

CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

CITY OF RIDGELAND FY27 TERM BIDS

October 1, 2026 thru September 30, 2027



CONTRACT DOCUMENTS AND SPECIFICATIONS
FOR
CITY OF RIDGELAND FY27 TERM BIDS

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SECTION 00100
ADVERTISEMENT FOR BIDS

Notice is hereby given that the Mayor and Board of Aldermen of the City of Ridgeland, Mississippi, will receive written and electronic sealed bids for the purchase of services, commodities, and supplies for Public Works and contracts for public construction as listed below. Bids will be received until the hour of **10:00 am., Tuesday, August 18, 2026**, in the Public Works Conference Room at City Hall located at 100 W. School Street, Ridgeland, Mississippi 39157 or may be submitted electronically at www.centralbidding.com.

Water & Sewer Distribution System Components-Installation
Equipment and Labor Rental Per Hour
Herbicide Ditch Spraying
Herbicide Roadside Spraying
Sewer Rehabilitation System
Landscape Materials & Installation (Plants, Soil, Sod, and Mulch) (Labor & Materials)
Aggregate, Soil and Fill Materials
Drainage Pipe – All Types (Materials Only)
Drainage Pipe & Structures (Installation Only)
Asphalt (FOB – Plant)
Asphalt (Various Locations - City of Ridgeland)
Water Treatment Chemicals
Water System Components- Materials
Sewer System Components- Materials
Pre-Cast Concrete Drainage Structures Materials
Concrete Installation and Repair, Labor and Materials
Concrete Materials and Supplies
GPS Locating Service (per hour)
Easement Clearing and Maintenance
Water Operations Maintenance and Inspection Services
Pre-cast Concrete Manholes
Utility Pothole Service (per hour)
Pest Control Chemicals
Traffic Signs
Street Sign Posts, Blanks and Miscellaneous Material
Decorative Street Name Signs & Posts
Construction Work Zone Sign and Equipment Rental
Temporary Painted Traffic Markings (Labor & Materials)
Permanent Thermoplastic Pavement Markings (Labor & Materials)
Heat Fused Durable Retro-reflective Preformed Pavement Markings (Materials)
General Traffic Signal Street Light Maintenance Service (Labor)
Vehicle Loop Assemblies (Labor & Materials)
Crack Sealant (Hot Applied)
Stamping and Printing Asphalt Pavement (Labor & Materials)
Decorative Stamped and Painted Concrete Pavement (Labor & Materials)

Official bid documents can be down loaded from Central Bidding at www.centralbidding.com and electronic bids can be submitted at www.centralbidding.com. For any questions relating to the electronic bidding process and to register, please call Central Bidding at 225-810-4814. All Bids must be sealed and clearly marked “Sealed Bid” with the item you are bidding listed on the envelope. Please put only one bid form in each envelope. All bids shall be submitted in duplicate. Bids will only be accepted on forms provided by the City and downloaded from

www.centralbidding.com and the prices quoted will be binding for the period from **OCTOBER 1, 2026 THRU SEPTEMBER 30, 2027, with option for (2) 1-year renewals unless otherwise indicated.** Contracts for purchase will be made from the lowest and/or best bids submitted, but the Mayor and Board of Aldermen reserve the right to reject any and all bids, and accept or reject any part of a bid.

All bids properly submitted in accordance with this notice will be opened at **10:00 am, August 18, 2026** in the Board Room at City of Ridgeland located at 100 W. School Street, Ridgeland, MS

Electronic Bidding: www.centralbidding.com

Hand Delivery: City of Ridgeland, Attn: Renee Buckner, 100 W. School Street, Ridgeland, MS 39157

Mailing Address: City of Ridgeland, Attn: Renee Buckner P.O. Box 217, Ridgeland, MS 39158

