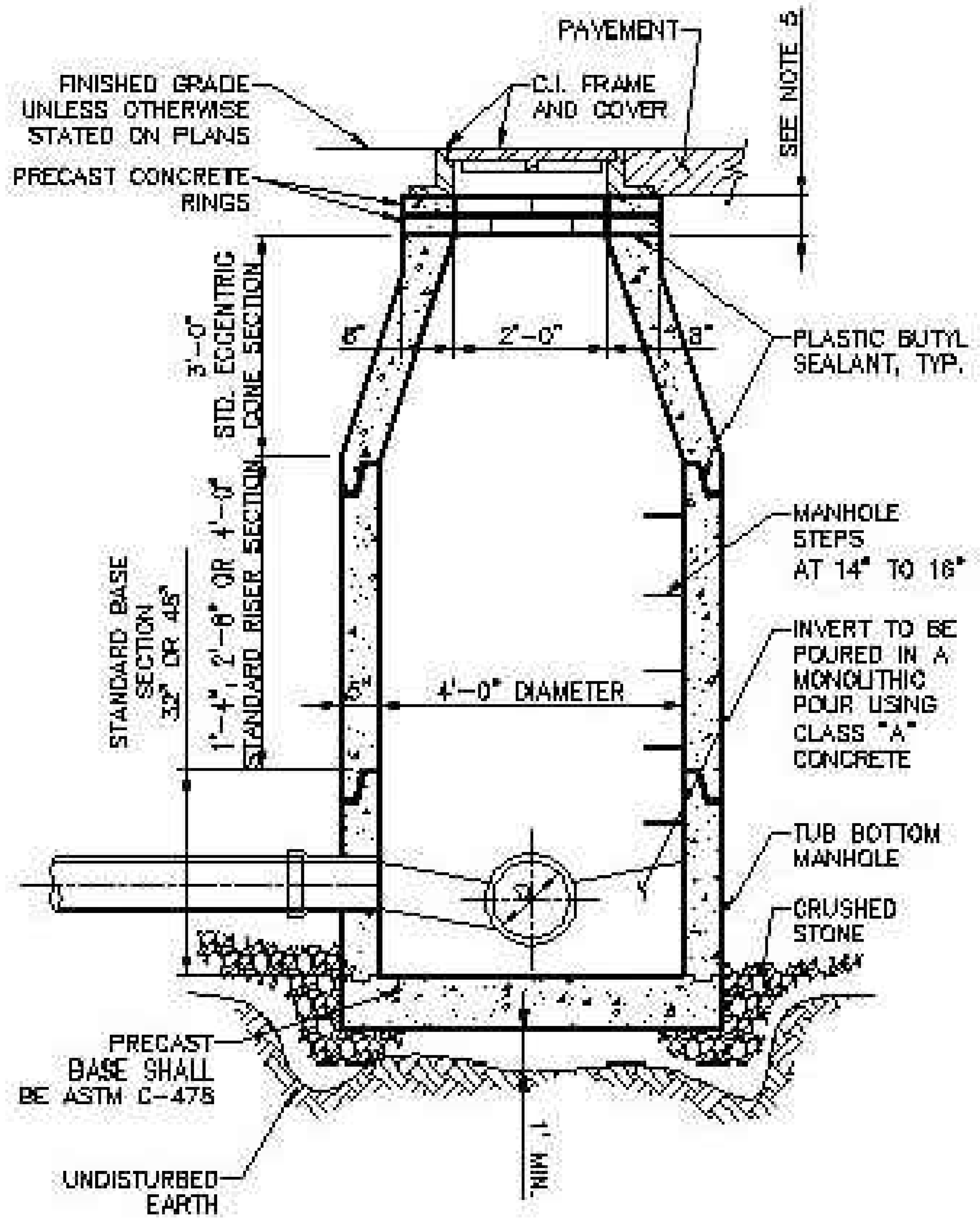
Scale: N/A
Date: 07-18-2024
Approved By: J. JOHNSON
Revisions:

