CONTRACT & BID DOCUMENTS

FOR
OAKDALE DRIVE
STORM DRAINAGE PIPE CIPP

Project No. 25-08-705

VALDOSTA
A City Without Limits

Prepared by:
ENGINEERING DEPARTMENT
CITY OF VALDOSTA
August 2025

Bid Opening Date: September 11, 2025 – 10:00am

OAKDALE DRIVE STORM DRAINAGE PIPE CIPP
Project No. 25-08-705

Bid Package Table of Contents

INVITATION FOR BID
FOR
OAKDALE DRIVE STORM DRAINAGE PIPE CIPP FY26
Valdosta, Georgia

Sealed bids will be received by the City of Valdosta at the office of the City Engineer, City Hall Annex Building, 300 N. Lee Street, Valdosta, Georgia, until 10:00 AM, Local Time, on Thursday, September 11, 2025 for Cured-In-Place-Pipe lining of approximately six-hundred linear feet of street storm drainage corrugated metal pipe (CMP) including related work.

The work consists of: initial examination and documentation of the condition of the existing 24" and 30" diameter pipes, cleaning and removal of debris from pipe and structure interior, preparation of pipes and structures for lining, complete work for the installation and curing of cured-in-place-pile lining, cleanup and restoration of disturbed areas including sodding, and all related work.

Specifications, Bidding and Contract Documents can be found on the City of Valdosta website http://www.valdostacity.com/bid-opportunities . This will be a Unit Price Contract, and payments will be made on a monthly basis with payment to be based on actual quantities of work measured. The list of items shown in the Unit Price Schedule is inclusive of all the work shown and described. The contract time is 60 calendar days. For more information contact Charlie Clark, Engineering Project Manager, at (229) 259-3530.

No bid may be withdrawn for a period of thirty (30) days after the scheduled time for receiving the bids.

Bids must be accompanied by a signed and notarized non collusive affidavit as well as a signed and notarized Georgia Security & Immigration Compliance affidavit.

Bids must be accompanied by a certified check or bid bond in an amount of not less than five (5) percent of the amount bid. A Contract Performance Bond and Payment Bond equal to one hundred (100) percent of the contract price will be required. If bid price is $25,000.00 or less no bonds are required.

A mandatory Pre-Bid meeting will be held on Tuesday, August 26, 2025 at 10:00 AM at the Engineering Department office, 300 N. Lee Street, Valdosta, Georgia. No one will be allowed to sign in after 10:00 AM.

The successful bidder, being responsible as well as responsive, shall commence work with an adequate force and equipment on a date specified in a written order of the City Engineer and complete the work within the time specified under the Special Conditions section of these specifications.

The City of Valdosta reserves the right to reject any or all bids, to waive informalities and to readvertise.

The City of Valdosta is an equal opportunity employer.

CITY OF VALDOSTA, GEORGIA
Engineering Department

PROPOSAL

TO: City of Valdosta, Lowndes County, Georgia

All interested parties:

In compliance with the advertisement for bids, the undersigned, hereinafter called the Bidder, proposes to enter into a contract with the City of Valdosta to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation, and all necessary labor to complete the construction of the work stipulated herein in full, and in complete accord with the shown, noted, described, specified and reasonably intended requirements of the Specifications, Drawings, and Contract Documents to the full and entire satisfaction of the Owner.

The Bidder has carefully examined and fully understands the contract, plans, specifications and other documents hereto attached and has made a personal examination of the site of the proposed work and hereby agrees that if his proposal is accepted, the Bidder will contract with the City of Valdosta in compliance with the specifications.

The Bidder acknowledges that each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item; the Bidder acknowledges that the estimated quantities are not guaranteed, and are for the purpose of comparison of Bids; and the Bidder acknowledges that final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

Bidder will perform the following Work at the indicated unit prices:

The rest of this page intentionally left blank.

See next page for unit cost schedule.

OAKDALE DRIVE DRAINAGE IMPROVEMENTS

Issued 08/12/2025

CITY OF VALDOSTA, GEORGIA

CONTRACT # 25-08-705

UNIT COST SCHEDULE - BID FORM

Item No.	ITEM DESCRIPTION	QUAN.	UNIT	UNIT COST	TOTAL COST
101	CCTV 24" & 30" Dia Pipes - Mobilization / Traffic Control /Demobilization	1	LS	$	$
201	CIPP 24" & 30" Dia Pipes - Mobilization / Traffic Control /Demobilization	1	LS	$	$
301	Clean Pipe & CCTV Evaluation - 24" & 30" Diameter (10 hour minimum)	10	HR	$	$
401	Debris Removal and Offsite Disposal	1	LS	$	$
501	CIPP 24" Diameter, installation complete	302	LF	$	$
502	CIPP 30" Diameter, installation complete	299	LF	$	$
Allowance Items - Costs will be adjusted as needed to match final Utility billings.					
601	City Water - fire hydrant meter deposit allowance	1	LS	$ 2,000.00	$ 2,000.00
602	City Water - fire hydrant meter deposit refund allowance	1	LS	$ (2,000.00)	$ (2,000.00)
603	City Water - fire hydrant meter rental allowance	2	Month	$ 100.00	$ 200.00
604	City Water - volume usage allowance (estimated for 50,000 gallons)	1	LS	$ 5,000.00	$ 5,000.00
				Total =	***$***

Alternate Bid Items - Provide a unit cost for the following contingency items which will be used as approved and directed by the Owner.					
1001	SOD (contingency - used only at the direction of the Owner)	SY	20	$	
1002	CONCRETE Flowable Fill - Fill Voids (contingency - used only at the direction of the Owner)	CY	10	$	
1003	New Concrete, slab on grade, 3000 psi (contingency - used only if directed by Owner)	CY	10	$	

In case of discrepancies between figures in the unit prices and the total, the unit price shall apply.

It is understood and agreed that the quantities listed in this proposal are approximate only and are intended principally to serve as a guide in comparing bids and may be increased without invalidating the unit costs.

The undersigned, as Bidder, hereby declares that the only person, company, or parties interested in this proposal or the contract to be entered into as principles, are named herein; and this proposal is made without connections with any other person, company, or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud.

Failure to properly acknowledge any Addendum shall result in a declaration of non-responsiveness and disqualify the bid. Receipt of the following addenda is acknowledged:

Addenda Number	Date
_____	_____

The full names and addresses of persons or parties interested in the foregoing bid as principles are as follows:
Company & Address:

_____

_____

_____

Date: _____

_____
Signature

_____
Signature

Registered Utility Contractors License Number: _____

END OF SECTION

NON-COLLUSIVE AFFIDAVIT

STATE OF _____

COUNTY OF _____

_____, being first duly sworn, deposes and says that he or she is a
(print name)

_____ of _____
(Owner, Officer, Agent, etc.) (Name of Business)

who is making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement, collusion, communication or conference with any person, to fix the bid price of affiliate or of any other bidder, or to fix any overhead, profit or cost element of said bid price, or that of any other bidder, or to secure any advantage against or any person interested in the proposed Contract; and that all statements in said proposal or bid are true.

_____
Signature of Bidder

_____
Title

Subscribed and sworn to before me this _____day of _____ 20____

Signed by: _____
Notary Public (seal)

Print Name: _____ My Commission expires: _____

VALDOSTA
A City Without Limits

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Contract No. and Name: _____

_____

Contractor's Name: _____

City of Valdosta Georgia
Contractor Affidavit

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 contracting with the City of Valdosta, Georgia has registered with and is participating in a federal work authorization program*, in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services pursuant to this contract with the City of Valdosta, Georgia, the Contractor will secure from subcontractor(s) similar verification of compliance with O.C.G.A. § 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees to maintain records of such compliance and provide a copy of each such verification to the City of Valdosta Georgia at the time the subcontractor(s) is retained to perform such service.

_____ _____
EEV / E-Verify TM User Identification Number Date of Authorization

_____ _____
BY: Authorized Officer or Agent Date
(Contractor Name)

_____
Title of Authorized Officer or Agent of Contractor

_____
Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN
BEFORE ME ON THIS THE
_____DAY OF _____, 20____

_____ [NOTARY SEAL]
Notary Public

My Commission Expires:_____

*any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United Sates Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Contract Act of 1986 (IRCA), P. L. 99-603

INSTRUCTION TO BIDDERS

GENERAL:

Bidders are required to examine the Drawings and Specifications and other Contract Documents carefully and to make such examinations of the site of the proposed work as are necessary to familiarize themselves with the nature and extent of the work to be done and with all local conditions which may affect the proposed construction. Bidders are also required to inform themselves fully in regard to construction and labor conditions under which the work will be performed. The Owner will not be responsible for Bidders errors or misjudgment, nor for any information on local conditions or general laws and regulations.

Insofar as practicable the contractor will be required to so schedule his operations and employ such methods of carrying out the work that he will not cause any interruptions of, or interfere with the use of any existing premises and shall bear the expense of repair or any other cost incurred.

Scheduling of construction shall be done with the approval of the Engineer.

LOCATION AND SITE:

The site of the proposed work is in the City of Valdosta, Valdosta, Georgia, specifically on the north side of Oakdale Drive for two blocks between the intersections of Oakgrove Circle and Northwood/Oakgrove Circle (See Project Sketch). Existing 24" diameter and 30" diameter corrugated metal pipe shall be repaired using cured-in-place-pipe installation.

The contractor shall, before submitting his bid, visit the site and acquaint himself with existing conditions.

PRE-BID CONFERENCE:

All parties associated with or interested in this project are welcomed to participate. A Conference Sign-In Sheet will be kept by the City to verify the parties' participation.

MAKING BIDS:

All bids must be submitted on Proposal forms attached hereto. No price changes shown on the envelope will be acknowledged. All proposals must be signed in ink by the person, or persons authorized to sign same, Bidders shall bid on all items of the proposal.

SUBMITTING BIDS:

Each bid must be submitted in a sealed envelope, bearing on the outside the name of the Bidder, his or their address, and addressed to the City Engineer, City of Valdosta, City Hall, Valdosta, Georgia and plainly marked as defined by the State of Georgia Licensing Board, **the Registered Utility Contractors License Number must appear on the front of envelope and in the space provided in the Bid Proposal.**

BID MODIFICATIONS:

Bid modifications are not allowed. Complete withdrawal or complete exchange of bid is acceptable, if done before scheduled bid opening.

AUTHORITY TO SIGN:

If a proposal is made by an individual, his name and post office address must be shown. If made by a firm, or partnership, the name and post office address of each member of the firm or partnership must be shown. If made by a Corporation, the person or persons signing the Proposal must show the name of the State under the laws of which the Corporation is chartered and his, or their authority for signing same; and the names, titles and addresses of the President, Secretary and Treasurer, and the Corporate authority for doing business in this State.

RIGHTS RESERVED:

The Owner reserves the right to reject any or all bids. It is understood and all bids are made subject to this agreement, that the Owner reserves the right to decide which bid is deemed the lowest and best, and in arriving at this decision, due consideration will be given to the Bidder, his financial responsibility, and work of this type successfully completed.

Any unauthorized conditions, limitations or provision attached to the Proposal will render it informal, and may cause its rejection. The Owner reserves the right to waive informalities.

No bids received after the time set for opening Proposals will be considered. No bids may be withdrawn after the bid opening.

PRICES BID:

The price bid shall include furnishing all equipment, tools, materials, skill, and labor of every description necessary to carry out and complete in good, firm, substantial and workmanlike manner the work specified in strict conformity with the drawings or direction of the Engineer.

CORRELATION AND INTENT OF DOCUMENTS:

The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all.

The intent of the documents is that the Contractor will furnish all labor and equipment, materials, accessories, fittings, transportation, tools and appurtenances, such as may be reasonably required under the terms of the Contract to make such items of work complete.

The drawings are intended to conform and agree with the specifications; if however, discrepancies occur, the Engineers will decide which shall govern. Special specifications stated on the drawing govern that particular piece of construction and have equal weight with the printed specifications.

INTERPRETATIONS:

Requests for interpretations of drawings and specifications must be made in writing to the City Engineer not later than five (5) days prior to receipt of Proposals. Any interpretations made to bidders will be issued in the form of Addenda to the Specifications and sent to the bidders.

GUARANTEE TO ACCOMPANY PROPOSAL:

No proposal will be considered unless accompanied by a certified check or acceptable Bid Bond in an amount of not less than five (5) percent of the bid and made payable to the City of Valdosta, Georgia.

RETURN OF THE PROPOSAL GUARANTEES:

All proposal guarantees will be returned within ten (10) days following the opening of Proposals if requested, except those of the three lowest bidders, which will not be returned until after a satisfactory bond has been furnished and the Contract has been executed.

WITHDRAWAL OF PROPOSAL:

No bidder may withdraw his bid for a period of thirty (30) days after the date set for the opening thereof.

REJECTION AND IRREGULAR PROPOSALS:

Proposals will be considered irregular and may be rejected, if they show serious omissions, alterations of form, additions not called for, conditions, unauthorized alternate bids or irregularity of any kind.

LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT:

The successful bidder, upon his failure or refusal to execute and deliver the contract and bonds required within 10 days after he has received notice of the acceptance of his bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his bid.

CONTRACT PERFORMANCE BOND AND PAYMENT BOND:

The Contractor will be required to furnish a Contract Performance Bond and a Payment Bond executed by a Surety Company duly authorized to do business in the State of Georgia, in an amount equal to one hundred percent (100%) of the contract price, as security for the payment of all persons performing labor and furnishing materials in connection with this contract.

The form of the bonds shall be attached to these specifications and the Surety shall be acceptable to the Owner. In case of default on the part of the Contractor, all expenses incident to ascertaining and collecting losses under the bonds, including both engineering and legal services shall lie against the bonds. The Contractor will be required to give a

one-year guarantee covering workmanship and materials. The Contract Bond shall remain in force for one year from date of final acceptance of the equipment, materials and construction.

BOND REQUIREMENTS:

All bonds must be submitted on forms provided by an insurance company licensed in the State of Georgia. Payment and Performance Bonds shall be submitted in quadruplicate.

INSURANCE, PROOF OF CARRIAGE:

The contractor will be required to furnish the Owner with satisfactory proof of the carriage of the insurance required.

AWARD:

The award of the contract will be made as soon as practicable to the lowest responsible bidder meeting the requirements of the Owner; provided that in the selection of equipment or materials a contract may be awarded to a responsible bidder other than the lowest in the interest of standardization or ultimate economy. The successful bidder will be notified of the intention to award as soon after bids are opened as possible.

BIDDERS NOTICE:

Bidders are hereby notified and agree by submission of their Proposal that, after award of the Contract, should additional items not listed in the Proposal become necessary and require unit prices not established by the Proposal, that the unit prices of such items shall be negotiated and shall be directly proportional to the established unit prices of similar items in the Proposal.

AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____ 20____, by and between the City of Valdosta, Georgia (Party of the First Part, hereinafter called the **Owner**) and _____ (Party of the Second Part, hereinafter called the **Contractor**). THIS AGREEMENT is on a unit basis. It is understood that the quantities in the Contractor's Bid Proposal are approximate, and are subject either to increase or decrease, and payment will be based on actual quantities of work measured.

WITNESSETH: That the said Contractor has agreed, and by these presents does agree with the said Owner, for the consideration herein mentioned in this proposal and under the penalty expressed in Bonds, hereto attached, to furnish all equipment, tools, materials, skill and labor of every description necessary to carry out and complete in good, firm, substantial and workmanlike manner the work specified, in strict conformity with the drawings, and the specifications hereinafter set forth, which drawings and the specifications, together with the foregoing proposal made by the Contractor, the Instructions to Bidders, General Conditions and this agreement, shall all form essential parts of this Agreement. The work covered by this agreement includes all work shown on plans and specifications and listed in the attached proposal, to-wit:

CONTRACT No. 25-08-705
OAKDALE DRIVE STORM DRAINAGE PIPE CIPP

THE CONTRACTOR shall commence the work with adequate force and equipment on a date to be specified in a written Notice to Proceed from the Engineer and shall complete the work within 60 consecutive calendar days from and including said date.

In the event the contractor fails to complete the work within the contract time listed above, liquidated damages shall be paid to the Owner at the rate of $ 50.00 per day, plus any expense incurred by the Owner for engineering, legal and inspection services associated with such delays until substantial completion is achieved.

THE OWNER shall pay and the Contractor shall receive the prices stipulated in the proposal hereto attached as full compensation for everything furnished and done by the Contractor under this contract for all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item).