CITY OF RIDGELAND, MISSISSIPPI

BY: /s/Angela Richburg

Angela Richburg, City Clerk

Publish: July 16, 2026 and July 23, 2026

Furnish 2 proofs of publication/City of Ridgeland

END SECTION 00100

SECTION 00200
INSTRUCTIONS FOR BIDDERS

1. **Receipt and Opening of Bids:** See copy of Advertisement for Bids (Section 00100) bound herewith.
2. **Preparation of Bids:**
 - A. Shall be made on the forms provided and all applicable blank spaces filled in. Alterations, erasures or changes of any kind must be initialed by the BIDDER and shall not contain any recapitulation of the work to be done. No oral, telephonic or telegraphic proposals will be considered.
 - B. **BIDDERS ARE HEREBY NOTIFIED THAT ANY PROPOSAL ACCOMPANIED BY LETTERS, QUALIFYING IN ANY MANNER, THE CONDITION UNDER WHICH THE PROPOSAL IS TENDERED, WILL BE CONSIDERED AS AN IRREGULAR BID AND SHALL NOT BE CONSIDERED IN MAKING THE AWARD.**
 - C. Bids may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Bids received after the time and date specified shall not be considered.
 - D. Submit TWO COPIES of bids in one opaque sealed envelope marked as follows:

Bid for: CITY OF RIDGELAND FY27 TERM BIDS

Certificate of Responsibility No. _____ (if applicable)

Name of Bid Form Enclosed: _____
(One per Bid Form Envelope)
 - E. Any addenda issued during the bidding shall be noted on the Bid Form and shall become a part of the executed Contract.
 - F. Each Bidder shall submit a completed Proposal Form and a completed Bid Form for each Section the Bidder desires to Bid. Each Bid Form must be accompanied by a separate Proposal Form and both shall be submitted in duplicate in one Envelope marked as referenced above.
3. **Method of Bidding:**
 - A. Each contract award will be made to the lowest and best bidder offering the lowest and best amount on each Bid Form as directed by the Bid Form.
 - B. Winning Bidders will be expected to sign a Contract within 10 days of Award Notification. Contractors offering labor services will complete the "CONTRACT-CONTRACTOR" and Material Suppliers will complete the "CONTRACT-VENDOR".

- C. The Contract will only become effective when signed by the Owner. Prior to the Owner's signature, any and all costs incurred shall be the sole responsibility of the bidder. Note: Contracts have no value until Purchase Orders are issued by the OWNER.
- D. Purchase Orders shall be issued for any work that the Owner chooses to have performed or for purchasing materials from any CONTRACTOR OR VENDOR.
- E. **The CITY OF RIDGELAND, MISSISSIPPI reserves the right to reject any or all bids and to waive any and all informalities.**

4. **Addenda and Interpretations:**

- A. Should a bidder find discrepancies in, or omissions from, the drawings or specifications or should be in doubt as to their written meaning, he should at once notify the Owner, who will send a written instruction or interpretation to all known holders of the documents. The Owner will not be responsible for any oral instructions.
- B. Addenda to specifications or drawings that may be issued before or during the time of bidding shall be included in the bid form and will become a part of the Contract.

5. **Certificate of Responsibility Number:**

- A. Each Contractor submitting a bid for any line item or Bid Specification that involves the use of labor to install must show on the face of the envelope containing the bid, his Mississippi State Certificate of Responsibility Number unless there appears a statement on the face of the envelope that the enclosed bid does not exceed \$50,000.00.
- B. **No bids will be accepted, opened or considered unless the above information is given as specified.**

Sufficient evidence that said certificate of responsibility number has been issued and is in effect at the time of receiving bids, and that Bidder's CR work classification(s) qualifies him to perform the type(s) of work required for this project, must be submitted when required by Owner.

6. **Notice to Nonresident Bidders:**

- A. A nonresident BIDDER domiciled in a state having laws granting preference to local contractors shall be awarded Mississippi public contracts only on the same basis as the nonresident bidder's state awards contracts to Mississippi contractors bidding under similar circumstances; and resident contractors actually domiciled in Mississippi, be they corporate, individuals or partnerships, are to be granted preference over nonresidents in awarding of contracts in the same manner and to the same extent as provided by the laws of the state of domicile of the nonresident.