Drawing Title:
DETAILS - WATER

Drawing No.
C5.2

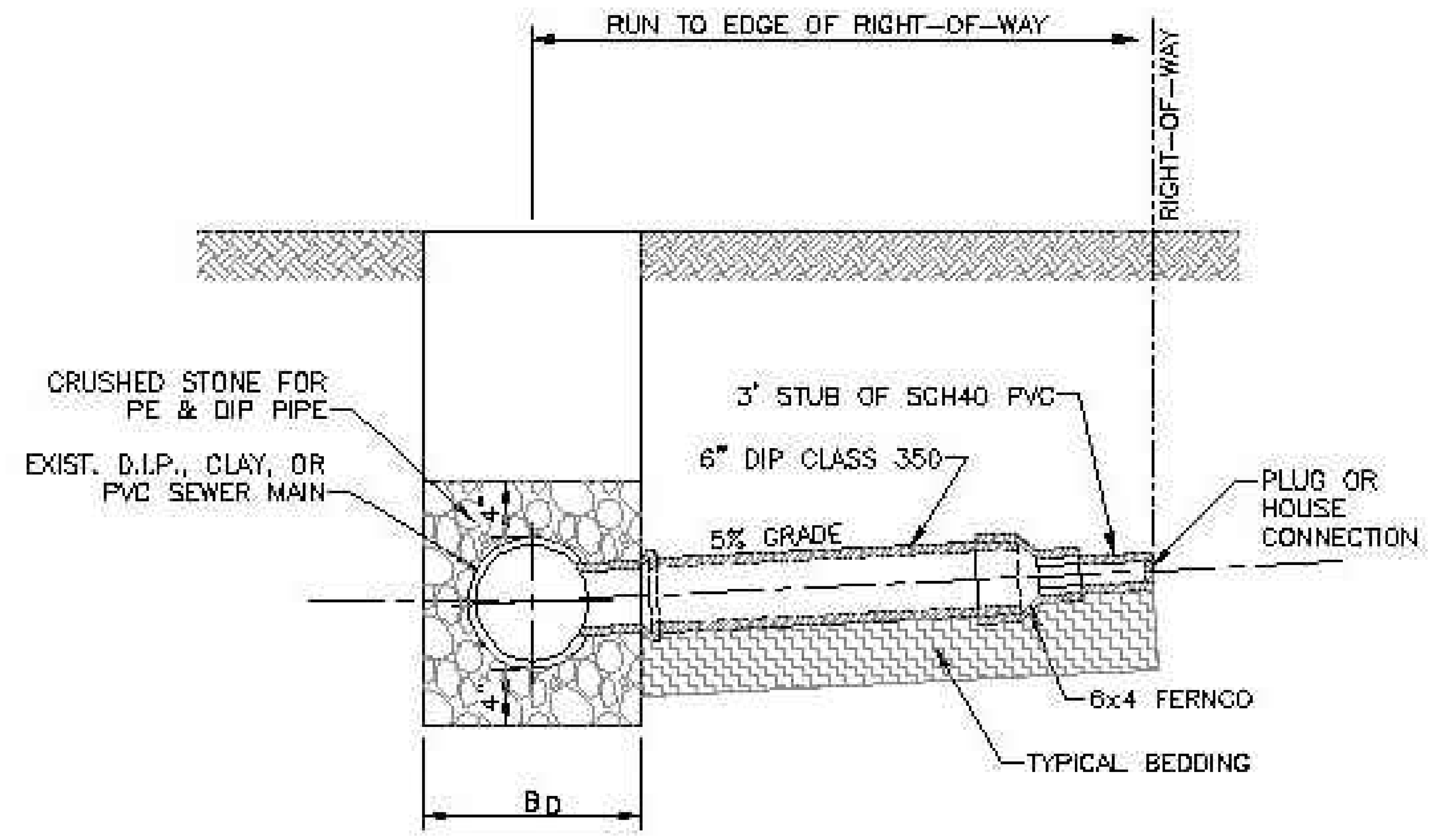
Project No.
21-0130

STANDARD PRECAST MANHOLE SECTION A-A



SECTION A-A

N.T.S.