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. With extended prices being the sum of ____Thousand _____Hundred Dollars and _____Cents ($xxx.), which sum shall be paid in the manner and terms specified in the Contract Documents but, before issuance of certificate of payments, if the Contractor shall not have submitted evidence satisfactory to the Owner that all payrolls, material, bills, and other indebtedness connected with the work have been paid, the Owner may withhold in addition to the retained percentages, such amount or amounts as may be necessary to pay just claims for labor and services rendered and materials in and about the work, and such amount or amounts withheld or retained may be applied by the Owner to the payment of such claims.

It is further mutually agreed between the parties hereto that if, at any time after the execution of the agreement and the surety bonds hereto attached for its faithful performance, the First Party shall deem the Surety or Sureties upon such bonds to be unsatisfactory, the Second Party shall, at its expense, within five (5) days after the receipt of notice from the First Party, so to do, furnish an additional bond or bonds in such form and amount, and with such Surety or Sureties as shall be satisfactory to the First Party. In such event no further payment to the Second Party shall be deemed to be due under this agreement until such new or additional securities for the faithful performance of the work shall be furnished in manner and form satisfactory to the First Party.

IN WITNESS THEREOF, the parties hereto have executed this Agreement in quadruplicate, this _____ day of _____, 20_____.

CITY OF VALDOSTA, GEORGIA
(Owner)

ATTESTED:

_____ BY_____
(Seal)

City Clerk City Manager

ATTESTED:

_____ _____

Corporate Secretary Contractor

Executed in Quadruplicate

(Corporate Seal)

GENERAL PROVISIONS

GENERAL NOTES:
These General Provisions shall apply to the Work as a whole and to each and all phases of the Work. Subcontractors shall be supplied with a copy of these General Provisions and no arrangements or contracts between the Contractor and the subcontractor are to be in conflict with same. They shall also apply to any modifications or extra work.

ACQUAINTANCE WITH CONDITIONS:
The Contractor shall be familiar with the site conditions, obstructions, etc. before starting the Work and report to the Engineer any discrepancy he might find. If no report is made there will be no additional compensation for encountering such.

DEFINITIONS:

Contract: The Contract consists of the Invitation for Bids, Proposal, Agreement, Bid Bond, Performance Bond, Payment Bond, Opinion of Attorney, Instruction to Bidders, General Provisions, Special Provisions, Measurement and Payment, Specifications, and the Drawings, including all changes incorporated therein before their execution. These documents form the Contract.

Owner: The Party of the First Part in the accompanying Contract.

Contractor: The Party of the Second Part in the accompanying Contract.

Subcontractor: Includes only those having a direct contract with the Contractor; it includes one who furnishes materials worked to a special design according to the Drawings and Specifications of this Work but does not include one who merely furnishes material not so worked.

Work at the Site of Project: The Work to be performed includes efforts and tasks normally done at the location of the project including all materials, equipment, labor, services and documentation necessary to construct the Project as defined in the Contract and includes efforts of the Contractor and the Subcontractors. The Work as employed herein means all tasks and efforts to be accomplished by the Contractor under the terms of this Agreement or as specified by the Engineer.

Project: The Work as a whole under this Contract, including all labor and materials, and all other items included in the Contract documents.

Engineer: The City Engineer and his office; the City Engineer will make the final decisions on design and construction.

City Engineer: Refers to the City Engineer, the City Engineer's staff, assistants and inspectors.

City: Refers to City of Valdosta, Georgia.

Written Notice: Written notice shall be deemed to have been fully served if delivered in person to the individual or to an officer of the Corporation for whom it is intended or if delivered at or sent by mail to the last business address known to the person who gives the notice.

STATUS AND DECISIONS OF ENGINEER:
The Engineer shall have general supervision and direction of the Work and has the authority to stop the Work whenever such stoppage may be necessary to insure the proper execution of the Contract.

The Engineer shall make decisions on all claims of the Contract and on all other matters relating to the execution and progress of the Work or the interpretation of the Contract documents.

PLANS AND DOCUMENTS FOR CONSTRUCTION PURPOSES:
The Contractor shall download from the City of Valdosta website a complete set of construction documents and Contract Specifications applicable to the Work required under this Contract for use during the course of construction. Revisions shall also be downloaded from the City's website. For download instructions, please visit the City of Valdosta website at www.valdostacity.com or contact the Engineering Department. If hardcopies are needed, the Contractor will be responsible to make efforts to have such hardcopies produced at his own expense.

SHOP DRAWINGS:
The Contractor shall provide the Engineer with four copies of shop drawings of any structure which requires details not shown on the construction Drawings. The Contractor shall provide shop drawings of any structure he intends to build in order to facilitate the construction of the project as a whole. The Contractor is to check shop drawings before sending them to the Engineer for approval and shall mark them as approved. The Engineer shall then check shop drawings and approve or disapprove them. Approval will not relieve the Contractor of any responsibility for accuracy of dimensions or details.

DRAWINGS AND SPECIFICATIONS:
All Drawings and Specifications are the property of the Engineer and are not to be used on other work without the permission of the Engineer. The Contractor shall keep a set of Drawings and Specifications on the site during the times of construction, and if the Contractor has no Drawings and Specifications, the Engineer shall have the authority to stop work until the above mentioned Drawings and Specifications are present on the site.

SPECIFICATIONS AND DRAWINGS TO BE COOPERATIVE:
The Specifications, the Drawings accompanying them and other Contract documents shall be supplementary to each other, and any material, workmanship and/or service which may be in one but not called for in the others shall be as binding as if indicated, called for, or implied by all.

The Contractor will understand that the Work herein described shall be completed in every detail notwithstanding that every item necessarily involved is not particularly mentioned, and the Contractor shall be held to provide all labor and material necessary for the completion of the indicated Work. Before starting the Work of the Contract, **the Contractor shall report in writing to the Engineer any discrepancy which he may discover between the Drawings and Specifications.** If the Contractor fails to call such discrepancy to the attention of the Engineer, the subsequent decisions of the Engineer as to which is correct shall be binding and final. Should any error and inconsistency appear in the Drawings or Specifications, the Contractor, before proceeding with the Work, shall make mention of the same to the Engineer for proper adjustment and in no case shall he proceed with the Work in uncertainty.

PROGRESS SCHEDULE:
The Contractor shall prepare and present to the Engineer a carefully prepared Schedule of Work which shall set forth the series of dates upon which the Contractor proposes to begin and finish the different parts of the Work.

ORDER OF WORK:
The Work shall be begun at such points as the Engineer shall designate and shall be prosecuted in the order he shall direct. This applies to both location and items of construction. The Contractor shall have no claim for extra compensation because of restrictions and limitations of work prescribed by the Owner.

SEQUENCE OF OPERATIONS:
In order that all phases of work to be done under the whole project may be properly coordinated, the Contractor shall arrange the sequence of his work in accordance with the schedule accepted and adopted in the early stages of construction. Such work schedule shall be approved by the Engineer and Owner.

WORK NOT SHOWN ON PLANS AND DRAWINGS:
In the carrying out of this Work as contemplated by the Drawings and Specifications, there may arise certain items of work for which definite plans have not yet been decided upon. All such work when authorized shall be paid for as provided in Changes of the Work.

PERFORMANCE OF WORK BY CONTRACTOR:
The Contractor shall perform on the site and with his own organization, at least 50 percent of the total amount of the Work to be performed under this Contract. If, during the progress of the Work hereunder, the Contractor requests a reduction of such percentage, and the Engineer determines that it would be to the Owners advantage, the percentage of the labor required to be performed by the Contractor's own organization may be reduced; provided prior to written approval of such reduction is obtained by he Contractor from the Owner.

CONTRACTORS SUPERINTENDENT:
The Contractor shall continuously maintain the presence of a competent general superintendent on the worksite during the progress of the Work. Whenever a superintendent is not on the job supervising the Work even though his crew is there, the Engineer shall have authority to stop the Work until the superintendent returns.

SUBCONTRACTOR:
The Contractor shall, as soon as practicable after the execution of the Contract, and before any subcontracts are awarded, notify the Engineer in writing of the names of the Subcontractors proposed to be used on the various parts of the Work.

When the names of the Subcontractors are submitted for approval, the Contractor shall give the Engineer the name and quality of the material and the name of the manufacturer of the material which the Subcontractor proposes to use.

No Subcontract shall be awarded until the Contractor has received approval in writing from the Engineer on the proposed Subcontractor.

The Contractor agrees that he is fully responsible to the Owner for the acts and omissions of persons directly employed by him.

Nothing contained in the Contract documents shall create any contractual relationship between the Subcontractor and the Owner.

INSPECTORS:
The Engineer will be represented by an inspector on the project. It shall be the Contractor's responsibility to notify the Engineer whenever work is to begin so that arrangements for inspection can be made. The inspector shall, while on the job, have the same authority as the Engineer and any instructions that he might give shall be carried out as if said instructions came directly from the Engineer.

INSPECTION:
The Engineer or his representatives, while observing work in progress on behalf of the Owner, will give the Contractor and subcontractors all possible assistance in interpreting the terms of the Contract. Such assistance shall not relieve the Contractor from responsibility for his work, in accordance with the Contract requirements and any work which proves faulty shall be made right by the Contractor.

Representatives of the Engineer are without authority to alter or relax the terms of the Contract. Any alterations or relation of terms of the Contract shall be valid only if made in accordance with the procedures set forth under Changes of the Work.

Upon request of the Contractor, decisions, instructions, or interpretations of the Engineer will be issued in writing. Any claim by the Contractor that all decisions, instructions, or interpretations are not within the scope of the Work, or that they entail cost beyond the scope of the Contract shall be made to the Engineer in writing and within five days of such ruling, and before the work involved is performed, otherwise interpretations are accepted without questions.

If any work should be covered up without approval or consent of the Engineer, if required by the Engineer, it must be uncovered for examination at the Contractors expense. Re-examination of questioned work may be ordered by the Engineer, and if so ordered, the work must be uncovered by the Contractor.

MATERIALS AND WORKMANSHIP:
Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, tools, equipment, appliances, light, power, transportation and all facilities necessary for the proper execution and satisfactory completion of this Work.

Unless otherwise specified all materials shall be new and both materials and workmanship shall be of good quality. The Contractor shall furnish satisfactory evidence and quality of materials intended to be used, if required.

Should any dispute arise as to the quality or fitness of any materials or workmanship, the decision shall rest with the Engineer and shall be based on the requirements that all material furnished and all work done shall be of good quality, and what might be usual and customary in the erection of other structures shall in no way enter into any consideration or decision.

It is not incumbent upon the Engineer to give the Contractor early notice of the rejection of faulty materials or workmanship or in any case to superintend to the extent of relieving the Contractor of responsibility for any consequence of neglect or carelessness of himself or of his subordinates.

All materials and labor shall be delivered and furnished at such time as shall be for the best interest of all concerned to the end that the combined work of all may be properly and fully completed on time.

POSSESSION OF SITE AND RESPONSIBILITY:
Upon taking possession of the site, the Contractor shall be responsible thereafter until the final acceptance of the Work by the Owner for the management, care and maintenance of the site and the Work both new and existing and shall be solely and wholly responsible for damage thereto and for any and all injury to persons or property incident to or on account of the execution of this Work and shall adjust all the claims or suits arising there from, without loss to the Engineer or the Owner. Any approval of means or methods of construction or protection of persons or property shall not relieve the Contractor from sole responsibility for the adequacy of such means or methods.

STORAGE OF APPARATUS AND MATERIALS:
All equipment and materials shall be stored in such manner as to insure the preservation of their quality and fitness for the Work. Materials stored shall be located so as to facilitate prompt inspection and shall be confined to space designated by the Engineer.

Should it become necessary at any time during the progress of the whole project to move materials which have been temporarily placed previous to their use in the construction, the Contractor shall when so directed by the Engineer or inspector move them without additional cost to the Owner.

PROPERTY CONFINES:
The Contractor has no authority to permit the use of any portion of the premises by anyone except for business connected with the construction in which his Contract is concerned.

CLEANING DURING CONSTRUCTION AND AT COMPLETION OF WORK:
The Contractor shall keep the premises clean at all times and shall remove all rubbish as often as directed by the Engineer and Owner. If the Contractor does not at all times provide men to attend to the cleaning up, on request, in a manner acceptable to the Engineer, the Engineer may employ such men direct and charge the cost of same to the account of the Contractor.

CHANGES OF THE WORK:
The Owner, without invalidating the Contract, may order extra work or make changes by altering, adding to, or deducting from the Work, the Contract sum being adjusted accordingly. All such work shall be executed according to the conditions of the original Contract, except that any claim for extensions of time caused thereby shall be adjusted at the time of ordering such changes.

In giving instructions, the Engineer shall have authority to make any minor changes in the Work, not involving extra cost, and not inconsistent with the purpose of the construction. But otherwise except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order from the Engineer stating that the Owner has authorized extra work or changes, and no claim for an addition to the Contract sum shall be valid unless so ordered.

The value of such extra work or change shall be determined by one or more of the following methods, at the option of the Owner:

(1) By estimate and acceptance in a lump sum.
(2) By unit prices named in the Contract or subsequently agreed upon.
(3) By cost percentage
(4) By cost plus a fixed fee

If none of the above methods are agreed upon, the Contractor, provided he receives an order as above, shall proceed with the work. In such case and also under cases (3) and (4) he shall keep and present in such form as the Engineer may direct, a correct amount of the net cost of materials, and labor, together with vouchers. In any case, the Engineer shall certify to the amount including reasonable allowance for overhead and profit due to the Contractor. Pending final determination of value, payments on accounts of changes shall be made on certificate of Engineer.

OWNERS RIGHT TO DO WORK:
If the Contractor shall neglect to prosecute the Work properly, and in a diligent manner or fail to perform the provisions of the Contract, the Owner may, after three days written notice to the Contractor, without prejudice to any other remedy, make good such deficiencies and may deduct the net cost thereof from the payment then or thereafter due the Contractor provided however, the Engineer shall approve both such actions and the amount charged to the Contractor.

ASSIGNMENT:
Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any monies due, or to become due, hereunder, without the previous consent of the Owner.

RIGHT OF OWNER TO TERMINATE CONTRACT:
In the event that any of the provisions of this Contract are violated by the Contractor, or by any of his subcontractors, the Owner may serve written notice upon the Contractor and the Surety of its intention to terminate the Contract, and unless within ten (10) days after the serving of such notice upon the Contractor, such violation or delay shall cease and satisfactory arrangement of correction be made, the Contract shall, upon the expiration of said ten (10) days, cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the Surety and the Contractor and the Surety shall have the right to take over and perform the Contract; provided, however, that if the Surety does not commence performance thereof within ten (10) days from the date of the mailing to such Surety of notice of termination, the Owner may take over the Work and prosecute the same to completion by contract or by force account and at the expense of the Contractor and the Contractor and his Surety shall be liable to the Owner for any excess cost occasioned the Owner thereby, and in such event the Owner may take possession of and utilize in completing the Work, such materials, appliances and plant as may be on the site of the Work and necessary therefore.

EXTENSION OF TIME:
Should the Contractor be delayed at any time due to causes beyond his control or due to extra work ordered by the Owner, the Contractor shall within seven (7) days of such delay request extension of time from the Engineer who shall decide if the Contractor has sufficient grounds for an extension and how much time is to be granted.

TIME FOR COMPLETION AND LIQUIDATED DAMAGES:
It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning, rate of progress and the time for completion of the Work to be done hereunder are ESSENTIAL CONDITIONS of this Contract; and it is further mutually understood

and agreed that the Work embraced in this Contract shall be commenced on a date to be specified in the Notice To Proceed. The Contract time shall apply to the period from the Notice to Proceed until the time of Substantial Completion. Substantial Completion is the degree of construction completion at which the Work can be used for its intended purpose.

The Contractor agrees that said Work shall be prosecuted regularly, diligently, and uninterrupted at such rate of progress as will insure full completion thereof within the time specified.

It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for the completion of the Work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

It is further agreed that time is of the essence of each and every portion of this Contract and of the Specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever, and where, under the Contract, an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract. Provided, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is due:

(1) To any preference, priority, or allocation order duly issued by the government.

(2) To unforeseeable cause beyond the control and without the fault of negligence of the Contractor, including, but not restricted to acts of God, or of the public enemy, acts of the owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; and

(3) To any delays of subcontractors occasioned by any of the causes specified in subsections (1) and (2) of this article.

Provided, further that the Contractor shall, within seven (7) days from the beginning of such delay, notify the Owner, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of his decision in the matter.

LICENSE:
The Contractor shall be required to have during the life of the Contract a current City of Valdosta Contractors License and City of Valdosta Business License for the work he will perform.