- B. When a nonresident CONTRACTOR submits a bid for a public project, he **shall** attach thereto a copy of his resident state's current bid law pertaining to such state's treatment of nonresident CONTRACTORS. **Any bid submitted by a nonresident CONTRACTOR which does not include the nonresident CONTRACTOR'S current state law may be rejected and not considered for award unless waived by the OWNER.**
 - C. Nonresident BIDDERS Certificate: Nonresident CONTRACTORS must complete the Nonresident BIDDERS Certificate included in the Contract Documents (page C-9) and submit same as part of their bid.
 - D. As used in this section, the term "resident contractors" includes a nonresident person, firm or corporation that has been qualified to do business in this state and has maintained a permanent full-time office in the State of Mississippi for most recent two (2) years prior.
- 7. **Bid Security:** No bid bonds are required.
 - 8. **Security for Faithful Performance:** Contract Performance and Payment Bonds may be required for certain work at the OWNER'S discretion. In the event that the OWNER elects to require Performance and Payment Bonds for certain work, the Owner will reimburse the Contractor at the direct cost incurred by the Contractor (must be included in a Purchase Order). The Owner will establish the required amount of the Bonds to ensure the payment of all persons performing labor on this Contract and for furnishing all materials in connection with this Contract. The surety on such Bond or Bonds shall be a duly authorized Surety Company doing business in the State of Mississippi.
 - 9. **Law And Regulations:** The bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.
 - 10. **Obligation of Bidder:** At the time of the opening of bids, each bidder will be presumed to have read and to be thoroughly familiar with the Drawings & Specifications (as applicable) and Contract Documents (including addenda issued, if any).
 - 11. **Time of Completion:** Bidder must agree to commence work within 30 calendar days from the date of the Purchase Order, which shall be considered an official "Notice to Proceed" from the Owner unless otherwise stated. The work shall be fully complete within a reasonable and customary amount of time. Bids shall be good and valid for the term as stated on the Proposal Form.
 - 12. **Non-Collusion Affidavit:** Contractor must complete **(in duplicate)** the non-collusion affidavits included in the Contract Documents and submit same as part of his bid. **FAILURE TO DO SO WILL DISQUALIFY HIS BID.**
 - 13. **Interpretations:** No oral interpretation made to any Bidder as to the meaning of the Drawings and Specifications or Contract Documents, shall be considered an effective modification of the provisions of the Contract Documents. Written and oral requests for

interpretation of the Drawings and Specifications shall be submitted to the Owner for a formal decision which will be given in writing to all Drawing and Specification holders.

14. **Qualifications of Bidders:** The Owner may make such investigations as he deems necessary to determine the ability of the Bidder to perform the work and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject a Bid if the evidence submitted by or investigation of such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the items of Work or Materials contemplated therein.
15. **Insurance:** Contractors who provide Labor Services will be required to carry the types and amounts of insurance specified in the Section 00404, as enclosed herein for the full term of the Contract.
16. **Contract Awards:** Award of Contracts, if made, shall be within **sixty (60) days** of date of receipt of Bids.
17. **No Guarantee of Purchase Orders:** The Owner reserves the right to issue Purchase Orders for work or materials. The purpose of Term Bids is to preposition Contractors and Vendors to aid in the speed of being able to complete work and purchase materials while complying with the strict requirements of the purchasing law of the State of Mississippi. Some bid items will be purchased more than others, and some will not be purchased at all. The quantities listed in each Bid Form are for the purpose of evaluating proposals and are not a guarantee of quantities. The needs for issuing Purchase Order can change, and Purchase Orders can be canceled for no cause. The Owner can stop work or a purchase at any time. The Owner shall pay for work complete and items delivered.

END OF SECTION - 00200

**SECTION 00300
PROPOSAL**

Proposal of _____

(hereinafter called "BIDDER"), organized and existing under the laws of the State of

_____ doing business as a _____,

insert: (corporation, partnership, limited liability company, or individual) to: the **City of Ridgeland,**

Mississippi, (hereinafter called "OWNER").