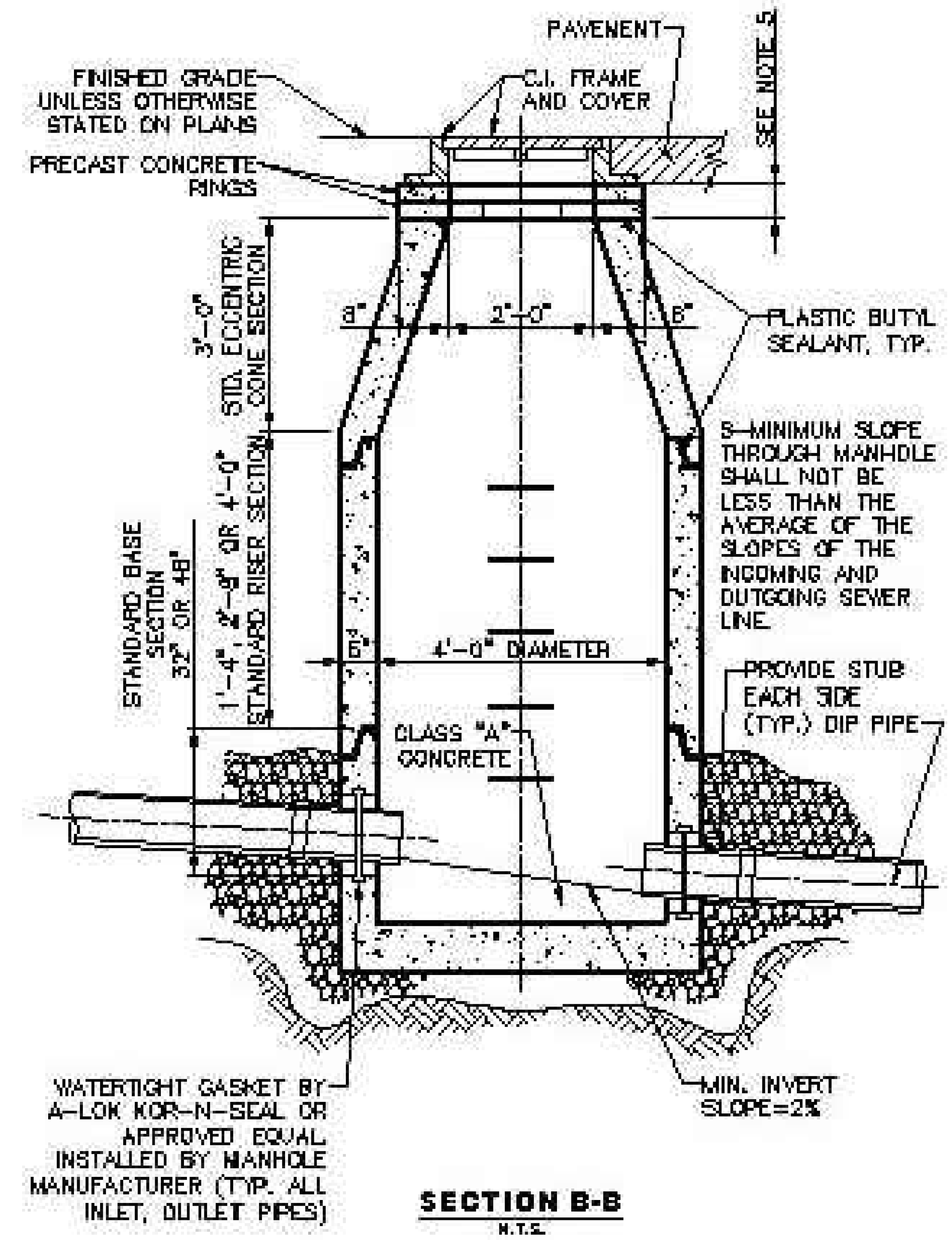


SECTION

TYPICAL SERVICE