BOND REQUIREMENTS:
All bonds must be submitted on forms provided by an insurance company licensed in the State of Georgia. Payment and Performance Bonds shall be submitted in quadruplicate.

CONTRACTORS INSURANCE:
Said project shall be constructed and maintained at the sole risk of the Contractor and the Contractor agrees, without regard to negligence on the part of City to save the City, and to hold the City harmless from and against all claims, damages, expense and liability (whether or not such liability has been judicially determined) for loss of life, personal injury or damage to property, resulting from or in any manner attributable to the construction, maintenance, use, operation or presence of the project, or to the presence of the equipment or employees of Contractor, on City's property.

The Contractor shall carry Workmen's Compensation Insurance and shall have all subcontractors carry Workmen's Compensation Insurance and shall carry Comprehensive Liability Insurance covering all operations and vehicles.

The Contractor shall name the City of Valdosta as an additional insured party on all insurance policies.

The Contractor shall submit Certificates of Insurance showing minimum coverage as follows:

(1)	Workmen's Compensation - As required by State Law		
(2)	Comprehensive General Liability		
	(a)	Each Person	$ 500,000
	(b)	Each Occurrence	1,000,000
(3)	Vehicle Liability		
	(a)	Each Person	300,000
	(b)	Each Occurrence	500,000
(4)		Property Damage Insurance	200,000

SOCIAL SECURITY AND SALES TAXES:
The Contractor shall be liable for all state and Federal Payroll or Social Security and Sales and Use Taxes that are in force at the time of the award of the Contract except taxes the City may be exempt from.

LIENS:
Neither the final payment or any part of the retained percentage shall become due until the Contractor, if required, shall deliver to the Owner a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required in either case, an affidavit that insofar as he has knowledge or information, the releases and receipts include all the materials and labor for which a lien might be filed, but the Contractor may, if any subcontractor refuses to furnish a release of claims or receipts in full, furnish a bond satisfactory to the Owner to indemnify him against any lien. If any lien should remain unsatisfied after all payments are made then the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such lien, including all costs and reasonable Attorney's fees.

MAINTENANCE:
The Contractor will be required to maintain all work done by him in a functional condition for sixty (60) days after the same has been completed as a whole, and the Engineer has notified the Contractor in writing that the Work has been finished and finalized to their satisfaction. The retained percentage will not be due to the Contractor until after the 60 days maintenance period but may be payable to the discretion of the Engineer. Any damage to the site or surroundings whether it be existing before construction or whether it be materials or items of construction shall be repaired by the Contractor at his expense and all parts of the site shall be left in as good repair as before the work started.

GUARANTEE:
The Contractor shall guarantee all materials and workmanship for a period of one (1) year from the date of final acceptance of the Work by the Engineer. If during this period any material or item of construction proves defective, the Contractor shall repair the same at his expense to the satisfaction of the Owner and guarantees shall be covered by Performance Bond. Neither the final certificate of payment nor any other provision relieves the Contractor of the responsibility for faulty materials or workmanship.

ACCEPTANCE:
When the Work has reached the point of Substantial Completion and can be used for its intended purpose, the Contractor shall notify the Engineer to this effect and shall request a final inspection. No work shall be accepted until the final inspection has been made and the job approved by the Engineer. Within ten (10) days after the final inspection the Engineer shall inform the Contractor in writing of the acceptance or rejection of the job and if the job is accepted the maintenance and guarantee periods will begin from this date.

PATENTS AND ROYALTIES:
The Contractor shall forever protect and defend the Owner against all demands whatsoever, involving the full and free use and enjoyment of any and all rights to any invention, machine or device, which may be applied as a part of the work, either in the construction or after construction. The Contractor shall notify the Owner in writing as to any such demands on the above rights upon which the Contractor may have to pay any royalties.

ACCIDENT PREVENTION:
Precautions shall be exercised at all times for the protection of persons (including employees) and property, and hazardous conditions shall be guarded against or eliminated. The foregoing shall be as indicated by the Engineer if it becomes necessary.

ESTIMATE:
At least 30 days before each progress payment falls due, the Contractor shall submit a detailed estimate of the Amount Earned during the preceding month for the separate portions of the Work, and request payment. The words Amount Earned means the value completed as of the date of the estimate for partial payment of the Work in accordance with the Contract Documents including the value of approved materials delivered to the project site suitably stored and protected prior to incorporation into the Work.

The Engineer will, after receipt of each request for payment, recommend payment or return the request to the Contractor indicating the reasons for refusing to recommend payment. In the latter case, the Contractor may, within 7 days, make the necessary corrections and resubmit the request.

The Engineer may refuse to recommend the whole or any part of any payment because:

(1) The work is defective, or completed work has been damaged requiring correction or replacement;

(2) Written claims have been made against Owner or Liens have been filed in connection with the Work;

(3) The Contract price has been reduced because of Change Orders;

(4) The Contractor's unsatisfactory prosecution of the work in accordance with the Contract documents; or

(5) Contractor's failure to make payment to Subcontractors or for labor, materials, or equipment.

DEDUCTION FROM ESTIMATE:
The Owner will deduct from the estimate, and retain as part security, 5 percent of the amount earned for work satisfactorily completed. A deduction and retainage of 5 percent will be made on the estimated amount earned for approved items of material delivered to and properly stored at the job site but not incorporated into the Work.

QUALIFICATION FOR PARTIAL PAYMENT AND MATERIALS DELIVERED:
Qualification for partial payment for materials delivered but not yet incorporated into the Work shall be as described below:

(1) Materials, as used herein, shall be considered to be those items which are fabricated and manufactured material and equipment. No consideration shall be given to individual purchases of less than $200 for any one item.

(2) To receive partial payment for materials delivered to the site, but not incorporated in the Work, it shall be necessary for the Contractor to include a list of such materials on the Partial Payment Request. At his sole discretion, the Engineer may approve items for which partial payment is to be made. Partial payment shall be based on the Contractor's actual cost for the materials as evidenced by invoices from the supplier. Proper storage and protection shall be provided by the Contractor, and as approved by the Engineer. Final payment shall be made only for materials actually incorporated in the Work and, upon acceptance of the Work, all materials remaining for which advance payments had been made shall revert to the Contractor, unless otherwise agreed, and partial payments made for these items shall be deducted from the final payment for the Work.

(3) Contractor warrants and guarantees that title to all work, materials, and equipment covered by any Application for Payment, whether incorporated in the project or not, will pass to Owner at the time of payment free and clear of all liens, claims, security interests, and encumbrances.

(4) If requested by the Engineer, the Contractor shall provide with subsequent pay requests, invoices receipted by the supplier showing payment in full has been made.

PAYMENT:
After deducting the retainage and the amount of all previous partial payments made to the Contractor from the amount earned, the amount due will be paid to the Contractor.

END OF SECTION

SPECIAL PROVISIONS

Location of Resurfacing Work: The location of the work is within the City of Valdosta, more specifically the site of the proposed work is on the north side of Oakdale Drive for two blocks between the intersections of Oakgrove Circle and Northwood/Oakgrove Circle (See Project Sketch). Existing 24" diameter and 30" diameter corrugated metal pipe shall be repaired using cured-in-place-pipe installation.

Description of Work: The work consists of: initial examination and documentation of the condition of the existing 24" and 30" diameter pipes, cleaning and removal of debris from pipe and structure interior, preparation of pipes and structures for lining, complete work for the installation and curing of cured-in-place-pile lining, cleanup and restoration of disturbed areas including sodding, and all related work.

Schedule of Work: The Contractor shall submit a schedule of work to the City Engineer's office before construction begins. Times of construction shall be 8:00 AM to 6:00 PM Monday through Friday and 9:00 AM to 4:00 PM on Saturday.

Clarifications and Special Conditions:

1. The Owner shall adjust the line item quantities as required to bring project cost to within the available funding.

2. In addition to the Pre-Construction Meeting, the Contractor shall establish a regular schedule for project status meetings with City Engineering Department staff.

3. Once occupied for CIPP operations the Contractor shall maintain construction progress and activities to completion of resurfacing operations.

4. Contractor shall be responsible for cleanup and repair of damages on City streets and adjoining private property.

5. The City intends for the full cost of construction activities be carried within the construction contract. Regarding provision and costs for City water, line items have been included with estimated quantities. City Utilities Department requires a deposit for use of a Fire Hydrant Meter, and the deposit is refunded upon return of the Meter.

Notice to Proceed: Upon written notice by the City Engineer, work will begin immediately.

Time of Contract: The Contractor shall start upon notice to proceed by the City Engineer and shall have **60 consecutive calendar days** to complete the work. In the event the Contractor shall not complete the work within the time limit, or

extended time limit agreed upon, **liquidated damages shall be paid to the Owner at the following rate of $ 50.00 per day**.

Construction Standards: All construction shall be in accordance with the latest edition of the Georgia Department of Transportation Standard Specifications – Construction of Transportation Systems, the City of Valdosta Standard Specifications for Water and Sewer Construction, , and the City of Valdosta Land Development Regulations.

Accident Prevention: Precautions shall be exercised at all times for the protection of persons (including employees) and property, and hazardous conditions shall be guarded against or eliminated. The foregoing shall be as indicated by the Engineer if it becomes necessary.

Use of Premises: The Contractor shall confine his work, the storage of materials, and the operation of his workmen to the limits developed by laws, ordinances, permits or directions of the Engineer and shall not unduly encumber the premises with his materials.

Permits: The Owner shall obtain the necessary easements and permits for construction across public and private property, streets, etc.

The Contractor shall abide by all rules, regulations, and requirements of the Owner of such property in regard to the construction under the contract including the giving of notices, provisions for inspection, and employment of such methods of construction as may be required. Whenever additional costs are incurred due to such requirements, all such costs shall be included in the prices bid. No additional compensation will be allowed for such costs after award of the contract.

Work by City and Utilities: The Contractor shall be responsible for complying with the City requirements and shall pay for all required work in connection therewith whether performed by himself, the City, Utility Companies, or others.

Materials Furnished: All materials necessary under this contract and items listed in the proposal will be furnished and installed by the Contractor unless otherwise specified.

Delivery of Materials: The Owner will not be responsible for delays in delivery of materials. No extra compensation will be allowed because of resulting expense. This also refers to items not listed in the proposal and may be termed as extra work which may be added on the project site by the Engineer.

Moving Materials: If it becomes necessary at any time during the construction to move materials which are to enter into the construction, which materials have been temporarily placed, the Contractor or subcontractor shall, when so directed by the

Engineer move them or cause them to be moved without additional cost to the Owner.

Salvaged Materials: The Owner shall have the right of first refusal for any salvaged materials as a result of demolition on the project.

Owner's Option: In all cases where the choice of more than one make or style of material is specified, the final selection of material rests with the Owner. Where any difference occurs in price, such difference is to be given at the time bids are submitted. After the contracts have been signed, the Owner reserves the right to choose whichever material he desires assuming that the price increased thereto and approved, or other words to that effect, it is to be taken the same as if the choice of more than one material was specified and the selection will rest with the Owner the same as above.

Materials -Test: Materials furnished for all construction shall be subject to test at all times by the Engineer and any samples or specimens selected for test shall be furnished at no cost to the Owner. All tests shall be made by a recognized testing laboratory acceptable to the Engineer.

The following materials will be subject to test in accordance with the latest standards and tentative standards of the American Society for Testing Materials (ATM) and the Georgia Department of Transportation, Division for Test and Investigation: cement, sand, coarse aggregate, brick, pipe, concrete, asphalt, base, curing compound and any other material that is used. Compaction tests on new base related to the paving work shall be performed every three hundred (300) feet.

These tests shall be performed by an independent testing laboratory approved by the Engineer. The cost of tests of whatever nature shall be borne by the Contractor. No separate payment will be made for tests and all costs in connection herewith shall be included in the price bid for the applicable item.

Items Not Listed in Proposal: If some item of work is required which is not covered in the specifications or in the proposal, the City reserves the right to do these items with their own forces.

Traffic Control: The Contractor shall be responsible for placing construction signs, detour signs, and other traffic control devices to protect the motoring public and his work force while the work is being performed. This signage and traffic control shall be placed in accordance with the MUTCD, current edition.

Pre-construction Meeting: A general preconstruction meeting will be held at the offices of the City Engineer prior to the notice to proceed.

Lines and Levels: The Contractor is responsible for providing all surveying and staking.

Road Closures or Detours: If the Contractor selects to hire off duty law enforcement officers to control road closures or detours, he must first approach The City of Valdosta Police Department for employment, if an agreement cannot be made between the Police Department and the Contractor. Only then can the Contractor seek an outside law enforcement agency.

OPINION OF ATTORNEY

This is to certify that I have examined the attached Contract Documents, that after examination, I am of the opinion that such documents conform to the laws of the State of Georgia, that the execution of the Construction Contract and the Contract Performance and Payment Bonds are in due and proper form, and that the representatives of the respective contracting parties have full power and authority to execute such Construction Contract and Contract Performance and Payment Bonds on behalf of the respective contacting parties and that the foregoing agreements constitute valid and binding obligations on such parties.

_____

Attorney for
City of Valdosta, Georgia

This the _____ day of _____, 20_____.

GENERAL AS-BUILT REQUIREMENTS:

1. All as-builts for projects are required to be on 24” x 36” paper, and shall bear the name, address, and telephone number of the firm preparing the drawing and the date the as-built data is added to the original via the revision block. Two (2) sets of paper plans and Two (2) electronic copies (one (1) PDF file and one (1) DWG file) of the plans are required to be submitted. The electronic AutoCAD drawing files shall be referenced to Georgia State Plane Coordinates, West Zone (NAD 83, current adjustment) and NAVD 88.

2. Surveyor’s statement (with seal and with an original signature on each sheet) shall verify that as-built drawings reflect the true conditions in the field or Engineer’s statement (with seal and an original signature on each sheet) shall state that the project will function as was originally intended on the approved construction plans.

3. Contractors’ statement (with an original signature on each sheet) shall verify that all construction specifications and product qualities have been met or exceeded.

4. “AS-BUILT DRAWING” or “RECORD DRAWING”, the name of the project and the date shall be clearly labeled on each sheet.

5. Street names shall be on all streets. All easements and right-of-ways shall be shown and clearly labeled.

6. If the utility system is to be private (not to be dedicated to City), then so state on each sheet.

7. The location and elevation of the benchmark referenced will be shown on the drawing. If the referenced benchmark is not within the project, then a complete description of its location will be provided to assist in future locating.

8. The locations and description of any utility lines and other installations of any kind or other description known to exist within the construction area. The location includes dimensions to permanent features. The construction area is defined as the area on site that is disturbed.

9. The locations and dimensions of any changes to buildings and structures.

10. Correct grade and alignment of roads.

11. Changes in details of design or additional information such as approved placement details, pipe sizes, material changes, etc.

WATER SYSTEM AS-BUILT REQUIREMENTS:

1. Locate valves, fittings, and services that are located within the City right-of-way or easement by labeling each with Northings and Eastings. All fire lines, fire hydrants, and fire appurtenances shall be located.

2. All horizontal distances shall be shown to the nearest hundredth of a foot (i.e., 56.30'). All vertical distances shall be shown to the nearest hundredth of a foot (i.e., 217.65').

3. Show all sizes and types of valves and pipes.

4. Special detail drawings may be required where installations are not shown on approved construction drawings for whatever reason or where required for clarity.

5. Show location and elevations on pipes and fittings where changes in direction occur and at a maximum of every 100’.

6. Typical water service installation details with deviations from original plans shall be noted on as-built drawings.

SANITARY SEWER SYSTEM AS-BUILT REQUIREMENTS:

1. All piping, wyes, tees, valves, manholes and special cases shall be located in the same manner as water locations.

2. Horizontal dimensions shall be to the nearest hundredth of a foot (i.e., 78.60’). Vertical dimensions shall be to the nearest hundredth of a foot (i.e., 217.65').

3. Identify runs of gravity mains (i.e., 300.4 feet of 8” PVC SDR 35 at 0.4%).

4. Elevations shall be given for the top of all manhole covers and for all inverts.

5. Service laterals are to be identified with location of end service or plug (Northing and Easting).

6. Manholes shall be identified by types.

FORCE MAINS AS-BUILT REQUIREMENTS:

1. Locate all valves, fittings, etc. as above.

2. Locations of pipe shall be shown at all changes in direction and at a maximum of every 100’.

3. Show all sizes and types of valves, fittings, pipe, etc.

4. Special detail drawings will be required where installations were not as shown on original drawings due to field conditions or where required for clarity.

PUMP STATION AS-BUILT REQUIREMENTS:

1. Wet well size and location shall be shown.

2. Elevations for top, bottom, inverts, adjacent ground and type and size of lines and fittings for all lines entering or leaving the wet well.