CONNECTION

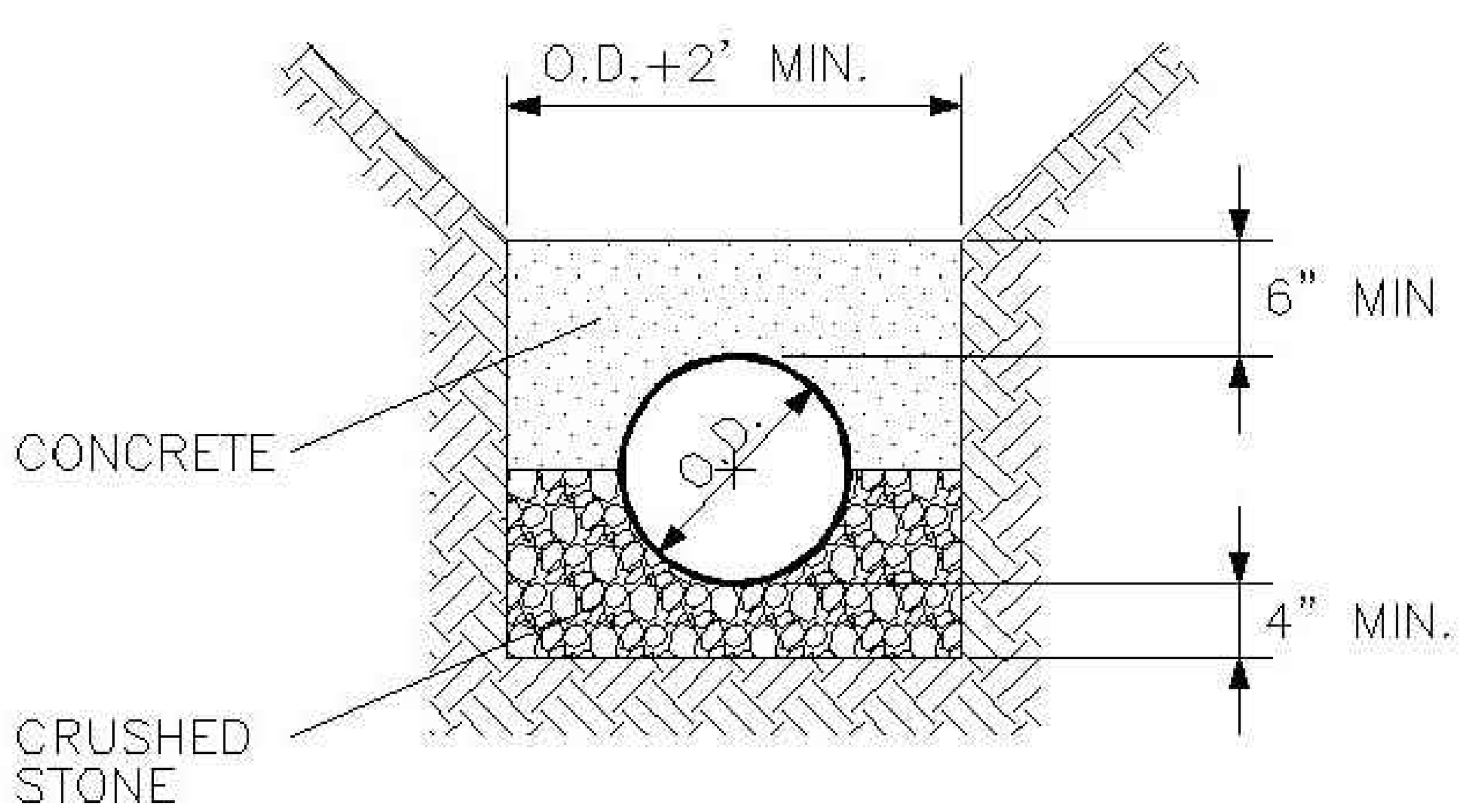
N.T.S.

STANDARD PRECAST MANHOLE SECTION B-B

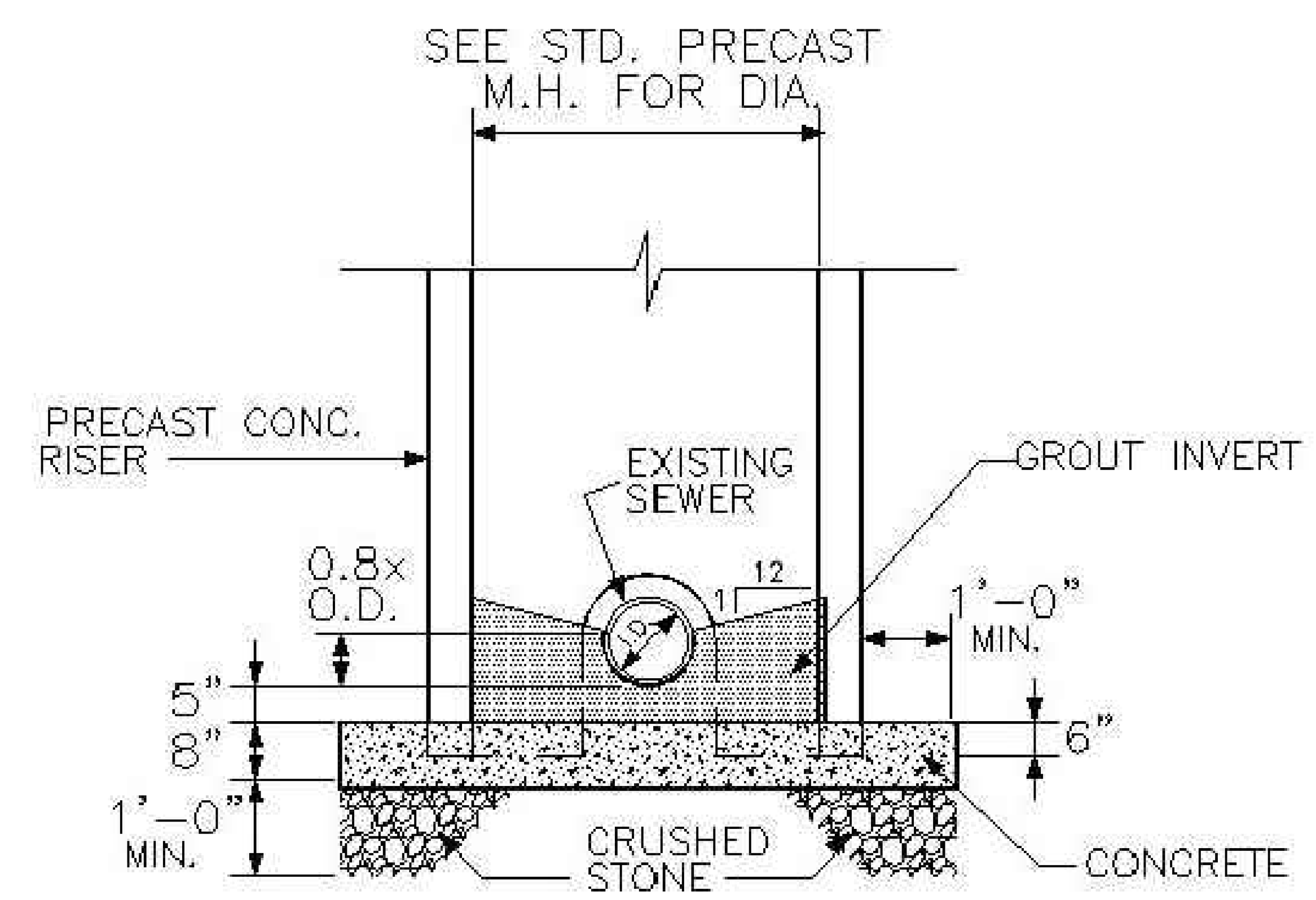


SECTION B-B

N.T.S.