3. All schedules which show pump, motor and electrical data shall be amended and shall be submitted with wet well drawings.

4. All improvements within the pump station boundaries shall be located horizontally and vertically to the nearest hundredth of a foot (i.e., 5.62'), including valve pit, pump-out, water spigot, backflow device, wet well, control panel, bends, fittings, etc.).

DRAINAGE SYSTEM AS-BUILT REQUIREMENTS:

1. All drainage structures shall be located by northing and easting as above. Any deviations from construction plans shall be noted on as-built.

2. Provide the type of drainage structure (e.g., 1033, 1019, D.I.) along with elevations on the top, weir, and invert.

3. Identify size, material, and slope of all piping. Identify end treatment of all open ended pipes (i.e., headwall type and material, FES, SES, etc.)

4. All improvements, structures, pipe ends, grates, boxes, etc. shall be located horizontally and vertically to the nearest hundredth of a foot (i.e., 5.62')

5. Any utility conflicts less than 18” of vertical separation shall be shown, to include type of utility, direction and elevation.

6. Provide spot elevations and cross sectional information at 100’ intervals and at any deviation in channel as well as slopes, on all ditches, canals, etc.

7. Show all drainage easements, including width and encroachments on those easements along with owner of record.

8. Show one foot contour lines of detention or retention facilities along with spot elevations on top of bank, emergency overflows, water stage and bottom of pond in front of the outlet control structure and the opposite end of facility to verify positive drainage.

9. Provide a detail of the outlet control structure, including: top elevations, inverts and sizes of weirs, spillways, orifices, outlet control pipe along with downstream pipe elevation and slope.

10. The Engineer shall provide a certification letter, signed and sealed, of the “as constructed” detention facility along with an as-built hydrology report and summary table indicating the as-built storm water facility produces a net zero increase, see Attachment A for sample certification letter.

STREETS, SIDEWALKS AND TRAILS SYSTEMS AS-BUILT REQUIREMENTS:

1. Show all right-of-way and easement lines, (e.g. right of way, easement width) clearly labeled.

2. Provide typical offset dimensions from property, right-of-way and easement lines.

3. Typical ramp or curb opening installation details that deviate from original plans shall be noted on as-built drawings.

4. Special detail drawings will be required where installations were not as shown on original drawings due to field conditions or where required for clarity.

5. State plane coordinates (NAD83, Georgia west zone) and elevation data (NAVD88) on all right-of- way monuments installed or encountered within the project.
6. Locate and describe all regulatory or warning signage and pavement markings within the project.

7. Location and species information on installed trees.

8. All irrigation lines, controllers, sprinkler heads, backflow devices, pressure reducing valves, meters, supply sources and tap locations shall be located to by Northing and Easting as above.

9. Location, type, material and reinforcement, height, drainage systems and foundation information of all retaining walls.

10. Note any changes to the alignment, either vertically or horizontally, of curb & gutter, sidewalk, pavers or any other surface improvement.

11. Provide center line crown elevations at approximately 100-foot stations and sags and crests, or as field conditions warrant.

Attachment “A”

SAMPLE

ENGINEER’S CERTIFICATION

OF

DETENTION FACILITIES

I, *John J. Smith*, P.E., *Director of Water Resources for Professional Consulting Engineers*, a registered professional engineer in the state of Georgia, hereby certify with my signature and seal that the detention facility in the project known as *Kings Lake Subdivision, lying in land lot/lots 509 of the 18th district*, Lowndes County, has been constructed in conformance with the approved site plan and hydrology study, Specifically, but not limited to, detention pond volume, elevation of earthen dam or top of wall, and size and elevation of weir openings.

Professional Consulting Engineers, Inc.,

Signature: _____

John J. Smith, P.E.
Director of Water Resources

This *19th day of April 2012*.

Georgia Registration No. *220X0*

Stamp & Seal:

CONTRACTORS
STATUTORY AFFIDAVIT

STATE OF_____ COUNTY OF _____

FROM:_____
(Contractor)

TO:_____
(Owner)

RE: Contract entered into the _____ day of _____, 20____, between the above mentioned parties for the construction of a

_____

_____

KNOW ALL MEN BY THESE PRESENTS:

1. The undersigned hereby certifies that all work required under the above contract has been performed in accordance with the terms thereof, that all material, men, subcontractors, mechanics, and laborers have been paid and satisfied in full and that there are no outstanding claims of any character arising out of the performance of the contract which have not been paid and satisfied in full.

2. The undersigned further certifies that to the best of his knowledge and belief there are no unsatisfied claims for damages resulting from injury or death to any employees, subcontractors, or the public at large arising out of the performance of the contract, or any suits or claims for any other damage of any kind, nature, or description which might constitute a lien upon the property of the Owner.

3. The undersigned makes this affidavit as provided by law and for the purpose of receiving final payment in full settlement of all claims arising under or by virtue of the contract, and acceptance of such payment is acknowledged as a release of the Owner from any and all claims arising under or by virtue of the contract.

IN WITNESS THEREOF, the undersigned has signed and sealed this instrument this _____ day of

_____, 20____

(Contractor)_____

personally appeared before the undersigned, _____
who after being duly sworn, depose(s) and say(s) that the facts stated in the above affidavit are true.

_____
(Notary Public)

This _____ day of _____, 20_____ My commission expires_____

TITLE VI ASSURANCES

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest
(hereinafter referred to as the "Contractor"), agree as follows:

1. Compliance with Regulations
The Contractor shall comply with the Regulations relative to nondiscrimination in federally-assisted programs of the Department of Transportation (hereinafter referred to as DOT), Title 49, Code of Federal Regulations, part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

2. Nondiscrimination
The Contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, sex, or national origin in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

3. Solicitations for Subcontracts, Including Procurement of Materials and Equipment
In all solicitations either by competitive bidding or negotiations made by the Contractor for work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this contract and the Regulations relative to nondiscrimination on the ground of race, color, sex, or national origin.

4. Information and Reports
The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information and its facilities as may be determined by the City of Valdosta or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the City of Valdosta, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance
In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, the City of Valdosta shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

a. Withholding of payments to the Contractor under the contract until the Contractor complies; and/or
b. Cancellation, termination, or suspension of the contract, in whole or in part.

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____

_____ (hereinafter called the

Principal), and_____

(Hereinafter called the Surety, a corporation chartered and existing under the laws of the State of _____ with its principal offices in the City of _____, in the full and just sum of_____ Dollars ($_____) good and lawful money of the United States of America, to be paid upon demand of the City of Valdosta, Georgia to which payment well and truly to be made we bind ourselves, our heirs, executors, administrators, and assigns, jointly and severally and firmly by these presents.

WHEREAS, the Principal is about to submit, or has submitted to the City of Valdosta, Georgia a proposal for furnishing materials and labor and constructing certain improvements on _____ for the said City of Valdosta, and,

WHEREAS, the Principal desires to file this bond in accordance with the law, in lieu of a certified bidder's check otherwise required to accompany this proposal.

NOW, THEREFORE: The conditions of this obligation are such that if the proposal be accepted, the Principal shall within ten (10) days after receipt of notification of the acceptance thereof execute a contract in accordance with the Proposal and upon the terms, conditions and prices set forth therein, in the form and manner required by the City of Valdosta, Georgia, and execute a sufficient and satisfactory performance bond and payment bond payable to the City of Valdosta, Georgia, each in an amount of one hundred percent (100%) of the total contract price, in form and with security satisfactory to said City of Valdosta, then this obligation to be void; otherwise, to be and remain in full force and virtue in law; and the Surety shall, upon failure of the Principle to comply with any or all of the foregoing requirements within the time specified above, immediately pay to the aforesaid City of Valdosta, Georgia, upon demand, the amount hereof in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

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

_____ _____

Principal

Surety

By_____(Seal)_____(Seal)

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we_____

As Principal,and_____
as Surety, are held and firmly bound unto the City of Valdosta, Georgia in the full sum of _____ Dollars ($_____). for the use and protection of the said City of Valdosta and all subcontractors and all persons supplying labor, materials, machinery and equipment for the performance of the work provided for in the contract hereinafter referred to, for the payment of which well and truly to be made we find ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the above bound Principal has entered into a contract with the City of Valdosta, Georgia dated the _____ day of _____, 20____ , designated as Contract No. _____.

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

And the Surety to this Bond, for value received, agrees that no change, extensions of time, alterations or additions to the terms of the contract or to the work to be performed there under or the specifications accompanying the same shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alterations or additions to the terms of the contract or the work to the plans and specifications.

It is agreed that this bond is executed pursuant to and in accordance with the provisions of Section 23-1705, et. Sep. of the Code of Georgia, as amended by the Act approved February 27, 1956, and is intended to be and shall be construed to be a bond in compliance with the requirements thereof.

IN WITNESS WHEREOF, the principal and the Surety have caused these presents to be duly signed and sealed this ___ day of _____, 20____.

_____L.S._____L.S.

By_____ _____

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we _____

_____ (hereinafter called the Principal), and

_____(hereinafter called the Surety) are held and firmly bound unto the City of Valdosta, Georgia (hereinafter known as the Owner) for the use of said obligee and all persons doing work or furnishing skill, tools, machinery, supplies, or materials under or for the purpose of the contract hereinafter referred to, in full and just sum of

_____ Dollars ($_____) lawful money of the United States of America, to be paid to said City of Valdosta, Georgia, its successors, and assigns to which payment well and truly to be made we find ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above bounded Principal has entered into contract with the said Owner, bearing date of_____, 20_____ ,for construction_____ in the City of Valdosta, Georgia, Contract No. _____, more particularly mentioned:

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

NOW, THEREFORE: The conditions of this obligation are such that if the above bounded Principal shall in all respects fully comply with the terms and conditions of said contract and his obligations there under, including the Specifications, Proposal, and Plans therein referred to and made a part thereof, and such alterations as may be made in said plans and specifications as therein provided for, and including one year guarantee period from date of final acceptance, and shall indemnify and save harmless the City of Valdosta, Georgia, against and from all costs, expenses, damages, injury or loss to which the said Owner may be subject by reason of any wrong doing, misconduct, want of care or skill, negligence, or default, including patent infringement on part of said Principal, his agents or employees, in the execution or performance of said Contract and shall promptly pay all just claims for damages, or injury to property and for all work done, or skill, tools, and machinery, supplies, labor, and materials, furnished and debts incurred by said

Principal in or about the construction or improvements contracted for this obligation to be void, otherwise in full force and effect.

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

The Bond shall be for the use of all persons doing work or furnishing skill, tools, machinery, or materials under or for the purpose of this Contract, in accordance with the provisions of Section

23-1705 et. Sep. of the Code of the State of Georgia, as amended by the Act approved February 27, 1956, and is intended to be and shall be construed to be a bond in compliance with the requirements thereof.

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

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

ATTESTED:

_____

Contractor

By:_____

ATTESTED:

_____

Surety

By:_____

Executed in Quadruplicate

ADDENDUM NUMBER ONE (1)
DATE

Project: _____
Owner: City of Valdosta, Georgia
Opening Date and Time: _____

SAMPLE
The deadline for turning in bids has been extended to March 2, 2010, at 10:00 am. Public opening of bids will begin at 10:15 am. Additional requested information regarding this project will be provided in a later addendum.

Please be sure to acknowledge the receipt of this Addendum on your proposal form in the appropriate space provided.

Submitted,

Name
Title

VALDOSTA
A City Without Limits

NOTICE OF AWARD

To: CONTRACTOR NAME.
ADDRESS
ADDRESS

Project Description: PROJECT NAME

The OWNER has considered the BID submitted by you for the above-described WORK in response to its advertisement for BIDS.

You are hereby notified that your BID is accepted in the amount of $ ###############.

You are hereby required to execute the AGREEMENT, and within fourteen (14) calendar days from the date of this NOTICE to furnish the required Contractor's CERTIFICATION OF INSURANCE with a 30 day notice of cancellation and PERFORMANCE BOND.

If you fail to execute said AGREEMENT and to furnish said BOND and CERTIFICATIONS within fourteen (14) days from the date of this NOTICE, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

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

Dated this 9th day of June, 2023 .

CITY OF VALDOSTA, GEORGIA

BY:_____
Benjamin O'Dowd

TITLE:__City Engineer__

DATE:_____

CONTRACTOR

BY:_____

TITLE:_____

DATE:_____

END OF SECTION

VALDOSTA
A City Without Limits

ENGINEERING DEPARTMENT

NOTICE TO PROCEED

To: ATTN: name
contractor
address
city, state zip

Regarding: project name

You are hereby notified to commence WORK, in accordance with the CONTRACT agreement dated month day, year, on or before month day, year, and you are to complete the WORK within xxx consecutive calendar days thereafter. The date of substantial completion of the WORK is therefore month day, year.

City of Valdosta, Georgia

BY: _____
Benjamin O'Dowd, City Engineer

DATE: _____

City Hall Annex • Post Office Box 1125 • 300 N. Lee Street • Valdosta, GA 31603-1125
Telephone (229) 259-3530 • Fax (229) 333-1884

CHANGE ORDER NUMBER

PROJECT: **Project Name**

OWNER/ENGINEER
City of Valdosta – Engineering Department
P. O. Box 1125
300 North Lee Street
Valdosta, GA 31603 - 1125

CONTRACTOR
company
address
address
city, state zip code

The contract amount prior to this change is $ ###,###.##

The contract is modified as follows:

Description of change – quantity, item, unit costs, total costs per line item…

The contract amount is hereby INCREASED/DECREASED/UNCHANGED to **$ ###,###.##**

The contract time is hereby CHANGED/UNCHANGED from _____ to _____.

The above changes are hereby:

Recommended:	Approved:	Approved:
by:_____ (City Engineer)	by:_____ (Owner)	by:_____ (Contractor)
Title:_____	Title:_____	Title:_____
date:_____	date:_____	date:_____

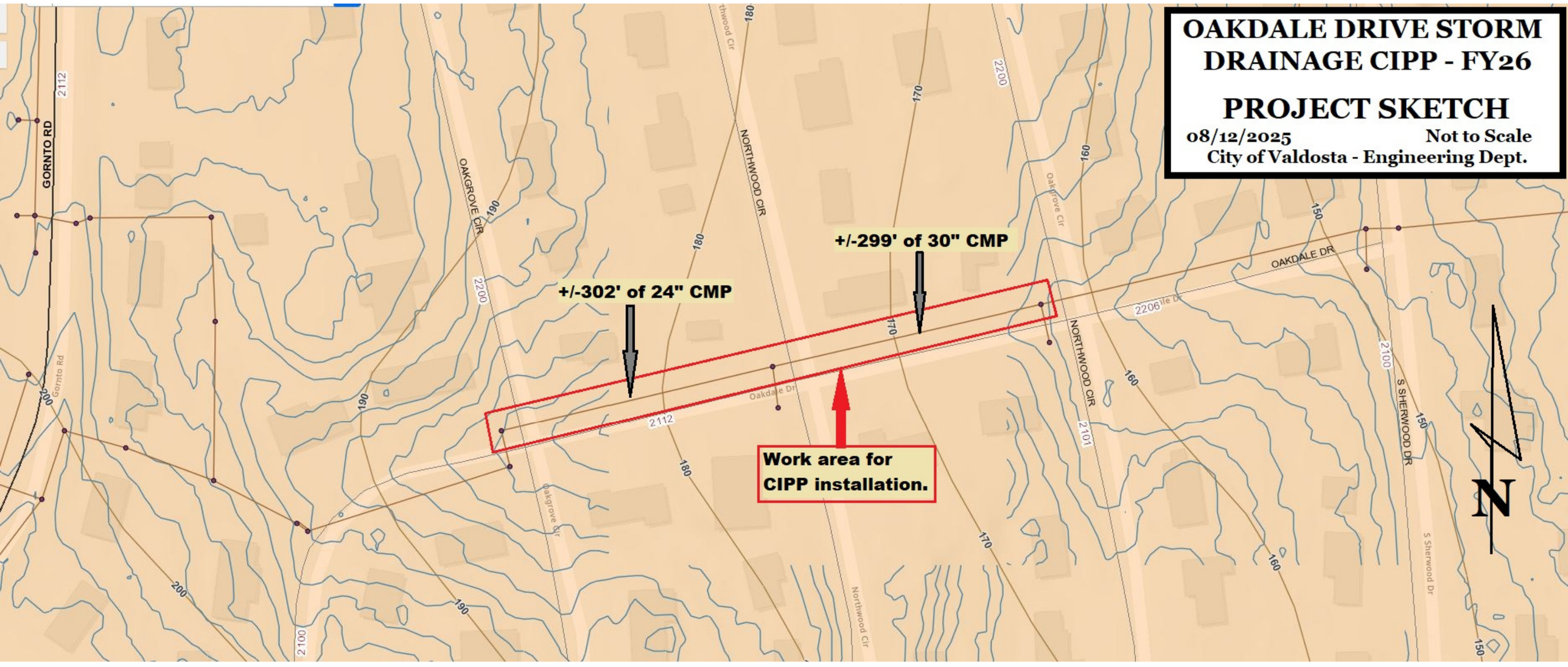
This change order is hereby fully executed and in effect as of the latest date shown above.

OAKDALE DRIVE STORM DRAINAGE CIPP - FY26

PROJECT SKETCH

08/12/2025 Not to Scale

City of Valdosta - Engineering Dept.



CURED-IN-PLACE PIPE (CIPP) INSTALLATION

PERFORMANCE SPECIFICATION GUIDELINE (PSG)

June 2023

2023 Edition
NASSCO Pipe Rehab Committee

(Supersedes all previous editions of this document)

Nassco.org

NASSCO, Inc.
5285 Westview Dr, Suite 202
Frederick, MD 21703

Disclaimer

These Specifications were prepared by a Committee comprised of representatives of NASSCO members and peer-reviewed by industry professionals. These Specifications are not specific to any one product, project, or job site, and should be considered a guideline only. Conditions for use may require additions, deletions or amendments to these guidelines so as to conform to project-specific site conditions and to comply with applicable laws, regulations, and ordinances. NASSCO does not guarantee, certify or assure any result and assumes no liability as to content, use and application of these guidelines

EFECTIVE SPECIFICATIONS

Effective specifications should encourage the most innovative, efficient and experienced Contractor to provide the level of quality required by the Owner at the best and lowest competitive price.

The specification should not strive to encourage the Contractor to seek the cheapest approach and product delivery available to provide the lowest price.

Effective specifications include the following, which are critical for project success:

1. Product selection for the best solution.
2. Definition of project goals and requirements, both short and long term.
3. Construction means and methods as defined, in writing, by the Contractor.
4. Product provided and installed as specified by the product manufacturer.
5. Product quality and quantity confirmed through inspection and testing.
6. Product design and service life verified through warranty inspection.

Index

PART 1 GENERAL

This performance specification guideline (PSG) is for the rehabilitation of gravity sewers, either sanitary, combined or storm, by the installation of cured-in-place-pipe (CIPP).

A. This performance specification guideline (PSG) includes the minimum requirements for the rehabilitation of sanitary and storm sewer pipelines by the installation of cured-in-place pipe (CIPP) within the existing, deteriorated pipe as shown on the plans included as part of these contract documents.

B. The rehabilitation of pipelines shall be done by the installation of a resin-impregnated flexible tube which, when cured, shall be continuous and tight-fitting throughout the entire length of the original pipe. The CIPP shall extend the full length of the original pipe and provide a structurally sound, jointless and water-tight new pipe-within-a-pipe. The Contractor is responsible for proper, accurate and complete installation of the CIPP using the system selected by the Contractor meeting the Owner requirements.

C. Neither the CIPP product, system, nor its installation, shall cause adverse effects to any of the Owner's processes or facilities. The installation pressure for the product shall not damage the system in any way, and the use of the product shall not result in the formation or production of detrimental compounds or by-products at the wastewater treatment plant. The Contractor shall notify the Owner and identify by-products produced as a result of the installation operations, test and monitor the levels, and comply with local waste discharge requirements. The Contractor shall clean up, restore existing surface conditions and structures, and repair the CIPP system determined to be defective. The Contractor shall conduct installation operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians, businesses and property owners or tenants and to provide an environmentally safe restored jobsite.

D. The prices submitted by the Contractor shall include all costs of permits, labor, equipment and materials for the various bid items necessary for furnishing and installing, complete in place, CIPP in accordance with these specifications. Items of work not specifically mentioned herein which are required, by the Contractor, to make the product perform as intended and deliver the final product as specified herein shall be included in the respective lump sum and unit prices bid.

1.1 DESCRIPTION OF WORK AND PRODUCT DELIVERY

The specifications must include a detailed description of the work required including products that are to be included in the installation, and what is to be delivered by the Contractor.

A. This PSG covers work necessary to furnish and install the CIPP. The Contractor shall provide materials, labor, equipment, and services necessary for traffic control (if required), bypass pumping and/or diversion of flows, cleaning, measurement and television inspection of sewers to be rehabilitated, CIPP installation, reconnection of service connections, quality controls, provide samples for performance of required material tests, final television inspection, testing of the rehabilitated pipe system, warranty work and other work, as specified herein.

B. The product furnished shall be a complete CIPP system including specific materials, applicable equipment and installation procedures. If prequalification is required, the CIPP system manufacturer may submit appropriate data/information to the Owner. Other CIPP systems or multi-component products will be required to meet the submittal requirements as contained herein.

C. The CIPP shall be continuous and jointless from manhole to manhole or access point to access point and shall be free of defects that will affect the long-term life and operation of the pipe.

D. The CIPP shall not leak at the manholes or through the wall of the installed pipe.-

If the host pipe is in groundwater, the use of end seals, if specified, shall be included to prevent infiltration tracking between the host pipe and CIPP and leaking into the CIPP at manholes.

E. The CIPP shall be designed for a life of 50 years or greater and an equal service life unless specifically specified otherwise by the Owner.

F. The CIPP may be designed for partially deteriorated conditions to resist external groundwater pressures only or for fully deteriorated conditions for a structural stand-alone pipe.

G. The installed CIPP shall comply with the chemical resistance requirements of the relevant ASTM standard(s) F1216, ~~or~~ ASTM D5813 (Section 6.4.1), ASTM F1743 or ASTM F2019.

H. All existing and confirmed active service connections and any other service laterals to be reinstated, as directed by the Owner, shall be re-opened robotically or by hand in the case of person-entry size piping, to their original shape and to 90% - 95% of their original area. All over-cut or under-cut service connections shall be properly repaired to meet the requirements of these specifications.

I. All materials furnished as part of this contract shall be marked with detailed product information, stored in a manner specified by the manufacturer and tested to the requirements of this contract.

J. Testing and warranty inspections shall be executed by the Owner. Defects found shall

be repaired or replaced by the Contractor.

K. The Contractor shall furnish, from the project installation, samples, marked with chain of custody information such as project name, section, date, diameter and thickness, etc., for product testing at the request of the Owner. The Owner shall take possession of the samples for testing and shall maintain the chain of custody, deliver the samples to an approved laboratory and pay for material and product testing performed under this contract.

1.2 REFERENCES

> All applicable reference documents should be listed in this section. If a document does not apply, is not pertinent or has unknown content, it should not be included. Specific reference document requirements should be defined in the contract documents or by reference to a specific section of the document. Specific Contractor requirements and/or test procedures contained in the references should be defined in detail in the contract documents.

A. The following documents form a part of this specification to the extent stated herein and shall be the latest editions thereof. Where differences exist between codes and standards, the requirements of these specifications shall apply. References to codes and standards shall be to the latest revised version.

- ASCE MOP 145 – Design of Close-Fit Liners for the Rehabilitation of Gravity Pipes
- ASTM - F1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
- ASTM - F1743 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)
- ASTM - D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- ASTM - F2019 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass Reinforced Plastic Cured-in-Place (GRP-CIPP) Using the UV-Light Curing Method
- ASTM - D2990 Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics

- ASTM - D5813 Standard Specification for Cured-in Place Thermosetting Resin Sewer Pipe
- Guideline for the Safe Use and Handling of Styrene-Based Resins in Cured-in-Place Pipe, NASSCO. 2023**.**
- Trenchless Technology Center at Louisiana Tech, 2019. NASSCO CIPP Emissions Phase 2: Evaluation of Air Emissions from Polyester Resin CIPP with Steam Cure
- Trenchless Technology Center at Louisiana Tech, 2023. NASSCO CIPP Emissions Phase 3 “Evaluation of Styrene Emissions Associated with Various CIPP Coatings in Refrigerated Storage” Final Report

1.3 PERFORMANCE WORK STATEMENT (PWS) SUBMITTAL

> In place of the engineer defining the specific method for product installation, the contractor defines the installation means and methods through a written plan called the Performance Work Statement (PWS). During construction the PWS provides valuable information to the inspector so that the inspector can determine if the submitted means and methods are being followed by the contractor. The PWS also outlines the necessary quality checks to be performed and the installation crew qualifications.

A. The Contractor shall submit, to the Owner, a Performance Work Statement (PWS) which clearly defines the CIPP product delivery in conformance with the requirements of these contract documents. Unless otherwise directed by the Owner, the PWS shall, at a minimum, contain the following:

B. Clearly indicate that the CIPP will conform to the project requirements as outlined in the Description of Work and as delineated in these specifications.

C. A detailed product installation plan describing preparation work, cleaning operations, pre-CCTV inspections, bypass pumping, traffic control, installation procedure, method of curing, service reconnection, quality control, testing to be performed, final CCTV inspection, warrantees furnished necessary and appropriate for a complete CIPP installation. An installation schedule shall be prepared, submitted and conform to the requirements of this contract.

D. Contractor’s description of the proposed CIPP technology, including a plan for identifying active service connections maintaining service, during mainline CIPP installation, to each home connected to the section of pipe being rehabilitated, including temporary service for commercial, industrial and apartment complexes, if required by the contract.

E. A description of the CIPP materials to be furnished for the project. Materials shall be identified in the submittals and conform to these specifications and/or shall conform to the pre-approved product submission.

F. A statement of the Contractors experience. The Contractor shall have a minimum of three (3) years of cumulative experience installing CIPP in pipe of a similar size, length and configuration as contained in this contract. The lead personnel, including the superintendent, the foreman and the lead crew personnel for the CCTV inspection, resin wet-out, the CIPP installation, curing and the robotic service reconnections each

must have a minimum of one (1) year of experience with the CIPP technology proposed for this contract and must have demonstrated competency and experience to perform the scope of work contained in this contract. The name and experience of each lead individual performing work on this contract shall be submitted with the PWS. Personnel replaced by the Contractor, on this contract, shall have similar, verifiable experience as the personnel originally submitted for the project

> If the design calculations include mechanical properties greater than the minimum properties listed in these specifications, the mechanical properties included in the design calculations become the minimum acceptable values when testing field samples.

G. Engineering design calculations, in accordance with the Appendixes of ASTM F1216, or ASTM F2019, ASCE MOP 145, or other design protocol as specified by the owner, for each length of CIPP to be installed including the thickness of each proposed CIPP. It will be acceptable for the Contractor to submit a design for the most severe line condition and apply that design to all the line sections. These calculations shall be performed and certified by a qualified Professional Engineer. All calculations shall include data that conforms to the requirements of these specifications or has been pre-approved by the Owner.

H. Proposed manufacturers' technology data shall be submitted for all CIPP products and all associated technologies to be furnished.

> Reinstating service laterals is a critical operation for completing small diameter CIPP installations. This specialty type equipment is not readily available for rent from local equipment rental companies. Because of this, often redundant robotic cutters are specified for small diameter projects with service laterals.

I. Submittals shall include information on CIPP intended for installation and tools and equipment required for a complete installation. The PWS shall identify which tools and equipment will be redundant on the job site in the event of equipment breakdown. Equipment to be furnished for the project, including proposed back-up equipment, shall be clearly described. The Contractor shall outline the mitigation procedure to be implemented in the event of key equipment failure during the installation process.

> Non-specialty backup equipment should be identified and reserved by the Contractor (on will call) from local rental companies in the event of equipment failure.

J. A description of the Contractor's proposed procedures for removal of existing blockages in the pipeline that may be encountered during the cleaning process.

Proper public notification can prevent many public relations issues during a project. If the residents know that there will be workers and equipment near their homes, that they should not use large volumes of water or that they may smell strange odors, many homeowner concerns and problems can be prevented.

K. A public notification plan shall be prepared and submitted including detailed staged notification to residences affected by the CIPP installation.

CIPP installations commonly include the use of resins which contain a styrene component. These resins can emit a distinctive odor from the styrene component. To minimize this nuisance odor the contractor should devise an odor control plan that will mitigate the nuisance effect to the general public and residents at the project site during the CIPP installation.

L. An odor control plan shall be submitted by the Contractor that will ensure that project specific odors will be minimized at the project site and surrounding area. Part of the plan will include methods for removing odors from residents' homes, if required.

M. Compensation for work required for the submittal of the PWS shall be included in the various pipelining items contained in the Proposal.

1.4 PRODUCT SUBMITTALS

Product submittals require the contractor to submit the materials to be incorporated in the installation. This also allows the contractor to submit alternative materials that may be equal or better than those specified. The engineer must be prepared to evaluate alternative materials through evaluation, certifications and third-party testing to validate alternative materials meet the specified requirements of the contract.

This section includes a list of significant CIPP products and procedures that should be included in the submittal package. These include the two principal products, the tube and the resin, in addition to handling and storing these items from the manufacturing plant to the wet-out facility. Also included are detailed procedures for wet-out, installation and curing.

A. Tube – including the manufacturer and description of product components (i.e., felt, fiberglass and other reinforcing materials) and applicable tube mechanical properties.

B. Flexible membrane – including materials (i.e., coating, foil) specific to the proposed curing method and recommended repair (patching) procedure if applicable.

C. Resin - including the manufacturer and description of product components including

the spectroscopic wavelength diagram for the resin being furnished as well as mechanical properties, corrosion data and creep data.

D. Manufacturers' shipping, storage and handling recommendations for all components of the CIPP system.

E. Safety Data Sheets (SDS) for all materials to be furnished for the project.

F. Tube wet-out and cure method including:

1. A description of the wet-out procedure for the proposed technology. In the case of tubes wet-out by a third party, the wet-out information from the third-party source.

2. The Manufacturer's recommended cure method for each diameter and thickness of CIPP to be installed. The PWS shall contain a detailed curing procedure outlining the curing medium, the method of application and how the curing process will be monitored (e.g., temperatures, pressure, output of light, rate of travel of light train assembly).

G. Compensation for all work required for the submittal of product data shall be included in the Lump Sum price contained in the Proposal for Mobilization.

Worker safety should be the number one priority on a job site. No work should start until the Contractor submits a safety plan, and all work should be conducted in accordance with the safety plan. The plan should be sufficiently detailed to describe daily safety meeting requirements, procedures and documentation. Emergency procedures and location of medical facilities should be identified

1.5 SAFETY

A. The Contractor shall conform to work safety requirements of pertinent regulatory agencies and shall secure the site for the working conditions in compliance with the same. The Contractor shall erect signs and other devices as are necessary for the safety of the work site.

B. The Contractor shall perform the Work in accordance with applicable OSHA standards. Emphasis shall be placed upon the requirements for entering confined spaces and with the equipment being utilized for pipe renewal.

C. The Contractor shall submit a proposed Safety Plan to the Owner prior to beginning any work, identifying all competent persons. The plan shall include a description of a daily safety program for the job site and all emergency procedures to be implemented in the event of a safety incident. The Safety Plan shall include safety recommendations for mitigating styrene emissions on heat-cure CIPP job sites that have a potential to

pose health risks to workers. Refer to TTC's Emissions Phase 2 and Phase 3 Reports and NASSCO's Styrene Guideline (See 1.2 REFERENCES). Work shall be conducted in accordance with the Contractor's submitted Safety Plan.

D. Compensation for work required for the submittal of the Safety Plan shall be included in the pipelining items contained in the Proposal.

1.6 QUALITY CONTROL PLAN (QCP)

A Quality Control Plan (QCP) should be submitted by the Contractor. The QCP should include a discussion of the proposed quality controls to be performed by the Contractor, including material protection and handling, equipment operation and documentation requirements. The Contractor personnel, including names and cell phone numbers for those that are responsible for assuring that all quality requirements are met, should be identified and submitted.

A. A Quality Control Plan (QCP) that represents and conforms to the requirements of these specifications shall be submitted to the Owner. At a minimum the QCP shall include the following:

1. A discussion of the proposed quality controls to be performed by the Contractor.

2. Defined responsibilities, of the Contractor's personnel, for assuring that quality requirements for this contract are met. These shall be assigned by the Contractor to specific personnel.

3. Proposed procedures for quality control, product sampling and testing shall be defined and submitted as part of the plan.

4. Proposed methods for product performance controls, including method of and frequency of product sampling and testing both in raw material form and cured product form.

5. Scheduled performance and product test result reviews between the Contractor and the Owner at a regularly scheduled job meeting.