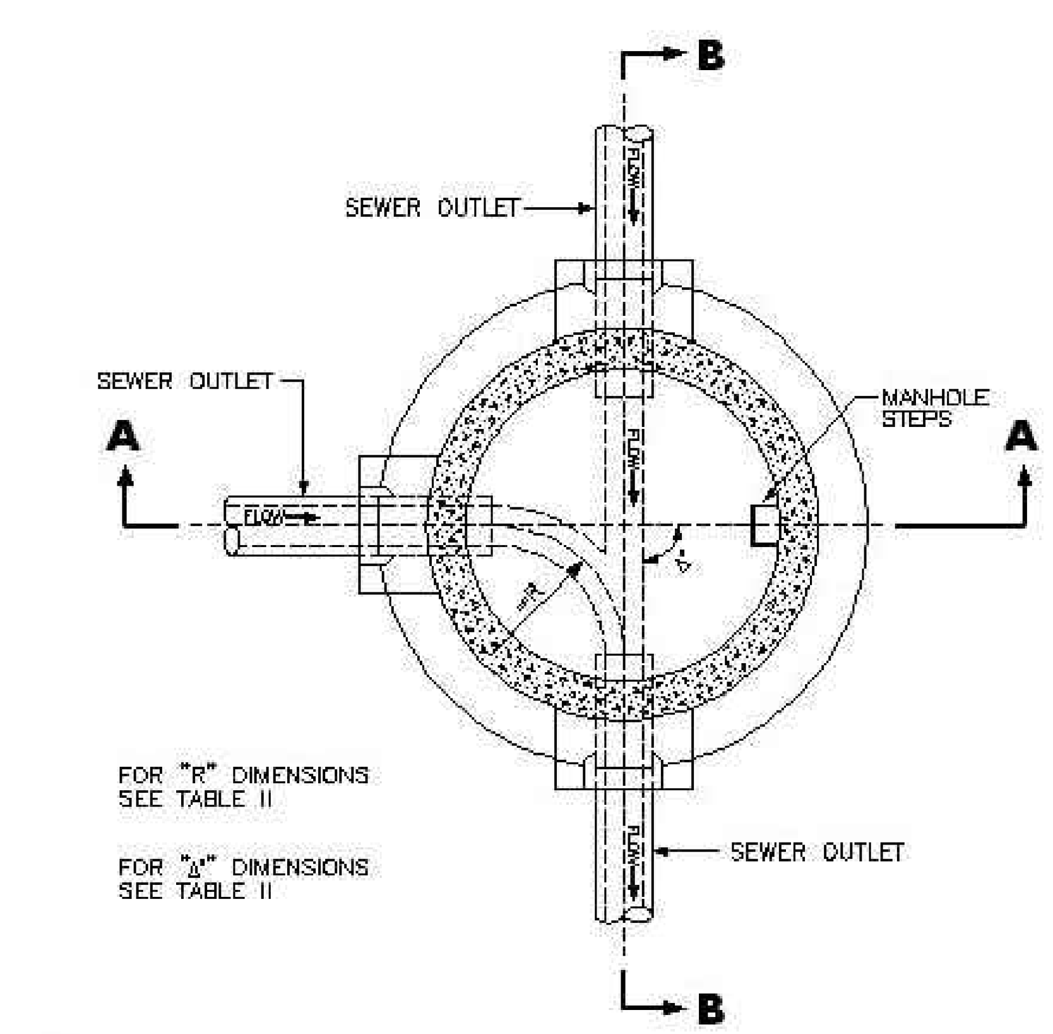


CONCRETE ARCH PIPE BEDDING AND HAUNCHING DETAILS



PRECAST MANHOLE OVER EXISTING SEWER DETAIL

N.T.S.



SECTIONAL PLAN

STANDARD PRECAST 4'-0" DIAMETER MANHOLE

N.T.S.

NOTE: 5'-0" & 6'-0" DIAMETER MANHOLES MAY BE SIMILAR DESIGN IF APPROVED BY THE ENGINEER.

TABLE II
GOVERNING DIMENSIONS FOR MANHOLES

D-PIPE SIZE	Δ° ANGLE	BASE DIAMETER	"R" =
8" - 12"	0° TO 90°	4'	1'-8"
15"	0° TO 60°	4'	1'-10"
15"	60° TO 90°	4'	1'-10"
18"	0° TO 60°	4'	2'-3"
18"	60° TO 90°	4'	1'-10"
21"	0° TO 60°	4'	2'-7"
21"	60° TO 90°	5'	2'-4"
24"	0° TO 45°	4'	3'-0"
24"	45° TO 90°	5'	2'-3"
30"	0° TO 60°	6'	3'-9"
30"	60° TO 90°	6'	2'-8"
36"	0° TO 30°	6'	4'-6"
LARGER THAN 36"	0° TO 90°	CAST IN PLACE MANHOLE BASE OR PRE-BED PIPE MANHOLE BASE & ELBOW UNITS.	

RaganSmith
a Pape-Dawson company

GEORGIA REGISTERED PROFESSIONAL No. PE051644 07/19/2024 CHARLIE J. JOHNSON

PATTERSON FARMS PHASE 4

FOR

HOLLIS HOLDINGS, LLC

WHITFIELD COUNTY, GA.

Scale: N/A

Date: 07-18-2024

Approved By: J. JOHNSON

Revisions:

Drawing Title:

DETAILS - SEWER

Drawing No.

C5.3

Project No.

21-0130