6. Inspection forms and guidelines for quality control inspections shall be prepared in accordance with the standards specified in this contract and submitted with the QCP.

Success of a CIPP installation leverages an industry standard of care performance specification and an inspector that understands CIPP quality control procedures required on a project. The inspector should be trained and knowledgeable in where the product is applicable, technology procedures, material wet-out, curing requirements, acceptability standards and required testing.

1.7 CIPP REPAIR/REPLACEMENT

As part of the PWS, the Contractor should submit repair and replacement procedures for common CIPP defects. Defects should be categorized as those that need no repair, those that can be repaired and those that must be removed and replaced. Defects that affect the operation and/or longevity of the CIPP should be repaired or replaced.

A. Occasionally installations will result in the need to repair or replace a defective CIPP. The Contractor shall outline specific repair or replacement procedures for potential defects that may occur in the installed CIPP. Repair/replacement procedures shall be as recommended by the CIPP system manufacturer and shall be submitted as part of the PWS.

B. Defects in the installed CIPP that will not affect the operation and long-term life of the product shall be identified and defined.

C. Repairable defects that may occur in the installed CIPP shall be specifically defined by the Contractor based on manufacturer's recommendations, including a step-by-step repair procedure, resulting in a finished product meeting the requirements of these contract specifications.

D. Unrepairable defects that may occur to the CIPP shall be clearly defined by the Contractor based on the manufacturer's recommendations, including a recommended procedure for the removal and replacement of the CIPP.

1.8 AS-BUILT DRAWINGS/RECORDS

As-Built drawings/records include the identification of the work completed by the Contractor and should include the pre- and post-inspection documentation. As-Built drawings /records should be kept current and should be available on the project site at all times. As-Built drawings/records can be in the form of actual drawings, either paper or electronic, spreadsheets or Word documents.

A. As-Built drawings/records, pre and post inspection videotapes, CDs or other electronic media shall be submitted to the Owner, by the Contractor, within 2 weeks of final

acceptance of said work or as specified by the Owner. As-Built drawings/records will include the identification of the work completed by the Contractor and shall be prepared on one set of Contract Drawings/Records provided to the Contractor at the onset of the project.

B. As-Built drawings/records shall be kept on the project site at all times, shall include all necessary information as outlined in the PWS or as agreed to by the Owner and the Contractor at the start of the Contract, shall be updated as the work is being completed and shall be clearly legible.

C. Compensation for work required for the submittal and approval of As-Built drawings/records shall be included in the various pipelining items contained in the Proposal.

1.9 WARRANTY

> The Contractor should warrant the CIPP material and installation for a period as specified. If required by the Owner, the Contractor should warrant defective work that has been repaired for an extended period as agreed. After completion of the work but before the warranty period has expired, the owner should inspect a portion of the rehabilitated system. Initial warranty inspection should include up to 15% of the completed work. The warranty inspection should be based on the recommendations documented by the project inspector during the execution of the project. Defects found should be remedied in accordance with the repair/replacement plan submitted in the PWS. Depending on the frequency of defects found, the Owner may inspect more installations, as necessary.

A. The materials used for the project shall be certified by the manufacturer for the specified purpose. The Contractor shall warrant the CIPP material and installation for a period of one (1) year. During the Contractor warranty period, any defect which may materially affect the integrity, strength, function and/or operation of the pipe, shall be repaired at the Contractor’s expense in accordance with procedures included in Section 1.7 CIPP Repair/Replacement and as recommended by the manufacturer.

B. For work completed by the Contractor that is defective and/or has been repaired, the Contractor shall warrant this work for (1) year in addition to the warranty required by the contract.

C. After a pipe section has been rehabilitated and for a period of time up to one (1) year following completion of the project, the Owner may inspect all or portions of the rehabilitated system. The specific locations will be selected at random by the Owner’s inspector and should include all sizes of CIPP from this project. If it is found that any of the CIPP has developed abnormalities since the time of "Post Construction Television Inspection," the abnormalities shall be repaired and/or replaced as defined in Section 1.7 CIPP Repair/Replacement and as recommended by the manufacturer.

If, after inspection of a portion of the rehabilitated system under the contract, problems are found, the Owner may televise all the CIPP installed on the contract. All verified defects shall be repaired and/or replaced by the Contractor and shall be performed in accordance with Section 1.7 CIPP Repair/Replacement and per the original specifications, all at no additional cost to the Owner.

PART 2 PRODUCTS

2.1 MATERIALS

> The cured CIPP product must meet the chemical resistance requirements specified as referenced in the relative ASTM standard(s) F1216, ASTM F1743, ASTM D5813 (Section 6.4.1), or ASTM F2019. The tested product should be the same type of tube and resin used on the project. Chemical resistance testing is a qualification test that is typically completed by the resin manufacturer who then certifies that the product meets the specified requirement. This certification, which can be accompanied by the test report, is submitted by the contractor prior to the start of the project.

A. The CIPP System must meet the chemical resistance requirements of these contract documents.

B. Materials shipped to the project site shall be accompanied by test reports certifying that the material conforms to the appropriate ASTM standards listed herein. Materials shall be shipped, stored, and handled in a manner consistent with written recommendations of the CIPP system manufacturer to avoid damage. Damage includes, but is not limited to, gouging, abrasion, flattening, cutting, puncturing or ultra- violet (UV) degradation. On-site storage locations shall be approved by the Owner. Damaged materials shall be promptly removed from the project site at the Contractor's expense and disposed of in accordance with all current applicable agency regulations.

2.2 TUBE

> The tube is the vehicle that carries the resin into the pipeline and holds the resin in place prior to and during cure. The thickness of the tube and installation procedures determine the finished thickness of the CIPP. A properly designed and specified tube is critical to achieving the specified finished CIPP thickness.

A. The tube shall consist of one or more layers of absorbent non-woven felt fabric, felt/fiberglass, felt/carbon fiber, carbon fiber or fiberglass and meet the material requirements of ASTM F1216, ASTM F1743, or ASTM F2019 and ASTM D5813 as applicable The tube shall be capable of absorbing and carrying resins, constructed to withstand installation pressures and curing temperatures and have sufficient strength to bridge missing pipe segments and stretch to fit irregular pipe sections. The

Contractor shall submit certified information from the tube manufacturer on the nominal void volume in the felt fabric that will be filled with resin or the recommended saturation rates using the proposed resin.

B. The wet-out tube ("liner") shall have a uniform thickness and excess resin distribution that when compressed at installation pressures will meet or exceed the design thickness after cure.

C. The tube shall be manufactured to a size and length that when installed will tightly fit the internal circumference of the original pipe. Allowance shall be made for circumferential stretching during installation. The tube shall be properly sized to the diameter of the existing pipe and the length to be rehabilitated and be able to tolerate circumferential changes to fit irregular pipe sections and negotiate bends. The Contractor shall determine the minimum tube length necessary to effectively span the designated run between manholes. The Contractor shall verify the lengths in the field prior to ordering and prior to impregnation of the tube with resin to ensure that the tube will have sufficient length to extend the entire length of the run. The Contractor shall also measure the inside diameter of the existing pipelines in the field prior to ordering tube so that the CIPP can be installed in a tight-fitting condition.

D. The outside and/or inside layer of the tube (before inversion/pull-in, as applicable) shall be coated or covered with an impermeable, flexible membrane that will contain the resin and facilitate, if applicable, vacuum impregnation and monitoring of the resin saturation during the resin impregnation (wet-out) procedure.

E. No material shall be included in the tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be acceptable upon visual inspection as evident by color contrast between the tube and the activated resin containing a colorant, if a colorant is utilized.

F. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made. The color contrast shall be sufficient to distinguish between the fully resin saturated tube and dry or resin lean areas.

G. Seams in the tube, if applicable, shall meet the requirements of section 7.1 of ASTM F1743.

H. The outside of the tube shall be marked at a maximum of every 5 feet with the name of the manufacturer or CIPP system, manufacturing lot and production footage.

I. The minimum length of the tube shall be that deemed necessary by the installer to effectively span the distance from the starting manhole to the terminating manhole or access point, plus that amount required to run-in and run-out for the installation process.

J. The nominal tube wall thickness shall be constructed, as a minimum, to a sufficient thickness that exceeds the required design thickness for that section of installed CIPP. Wall thickness transitions may be fabricated into the tube between installation entrance and exit access points. The volume of resin used in the impregnation shall be sufficient to fully saturate the tube.

2.3 RESIN

In felt tube CIPP, the resin is the structural pipe. In reinforced tube CIPP, the resin is important in providing the structural matrix so that the reinforcing fibers can significantly increase the CIPP's mechanical properties. Thus, it is important that the applicable resin for the pipe's flow characteristics is specified and delivered to the wet-out facility. The project representative should verify that the resin specified or substituted by the Contractor meets the contract specified requirements. The inspector should verify that the specified or approved resin is supplied by the Contractor and correct amount of resin is added to the tube at the wet-out facility. This information can be verified from the spectroscopic wavelength diagram of the resin, the tube wet-out report and standard resin saturation charts furnished from the suppliers of the resin and tube.

A. The resin shall be a corrosion resistant polyester or vinyl ester resin and catalyst system or epoxy resin and hardener system that, when properly cured within the tube composite, meets the requirements of ASTM F1216, ASTM F1743 or ASTM F2019, the mechanical properties herein, and those which are to be utilized in the design of the CIPP for this project. The resin, specified for the specific application defined in the contract documents, shall produce CIPP which will comply with or exceed the structural and chemical resistance requirements of this specification.

B. The resin to tube ratio, by volume, shall be furnished as recommended by the CIPP tube manufacturer.

2.4 STRUCTURAL REQUIREMENTS

The calculated design thickness typically determines the minimum installed CIPP thickness. However, in small diameter CIPP, such as 8", the calculated thickness may be quite small depending upon the design loads. The minimum installed CIPP thickness in these cases should consider the minimum thickness required for maintenance activities such as pressure jetting and abrasion and damage from materials and objects in the pipe flow. Also, the risk of leakage through the CIPP wall increases as the wall becomes thinner. Under these circumstances, a minimum wall thickness greater than the calculated design thickness may be prudent. The type of CIPP product, for example felt or glass tube, should be considered.

A. The mechanical properties and physical characteristics of the finished CIPP will vary

considerably, depending on the types and mixing proportions of the materials used and the degree of cure executed. It shall be the responsibility of the Contractor to control these variables and to provide a CIPP system which meets or exceeds the minimum properties specified herein or as submitted in the PWS.

B. The CIPP shall be designed as per ASTM F1216 Appendix X1, ASTM F2019 Appendix X1, or ASCE MOP 145. The CIPP design shall assume no bonding to the original pipe wall.

C. The design engineer shall set the long-term (50 year extrapolated) Creep Retention Factor at 50% of the initial design flexural modulus as determined by ASTM D790 test method. This value shall be used unless the Contractor submits long-term test data (ASTM D2990) to substantiate a higher retention factor.

D. The cured pipe material ("CIPP") shall, at a minimum, meet or exceed the mechanical properties, as listed below or as submitted in the PWS.

2.5 MINIMUM MECHANICAL PROPERTIES

Property	Test Method	Cured Composite Per ASTM F1216 or F1743	Cured Composite Per ASTM F2019	Cured Composite Per Design
Flexural Modulus of Elasticity	ASTM D790	250,000 psi	Declared Value but not less than 725,000 psi	Contractor Value
Flexural Strength	ASTM D790	4,500 psi	Declared Value but not less than 15,000 psi	Contractor Value

A. The required CIPP wall thickness shall be based, as a minimum, on the mechanical properties of the cured composite and per the design of the Professional Engineer (see section 1.3.G) and in accordance with the design equations contained in Appendix X1 of ASTM F1216, Appendix X1 of ASTM F2019, or ASCE MOP 145 and the following design parameters:

Design Safety Factor	2.0 (1.5 for pipes 36" or larger, if applicable)
Creep Retention Factor	50% or otherwise verified by test data
Ovality	2% or as measured by field inspection
Constrained Soil Modulus	Per AASHTO LRFD Section 12 and AWWA Manual M45
Groundwater Depth	As specified or indicated on the Plans
Soil Depth (above the crown)	As specified or indicated on the Plans
Live Load	Highway, railroad, airport or permanent structures as applicable
Soil Load (assumed)	120 lb./cu. ft. or as specified

ASCE MOP 145 does not use a safety factor and includes three Design States [I, II, or III]. MOP 145 design is based on LRFD (load and resistance design factors), and the appropriate parameters depend on the Design State used and are defined in the MOP.

B. The Contractor shall submit, prior to installation of the lining materials, certification of compliance with these specifications and/or the requirements of the pre-approved CIPP system. Certified material test results shall be included that confirm that materials conform to these specifications and/or the pre-approved system. Materials not complying with these requirements will be rejected.

C. The design soil modulus may be adjusted based on data, determined from project soil testing results, as provided by the Owner in the contract documents.

PART 3 INSTALLATION

3.1 CONSTRUCTION REQUIREMNTS

The construction requirements cover on-site activities needed for proper installation of the CIPP product. Construction activities (cleaning, inspection, measurement, bypass, etc.) should have been explained in the PWS submitted by the Contractor. Inspection and testing requirements, during construction, should be defined for the Contractor and the inspector. The Contractor shall keep wet-out and curing logs for inspection by the Owner or Owner's project representative.

A. The liner shall be constructed of materials and methods that, when installed, shall

provide a continuous structurally sound CIPP able to withstand all imposed static and dynamic loads on a long-term basis as required in the specifications.

B. The Contractor may, under the direction of the Owner, utilize existing manholes in the project area as installation access points. If a street must be closed to traffic because of the location of the sewer, the Contractor shall furnish a detailed traffic control plan with necessary labor and equipment. The plan shall be in conformance with the requirements of the local agency having jurisdiction over traffic control.

C. Cleaning of Pipelines – Before ordering tube materials for the project, the Contractor shall remove debris from inside the pipeline that will interfere with the installation and the final product delivery of the CIPP, as required in these specifications, and accurately measure and document the diameter and length of the existing pipeline to be rehabilitated. Solid debris and deposits shall be removed from the system and disposed of properly by the Contractor. Moving material from manhole section to manhole section shall not be allowed. As applicable, the Contractor shall either plug or install a flow bypass pumping system to properly clean the pipelines. Precaution shall be taken by the Contractor in the use of cleaning equipment to avoid damage to the existing pipe. The repair of any damage, caused by the cleaning equipment, shall be the responsibility of the Contractor. The Owner will designate a site for the disposal of debris removed from the Owner's sewer system as a result of the cleaning operation. Unless otherwise specified by the Owner, the Contractor shall dispose of debris at no charge. Should dumping fees apply, the Contractor shall be compensated at the respective unit price bid in the Proposal for cleaning.

D. Bypassing Existing Flows - The Contractor shall provide for the flow of existing mainline and service connection effluent, if applicable, around the section or sections of pipe designated for CIPP installation. With most small diameter pipelines, particularly on terminal sewers, plugging will be adequate but must be monitored on a regular basis to prevent backup of sewage into adjacent homes. Service connection effluent may be plugged, if required, only after proper notification to the affected residence and may not remain plugged overnight. Installation of the CIPP shall not begin until the Contractor has installed the required plugs, or a sewage bypass system, and all pumping facilities have been installed and tested under full operating conditions including the bypass of mainline and side sewer flows, if required. Once the installation has begun, existing flows shall be maintained, until the CIPP is fully cured, cooled down, fully televised and the CIPP ends finished. The Contractor shall coordinate sewer bypass and flow interruptions with the Owner at least 7 days in advance. The pump and bypass lines shall be of adequate capacity and size to handle peak flows. The Contractor shall submit a detail of the bypass plan and design to the Owner before proceeding with any CIPP installation. Compensation for bypass pumping and all associated plans and approvals shall be at the price bid in the Proposal.

E. Contractor shall perform post-cleaning video inspections of the pipelines. Only PACP certified personnel trained in locating defects, obstacles and service connections by

closed circuit television shall perform the inspection. The Contractor shall provide the Owner a copy of the pre-cleaning and post-cleaning video and suitable log, and/or in digital format, for review prior to installation of the CIPP and for later reference by the Owner.

F. Line Obstructions - It shall be the responsibility of the Contractor to clear the line of obstructions that will interfere with the installation and long-term performance of the CIPP. If pre-installation inspection reveals an obstruction, misalignment, broken or collapsed section or sag that was not identified as part of the original scope of work and will prohibit proper installation of the CIPP, the Contractor may be directed by the Owner to correct the problem(s) prior to installation by utilizing open cut repair methods. The Contractor shall be compensated for this work under a contingency pay item designated for open cut point repairs. Removal of previously unknown obstructions shall be considered as a changed condition. The cost of removal of obstructions that appeared on pre-bid video documentation and made available to the Contractor, prior to the bid opening, shall be compensated for on a unit price basis in accordance with the contract documents.

G. The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing the CIPP. If required in the contract documents, each connection will be dye tested to determine whether or not the connection is live or abandoned. Other approved methods to confirm live connections are acceptable. The cost for dye testing of existing service connections shall be compensated at the unit price bid in the Proposal for Dye Testing of Existing Service Connections. In the event the status of a service connection cannot be adequately defined, the Owner will make the final decision, prior to installation of the CIPP, as to the status. Typically, only service connections deemed “active” shall be reopened by the Contractor.

H. The Contractor shall be allowed use water from an owner-approved fire hydrant in the project vicinity. Use of an approved double check backflow assembly shall be required. Contractor shall provide his own approved assembly. Contractor shall pay current market price for all water usage.

3.2 INSTALLATION OF CIPP

It is important that the CIPP be installed in accordance with the manufacturer’s recommendations. These procedures should have been outlined in the PWS submitted by the Contractor. Recommended procedures that should be monitored include: Installation speed and pressure, the cure schedule and curing temperature monitoring must be maintained and documented, as recommended by the manufacturer. Chemical grouting should be utilized, or a pre-liner should be installed, where the infiltration into the pipeline is excessive and may affect the cure and/or the final structure of the CIPP unless the tube has an outer coating or film.

A. The CIPP shall be installed and cured in the host pipe per the manufacturer's specifications as described and submitted in the PWS.

B. CIPP installation shall be in accordance with the applicable ASTM standards as modified in this Section 3.2.

C. If significant groundwater infiltration is present in the existing sewer, such as PACP defects coded "infiltration gusher" or multiple "runners", the Contractor shall install a preliner or perform chemical grouting to control resin loss and contamination, maintain CIPP thickness, prevent mechanical property reduction and prevent inadequate curing of the CIPP resulting from water or other contamination of the resin during installation. The preliner shall be a plastic tube to fit the existing pipeline and shall be continuous from manhole (access) to manhole (access). Preliners are not required in this situation when using pulled-in liners with exterior coatings or in the case of light cured liners (i.e., UV or LED) that contain an outer membrane.

D. The liner shall be positioned in the pipeline using the method specified by the manufacturer. Care should be exercised not to damage the liner during installation. The liner should be pulled-in or inverted through an existing manhole or approved access point and fully extend to the next designated manhole or termination point in accordance with ASTM F1216, ASTM F1743, or ASTM F2019, and the manufacturer's recommendations.

E. When Using Hot Water or Steam Cure: Prior to installation and as recommended by the manufacturer, remote temperature gauges or sensors shall be placed inside the host pipe to monitor the temperatures during the cure cycle. CIPP and/or host pipe interface temperature shall be monitored and logged during cure.

To monitor the temperature of the CIPP wall and to verify correct curing, where specified by the contract documents, temperature monitors can be placed between the host pipe and the CIPP in the bottom of the host pipe (invert) at manholes or access points and/or throughout its entire length (continuous) to monitor the temperature on the outside of the CIPP during the curing process.

Curing shall be accomplished by utilizing the appropriate medium in accordance with the manufacturer's recommended cure procedure and/or schedule. The curing source or in and output temperatures shall be monitored and logged during the cure cycles, if applicable. The manufacturer's recommended cure method and schedule shall be used for each line segment installed, and the CIPP wall thickness and the existing ground conditions with regard to temperature, moisture level, and thermal conductivity of soil shall be taken into account by the Contractor.

If any temperature sensor or continuous sensor location does not reach the temperature as specified by the manufacturer to achieve proper curing or cooling, the installer can make necessary adjustments to comply with the manufacturer's recommendations. For continuous temperature monitoring, the system computer should have an output report that specifically identifies stations along the length of pipe, indicates the maximum temperature achieved and the sustained temperature time at the stations. At each station along the length of the pipe, the computer should record both the maximum temperature and the minimum cool down temperature and comply with the manufacturer's recommendations.

> When using hot water or steam cure methods, monitoring cure temperatures is important for verifying the correct cure of the resin. Temperatures can be monitored continuously in time and location throughout the pipeline being rehabilitated by using a fiber optic cable sensing system installed in the pipe invert prior to CIPP installation. Continuous monitoring systems are computer controlled with a real-time screen display and can be monitored by any smart device. This is especially useful for critical sewers and medium to large diameter sewers. As a minimum, standard thermocouples, which measure temperatures at one point, should be used, typically at the pipe invert in the termination manhole. Often thermocouples are used in addition to continuous monitoring systems to verify proper cure of the CIPP.

F. When Using Photoinitiated Reaction (i.e., UV or LED light cure): A protocol shall be defined by the manufacturer and recorded during the cure process and maintained as documentation to verify cure. Data collected shall include time, rate of travel of the light curing assembly for dynamic curing processes, pressures, temperature in the liner and the power output of the light assembly along the entire length of the installed CIPP. The cure procedure shall be in accordance with ASTM F1216, ASTM F1743, or ASTM F2019 and the manufacturer's recommendation as included in the PWS submission by the Contractor.

3.3 COOL DOWN

> Proper cool down of CIPP is important to help minimize CIPP shrinkage and cracking. The temperature profile and times required should be provided as a part of the cure schedule. Short cuts that reduce the cool down time should not be allowed.

A. The Contractor shall cool the CIPP in accordance with the approved CIPP manufacturer's recommendations as described and outlined in the PWS.

B. Temperatures and curing data shall be monitored and recorded by the Contractor throughout the installation process to ensure that each phase of the process is achieved as approved in accordance with the CIPP system manufacturer's recommendations.

3.4 FINISH

> Any defect which could affect the structural integrity or longevity of the CIPP should be repaired. Sealing the ends of the CIPP at manholes and at service connection openings, if specified, is important in cases where the sewer is below the groundwater surface elevation. Leaks through the wall of the CIPP are considered a defect.

A. The installed CIPP shall be continuous over the entire length of a sewer line section and be free from visual defects such as foreign inclusions, dry spots, pinholes, major wrinkles and delamination. The CIPP shall be impervious and free of leakage through the CIPP wall.

B. Any defect which will or could affect the structural integrity or strength of the CIPP shall be repaired at the Contractor's expense in accordance with the procedures submitted under Section 1.7 CIPP Repair/Replacement.

C. The beginning and end of the CIPP shall be sealed to the existing host pipe, if specified. The sealing material shall be compatible with the pipe end and shall provide a watertight seal.

D. If any of the service connections leak water between the host pipe and the installed CIPP, the connection mainline interface shall be sealed, if required by these specifications, to provide a leak tight connection.

E. If the wall of the CIPP leaks, it shall be repaired or removed and replaced with a watertight pipe as recommended by the manufacture of the CIPP system.

F. Compensation shall be at the actual length of CIPP installed. The length shall be measured from center of manhole to center of manhole. The unit price per linear foot installed shall include materials, labor, equipment and supplies necessary for the complete CIPP installation. Compensation for service connection sealing and pipe sealing at the manhole/wall interface shall be at the unit price bid in the Proposal.

> The long-term structural capability of the existing underground pipeline is defined by the pipe design and the surrounding soil structure. When a CIPP is installed through an existing pipe that represents such defects as soil visible or soil missing, the engineer should consider that the soils be replaced using a flowable fill technique to provide soils support for the newly installed CIPP.

3.5 FLOWABLE FILL OF VOID AREAS

A. Where required by the Owner, the Contractor shall backfill known voids that remain

after installation of CIPP. The material shall be of the flowable fill type and shall be injected into the void while removing all trapped air from the void. The Contractor shall submit the proposed method of placing the flowable fill, including pressures that will not collapse the CIPP and air release method to be employed, to the Owner for review before material is installed. The cost of this work shall be at the unit price bid for flowable fill and include all material, equipment, and labor to complete the filling of the soil void

3.6 MANHOLE CONNECTIONS AND RECONNECTIONS OF EXISTING SERVICES

> The most common method of sealing the CIPP at manholes is to install a hydrophilic rubber seal prior to installing the CIPP. Sealing the CIPP at manholes after the CIPP has been installed is possible but less effective. Side connections should be cut open to at least 90%-95% of the original service connection opening area. In all cases, the invert of the lateral connection shall be cut flush with the invert entering the mainline to eliminate debris build-up.

A. A seal, consisting of a resin mixture or hydrophilic seal compatible with the installed CIPP, shall be applied at manhole/wall interface, if specified, in accordance with the CIPP System manufacturer's recommendations.

B. Existing services shall be internally or externally reconnected unless indicated otherwise in the contract documents

C. Reconnections of existing services shall be made after the CIPP has been installed, fully cured, and cooled down. It is the Contractor's responsibility to make sure that all active service connections are reconnected. If verification of active service connections requires techniques beyond standard mainline CCTV then a separate bid item shall be included.

> Verification of active services can be completed using many options such as dye testing, CCTV via lateral launching from the main, connection records from the Owner or other means. Methods requiring the Contractor to extend resources beyond mainline CCTV should be separate bid items.

D. External reconnections are to be made with a tee fitting or other approved method in accordance with CIPP System manufacturer's recommendations. Saddle connections shall be seated and sealed to the new CIPP using grout or resin compatible with the CIPP.

E. A CCTV camera and remote cutting tool shall be used for internal reconnections. The machined opening shall be at least 90 percent of the service connection opening area and the bottom of both openings must match. The opening shall not be more than 100 percent of the service connection opening. The edges of the opening shall not have

pipe fragments or CIPP fragments which may obstruct flow or snag debris. In all cases the invert of the service connection shall be cut flush with the invert entering the mainline.

F. If service reinstatements result in openings that are greater than 100 percent of the service connection opening, the Contractor shall install a CIPP type repair, sufficiently in size to completely cover the over-cut service connection. No additional compensation will be paid for the repair of over-cut service connections.

G. Coupons or fragments of CIPP material resulting from service tap cutting shall be collected at the next manhole downstream of the pipe rehabilitation operation prior to leaving the site. Coupons may not be allowed to pass through the system.

H. Compensation shall be at the actual number of services reconnected using either internal or external means as contained in the Proposal. The unit price bid per service line reconnected shall be include all materials, labor, equipment and supplies necessary to complete the work as required in these specifications.

3.7 TESTING OF INSTALLED CIPP

CIPP mechanical properties should be verified through field sampling and independent testing. Samples shall be taken from the CIPP section installed and should be properly marked and transmitted to an independent testing laboratory or obtained from the project site by a laboratory representing the Owner. Test results should be transmitted from the laboratory to the Owner's representative. Sampling should be in accordance with ASTM F1216, ASTM F1743, or ASTM F2019 as applicable, and a chain of custody should be strictly maintained. Restrained samples can be used for sewers of 18" diameter or less. Plate samples are used for pipelines larger than 18" diameter. Samples should be acquired as directed and specified by the Owner or the Contract documents.

A. The mechanical properties and thickness of the installed CIPP shall be verified through field sampling and laboratory testing. All materials for testing shall be furnished by the Contractor to the Owner for testing. All materials testing shall be performed at the Owner's expense by an independent third-party laboratory selected by the Owner as recommended by the CIPP manufacturer. All tests shall be in accordance with applicable ASTM test methods to confirm compliance with the requirements specified in these contract documents, or as submitted in the PWS. Tubes constructed of fiberglass and cured by light (i.e., photoinitiated reaction) shall be tested in accordance with Appendix X2 of ASTM F2019.

B. The Contractor shall provide samples for testing to the Owner from the actual installed CIPP. Samples shall be provided from each section of CIPP installed or as required by the Owner. The sample shall be cut from a section of cured CIPP that has been inverted or pulled through a like diameter pipe which has been held in place by a

suitable heat sink, such as sandbags. All curing, cutting and identification of samples will be witnessed by the Owner and transmitted by the Owner's representative as specified, and sent to the testing laboratory. Flat plate samples can be taken on pipelines greater than 18 inches in diameter, if specified. Identification on the samples shall include markings indicating the direction of reinforcement when used in tube construction and shall be standard chain of custody markings.

C. The laboratory results shall identify the test sample location as referenced to the nearest manhole and station. Final payment for the project shall be withheld pending receipt and approval of the test results. If properties tested do not meet the minimum mechanical and thickness requirements, the CIPP shall be repaired or replaced by the Contractor unless the actual mechanical properties and the thickness of the sample tested meet the design requirements as required in the contract.

> Chemical resistance is a qualification test where CIPP samples tested should be of the tube and resin proposed for the actual construction. For municipal applications, a certification is typically submitted from the manufacturer verifying that the chemical resistance meets the contract requirements. For industrial installations, the chemical resistance of the resin installed must be tested to meet the corrosion resistance requirements of the pipeline being rehabilitated.

D. Chemical resistance - The CIPP system installed shall meet the chemical resistance requirements of the relevant ASTM standard(s) F1216, ~~or~~ ASTM F1743, ASTM D5813 (section 6.4.1), or ASTM F2019. CIPP samples tested shall be of the tube and the specific resin proposed for actual construction. It is required that CIPP samples without plastic coating meet these chemical testing requirements. A certification may be submitted, by the Contractor, from the manufacturer verifying that the chemical resistance of the CIPP meets the contract requirements.

E. Hydraulic Capacity - The installed CIPP shall, at a minimum, be equal to the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.

F. The installed CIPP thickness shall be measured for each line section installed as per the ASTM requirements specified. If the CIPP thickness does not meet that specified in the contract and submitted as the approved design by the Contractor, then the CIPP shall be repaired or removed unless the tested mechanical properties and the thickness of the sample tested meet the design requirements as required in the contract. The CIPP thickness shall have tolerance of minus 5%. In worker-entry size piping, where sampling is by flat plate, a quality-based approach using the approved quality plan will be used to accept installed thickness (see discussion in following text box). If the plate sample does not meet the required mechanical property values, or if quality checks are deficient, it may be necessary for the Contractor to remove a core sample from the CIPP 12 o'clock position to check thickness. The openings produced from core samples shall be repaired in accordance with manufacturer's recommended

procedures.

For small diameter CIPP of 18” inch diameter or less, the restrained sample can be measured for thickness. In sewers larger than 18-inch diameter the flat plate sample can be tested for thickness, but a flat plate can be constructed in any thickness. The thickness can be measured in a manhole once the CIPP ends are cut, but this may result in a low measurement due to resin loss and thinning. A quality-based approach can be used where it is determined that if all the quality checks are met, the likelihood of the CIPP installed thickness meeting the required minimum installed thickness is good. For example, if the dry tube is the correct thickness, the correct type and amount of resin is added during wet-out, and the correct pressures, temperatures and procedures are used during installation and cure, the installed thickness should meet the design minimum thickness. If the plate sample does not meet the required physical property values, or if any quality checks are deficient, it may be necessary to remove a core sample from the CIPP at the 12:00 o’clock position to check thickness. The core hole shall be repaired as recommended by the manufacturer.

G. All costs to the Contractor associated with providing cured CIPP samples for testing shall be included in the Lump Sum price bid for Mobilization. Payment for all testing by a laboratory will be paid for by the Owner directly to the laboratory under the lump sum Reserve for Testing item in the Bid Proposal.

3.8 FINAL ACCEPTANCE

Sample testing and repairs to the CIPP should be completed. Test results must have been received from the independent laboratory and meet the contract specified requirements prior to final acceptance of the installed CIPP.

A. CIPP sample testing and repairs to the installed CIPP, as applicable, shall be completed before final acceptance, meeting the requirements of these specifications, and documented in written form.

Prior to conducting the final CCTV, the Contractor should thoroughly clean the newly installed CIPP. Sewage flow in the line should be minimized, and standing water in sags should be cleared. The CCTV visual quality of the final inspection shall be as specified in the contract. If the quality does not meet the specified requirements, the Contractor shall re-CCTV those section that are unacceptable.

B. The Contractor shall perform a closed-circuit television inspection in the presence of the Owner after installation of the CIPP and reconnection of the side sewers per PACP requirements. Conventional pan-and-tilt TV camera or sidewall scanning technology, as approved by Owner, shall be used. The finished CIPP shall be continuous over the entire length of the installation and shall be free of significant visual defects, damage, lifts, holes, leaks and other defects that are not a reflection of the existing pipe condition. Unedited digital documentation of the inspection shall be provided to the

Owner within ten (10) working days of the CIPP installation. The data shall note the inspection date, location of all reconnected side sewers, debris, as well as defects in the CIPP, including, but not limited to, gouges, cracks, bumps, or bulges. If post installation inspection documentation is not submitted within ten (10) working days of the CIPP installation, the Owner may, at its discretion, suspend further installation of CIPP until the post-installation documentation is submitted. As a result of this suspension, no additional working days will be added to the contract, nor will adjustment be made for increase in cost. Immediately prior to conducting the CCTV inspection, the Contractor shall clean the newly installed CIPP removing debris and build-up that may have accumulated at no additional cost to the Owner.

Final CCTV inspection should be performed using water jets to eliminate standing water in sags and bellies while the line is being televised.

If required by the Owner in the specifications, leakage can be determined through visual inspection (water or air installations), hydrostatic testing (water installations), air testing (air installations) or infiltration testing (water or air installations). For small diameter sewers installed with air pressure (light cure or steam cure), it does not make sense to do hydrostatic (exfiltration) testing for leakage. This leaves visual inspection or air testing as viable alternatives.

For large diameter sewers, visual inspection for leakage is the most common method. Air and hydrostatic testing should not be performed for sewers greater than 36” diameter because of worker safety. Any unacceptable leakage through the CIPP wall should be repaired as required in the contract documents or agreed to by the owner.

C. If required by the Owner in the specifications, and if the pipe diameter is less than or equal to 36”, the CIPP shall be tested for leakage using the water exfiltration test (ASTM F1216 8.2) or a low pressure air test (refer to Appendix A). Testing is limited to pipe lengths with no reinstated service laterals and could delay service lateral reinstatement. Water exfiltration or air testing is not recommended in pipe diameters exceeding 36” diameter. In these cases, a visual inspection for leakage shall be performed, if specified.

Any unacceptable leakage through the CIPP wall should be repaired as required in the specifications or agreed to by the owner.

Not all CIPP line segments can be air tested because of end configurations in the manhole, shape of the CIPP and CIPP irregularities. It is recommended that only a set percentage of the line segments in any one project be tested in lieu of testing each line segment.

Low pressure air testing can be a dangerous operation. It is imperative that all safety protocols for plug operation & maintenance and air testing be followed, including proper blocking/bracing of plugs during the air test and limiting air tests to a maximum diameter of 36 inches.

D. Bypass pumping or plugging from the upstream manhole shall be utilized to minimize sewage from entering the line during the inspection. In the case of bellies in the line, the pipe shall be cleared of standing water to provide continuous visibility during the inspection.

3.9 TYPICAL BID ITEMS

Additional items such as pre-liner and flowable backfill can be added to specific contracts requiring these items.

A. Mobilization – Lump Sum - Includes all PWS information, submittals, safety plan, as-built drawings, testing samples, mobilization/demobilization of labor, equipment and materials to the project site. Generally limited to 5% of the total amount bid for the project.

B. Pre-Installation CCTV Inspection – Per linear foot - Includes pre-cleaning and post cleaning CCTV for Owner review. Does not include CCTV inspection just prior to CIPP installation. All inspections will be performed by PACP trained and certified personnel.

C. Dye Testing of Service Connections – Per each - Includes dye testing and documentation of existing service connection on each pipe length to be lined.

D. Point Repairs – Per each or by Lump Sum Contingency - Includes excavation and restoration of a section or sections of pipe that are beyond rehabilitation using CIPP. Note: Point repair items shall be categorized by pipe size, a minimum length of excavation and depth category of excavation to be paid for in the Proposal. If point repairs are not identified in the contract documents, payment shall be on a contingency basis.

E. Standard Pipe cleaning – Per linear foot for each pipe size category – including all labor, equipment, materials and cost of material disposal.

F. Heavy Pipe Cleaning – Per linear foot for each pipe category – including all labor, equipment, materials and cost of material disposal.

G. Preliner Installation – per linear foot installed by size category. Includes all labor, equipment and materials required.

H. CIPP Installation – Per linear foot for each pipe size category - Includes all labor,

equipment and materials required for the complete installation of a CIPP.

I. Flowable Fill – per cu. yd. of material installed and documented including all labor, equipment and materials required for the complete backfilling of soil voids.

J. Traffic Control – Lump Sum – Includes all labor, equipment and materials required to implement a traffic control plan for the entire project and shall include all costs associated with sub-contracted traffic control specialists.

K. Sewage Bypass – Lump Sum – Includes all labor, equipment and materials required to implement a flow bypass plan for the entire project, including the cost of all sub-contracted flow bypass specialists.

L. Service Reconnections – Per each – Includes reconnecting existing live sewer service connections to the installed CIPP. Owner shall review and verify those connections that are not live and will be left unopened.

M. Service connection sealing – Per each – Includes sealing the interface between the installed CIPP and the host pipe at the location of the service connection.

N. Manhole/Wall Interface Sealing – Per each – Includes sealing the interface between the installed CIPP and the manhole wall.

O. Post Construction CCTV Inspection - Per linear foot - Includes post lining CCTV for submission to the Owner. All inspections will be performed by PACP trained and certified personnel.

P. Reserve for Testing – Lump Sum Reserve – For Owners use to include testing required as directed by the Owner, under this contract, by an independent laboratory. (The amount will be set by the Owner in the Bid Proposal)

END OF SECTION

Appendix A: Air Testing of CIPP

Pressure gauges used for this test shall have a minimum division of 0.1 psi and an accuracy of 0.0625 psi.

Test Procedure:

1. The tested pipe may be wet or dry.
2. The minimum test pressure should equal 3.5 psi plus 0.433 psi for each foot of average water or groundwater depth over the crown of the pipe. The maximum test pressure shall be 6 psi.
3. Slowly add air to the section of pipe being tested until the internal air pressure is raised to 4 psi greater than the average back pressure due to water or groundwater. The maximum air pressure shall be 6 psi.
4. Once the test pressure is reached, allow a period of time for the air temperature to stabilize. The stabilization period can vary from a few minutes to an hour or more dependent upon the temperature of the air and CIPP under test. Add air to maintain pressure.
5. After the temperature stabilization period, disconnect the air supply.
6. Record the time in seconds required for the air pressure to drop from 3.5 to 2.5 psi greater than the average back pressure due to water or groundwater.

Acceptance Criteria:

The tested section is acceptable if the time recorded is not less than the time in seconds (T):

$$T = K/C$$

Where:

K = the sum of the computations ($0.011d^2L$) for each size of CIPP and its length in the section
C = the sum of the computations ($0.0003882\ dL$) for each size of CIPP and its length in the section; the minimum value for C = 1
d = inside diameter of CIPP in inches
L = length of CIPP in feet

If the tested section fails the air test (time recorded is less than T), check all connections of the test apparatus with soapy water for leaks. Complete another stabilization period (# 4 above) and retest. If the tested section fails again but the results are better (time recorded is still less than T but closer), the problem may be temperature stabilization or re-rounding or expansion of the CIPP. Repeat the stabilization/test cycle if results continue to improve until the section passes. If after repeated test/stabilization cycles the results are not improving, there is most likely a leak in the CIPP or the test apparatus.

If it is determined that there is a leak in the CIPP test section, then a visual test will be performed to locate the leak and repair it, if possible. Repairs will be in accordance with manufacturer's recommendations. Once repaired, the section should be retested.

Not all CIPP line segments can be air tested because of end configurations in the manhole, shape of the CIPP and CIPP irregularities such as wrinkles. It is recommended that only a set percentage (typically 10%) of the line segments in any one project be tested in lieu of testing each line segment.

Low pressure air testing can be a dangerous operation. It is imperative that all safety protocols for plug operation & maintenance and air testing be followed, including proper blocking/bracing of plugs during the air test and limiting air tests to a maximum diameter of 36 inches.

Table 1: Example Air Test Chart for Gravity Sewers

*Adapted from “Oregon Standard Specifications for Construction, 2015, Section 00445.72 Pipe Testing, pp. 330-331”

Table 1: Example Air Test Chart for Gravity Sewers

Example Air Test Chart for Gravity Sewers

Minimum Acceptance Time for Pressure Drop from 3.5 to 2.5 psi

Adapted from "Oregon Standard Specifications for Construction" (2015)

Diameter	6-inch			8-inch			10-inch			12-inch			18-inch			24-inch		
Length (ft.)	C	K	Minimum Time	C	K	Minimum Time	C	K	Minimum Time	C	K	Minimum Time	C	K	Minimum Time	C	K	Minimum Time
			Min.-Sec.			Min.-Sec.			Min.-Sec.			Min.-Sec.			Min.-Sec.			Min.-Sec.
100	1.00	35	0'-35"	1.00	64	1'-02"	1.00	100	1'-40"	1.00	146	2'-26"	1.00	329	5'-29"	1.00	585	9'-45"
150	1.00	53	0'-53"	1.00	93	1'-33"	1.00	150	2'-30"	1.00	219	3'-39"	1.01	493	8'-10"	1.34	877	10'-53"
200	1.00	70	1'-10"	1.00	125	2'-05"	1.00	200	3'-20"	1.00	292	4'-52"	1.34	658	8'-10"	1.79	1169	10'-53"
250	1.00	88	1'-28"	1.00	156	2'-36"	1.00	250	4'-10"	1.12	365	5'-27"	1.68	822	8'-10"	2.24	1462	10'-53"
300	1.00	105	1'-45"	1.00	187	3'-07"	1.11	300	4'-30"	1.34	439	5'-27"	2.01	987	8'-10"	2.68	1754	10'-53"
350	1.00	123	2'-03"	1.02	218	3'-33"	1.29	349	4'-30"	1.57	512	5'-27"	2.35	1151	8'-10"	3.13	2046	10'-53"
400	1.00	140	2'-20"	1.17	249	3'-33"	1.48	399	4'-30"	1.79	585	5'-27"	2.68	1316	8'-10"	3.58	2339	10'-53"
450	1.00	158	2'-38"	1.31	280	3'-33"	1.66	449	4'-30"	2.01	658	5'-27"	3.02	1480	8'-10"	4.03	2631	10'-53"
500	1.10	175	2'-40"	1.46	312	3'-33"	1.85	499	4'-30"	2.24	731	5'-27"	3.36	1644	8'-10"	4.47	2923	10'-53"
550	1.21	193	2'-40"	1.61	343	3'-33"	2.03	549	4'-30"	2.46	804	5'-27"	3.69	1809	8'-10"	4.92	3216	10'-53"
600	1.31	210	2'-40"	1.75	374	3'-33"	2.22	599	4'-30"	2.68	877	5'-27"	4.03	1973	8'-10"	5.37	3508	10'-53"
650	1.42	228	2'-40"	1.90	405	3'-33"	2.40	649	4'-30"	2.91	950	5'-27"	4.36	2138	8'-10"	5.82	3801	10'-53"
700	1.53	245	2'-40"	2.05	436	3'-33"	2.59	699	4'-30"	3.13	1023	5'-27"	4.70	2302	8'-10"	6.26	4093	10'-53"

Notes:		
	1. $C = (0.0003882)dL$	4. If C is less than 1 use C =1
	2. $K = (0.011)d^2L$	5. For project calculated minimum times, use actual inside diameter of CIPP
	3. $T_{(Sec.)} = (K/C)$	6. Calculations shown are for 4.5 mm CIPP for 6", 6 mm for 8", 10" & 12", 9 mm for 18" and 12 mm for 24"
	7. If C > 1, $T_{(Sec.)} = 28.34d$	

Utilities Miscellaneous Rates, Charges, and Fees as of 08/01/2025	
Description	**Fees**
Residential & Commercial Meter Fees and Charges — Full Service	
Water Meter & Installation Fee for meter install within 5 business days	
3/4" (5/8') meter & install	$702.00
1" meter & install	$756.00
1 1/2" meter & install	$1,026.00
2" meter & install	$1,296.00
Meters above 2"	Market Rate plus $108.00
Meter installation within 24 hours — an additional fee	$270.00
Sewer Connection Fees and Charges — added to all full-service meters	
Sewer Connection Fee (Sewer Tap) Must be added to every meter except for irrigation meter)	$432.00
Irrigation Meters Fees and Charges — Water Only	
3/4" (5/8') meter & install with a — T-Connection	$1,296.00
3/4" (5/8') meter & install with a — Main Connections	$3,402.00
Water Connection and Reconnection Fees	
New Service	$27.00
Residential Initial Deposit	$100.00
Additional Deposit (after disconnection for non-payment the deposit will increased by an additional fee each time the service is re-established)	$50.00
Residential Service disconnection penalty is assessed when account is closed due to nonpayment + Balance in full is required to re-establish the service	$ 30.00 plus balance in full
Commercial Service disconnection penalty is assessed when account is closed due to nonpayment +Balance in full is required to re-establish the service	$ 50.00 plus balance in full

Wastewater Service disconnection penalty is assessed when account is closed due to nonpayment + Balance in full is required to re-establish the service	$ 540.00 plus balance in full
Tampering Fees	
3/4" (5/8') Tampering Fee 1st offence	$270.00
1" Tampering Fee 1st offence	$324.00
1 1/2" Tampering Fee 1st offence	$378.00
2" Tampering Fee 1st offence	$432.00
2 /2"1 and larger meters Tampering Fee	Refer to Theft of Services
Theft of Services for Tampering Fee & Unregistered Hydrant Fee	
1st Offence	$1,080.00
2nd Offence	$2,160.00
3 rd Offence	Magistrate Court
Other Miscellaneous Fees and Charges	
Re-Read Fee: Applied if the requested re-read shows that the read is correct	$27.00
Excess Trip Charges: Additional trips to check out for the same reason	$10.80
Standby or After Hour Calls	$81.00
Broken Payment Arrangements	$27.00
Broken Meter Curb Stop Fee	$108.00
Broken Meter Pen & Lock Fee	$54.00
Hydrant Rental Meter Fees and Charges	
Hydrant Meter Rental Fee, Inside City Limits	$1,500.00
Hydrant Meter Rental Fee, Outside City Limits	$2,000.00
Hydrant Meter Monthly Base Charge	$100.00
Hydrant Water Usage Charges — Commercial Consumption Rate per Unit	Commercial Rate per Unit

Backflow and Fats, Oil, & Grease Fees and Charges	
BFP Non-Compliance with Ordinance Fee	$108.00
BFP Inspection Fee	$108.00
Grease Trap Non-Compliance with Ordinance Fee	$108.00
Grease Trap Inspection Fee	$108.00
Georgia Commercial Waste Vehicle Inspection - Per Vehicle	$270.00
Georgia Commercial Waste Vehicle Inspection - Additional Fleet	$108.00
Laboratory Services Fees and Charges	
Biochemical Oxygen Demand Test	$43.20
Chemical Oxygen Demand Test	$43.20
Total Suspended Solids Test	$43.20
Ammonia Nitrogen Test	$43.20
Fecal Coliform Test	$43.20
Bac-T Test	$32.40

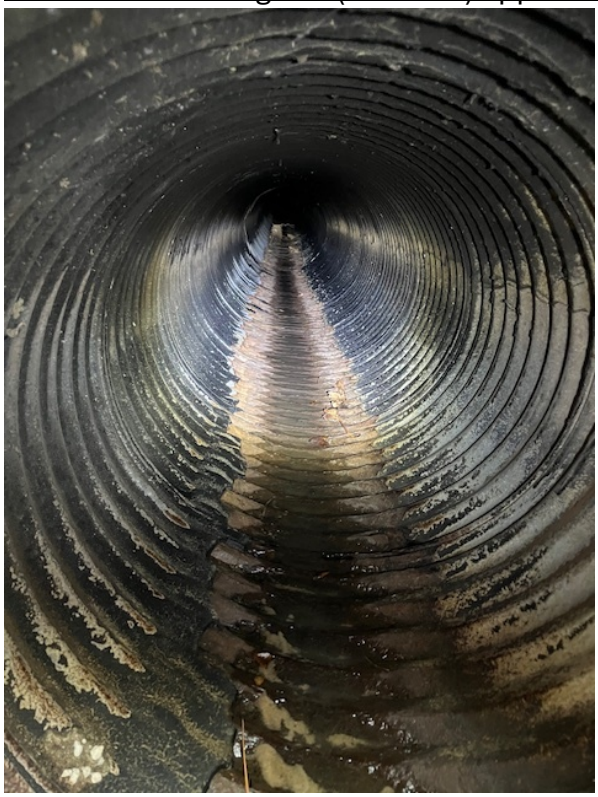
Oakdale Storm Drain CIPP – FY26

Existing Pipe Conditions Photos

Issued 08/12/2025

Oakgrove to Northwood/Oakgrove (30” CMP)

Northwood to Oakgrove (30” CMP) opposite direction from above



Oakgrove to Northwood (24” CMP)