In compliance with your advertisement for Bids for construction of:

CITY OF RIDGELAND FY27 TERM BIDS

BIDDER, hereby proposes to perform all WORK for construction AND/OR supply all MATERIALS in strict accordance with the CONTRACT DOCUMENTS, and at the prices stated on each attached Bid Form. By submission of the BID, each BIDDER certifies, and in the case of a joint BID each party thereto certifies as to his own organization, that this BID has been developed independently, without consultation, communication or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER ACKNOWLEDGES receipt of the following ADDENDA:

NUMBER

DATE

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

BIDDER understands that the quantities mentioned in each Bid Form are merely for the purpose of calculating quantities to determine the lowest and best bid. Owner has the discretion to issue Purchase Orders to winning Bidders, but the Owner does not have the obligation to issue Purchase Orders. Owner also has the right to use other purchasing mechanisms as allowed by the laws of the State of Mississippi.

In accordance with the requirements of the Plans & Specifications (as applicable) and Contract Documents, BIDDER proposes to furnish all necessary materials, equipment, labor, tools and/or other means of construction and to construct the Project or supply the Materials in accordance with the Contract Documents at the prices specified on the Bid Form(s) supplied by each BIDDER with

this Proposal. **All prices submitted shall be good and valid from October 1, 2026 through September 30, 2027.**

It is agreed that the description under each item, being briefly stated, implies, although it does not mention, all incidentals and that the prices stated are intended to cover all such work, materials, and incidentals as constitute Bidder's obligations as described in the Specifications and any details not specifically mentioned, but evidently included in the Contract shall be compensated for in the item which most logically includes it.

Bidder further agrees to execute the contract agreement as bound herein within ten (10) days after receipt of contract forms from the owner.

BIDDER also proposes to execute a Performance Bond and a Payment Bond, if required by the Owner, each in an amount of not less than **one hundred percent (100%)** of the total of the Base Bid. These Bonds shall not only serve to guarantee the completion of the work on the BIDDERS part, but also to guarantee the excellence of both workmanship and materials until the work is finally accepted. Owner agrees to compensate Contractor for the direct cost of the Bonds.

Further, the BIDDER agrees to abide by the requirements under Executive Order No. 11246, as amended, including specifically the provision of the Equal Opportunity Clause set forth in the Federal Requirements, if applicable.

NOTES:

1. Unit price amounts are to be shown in figures where indicated. Where a discrepancy in the unit price and the extension of any items occurs, the unit price will govern.
2. Unit prices shall include all labor, materials, shoring, removal, overhead, profit, insurance, delivery fees, etc., to cover the finished work or materials of the several kinds called for.
3. Any erasure, change or alteration of any kind must be initialed and HIGHLIGHTED by the BIDDER.
4. Bid prices shall include sales tax and all other applicable taxes and fees.
5. Any item of work not specified on the Proposal as a separate pay item or indicated as an absorbed cost in a pay item but which is incidental to completion of the work shall be considered as an absorbed cost with full compensation included in the unit price bid for the particular item involved.
6. The Owner reserves the right to issue Purchase Orders for work or materials. The purpose of Term Bids is to preposition Contractors and Vendors to aid in the speed of being able to complete work and purchase materials while complying with the strict requirements of the purchasing law of the State of Mississippi. Some bid items will be purchased more than others, and some will not be purchased at all. The quantities listed in each Bid Form are for the purpose of evaluating proposals and are not a guarantee of quantities. The needs for issuing Purchase Order can change, and Purchase Orders can be canceled for no cause. The Owner can stop work or a purchase at any time. The Owner shall pay for work complete and items delivered.

CORPORATE CERTIFICATE

(To be executed if Bidder is a Corporation)

STATE OF _____

COUNTY OF _____

I, _____ certify that I am the Secretary of the Corporation named as Contractor in the foregoing Proposal; that _____ who signed said Proposal on behalf of the Contractor, was then _____ of said Corporation; that said Proposal was duly signed for and in behalf of said Corporation by authority of its governing body and is within the scope of its corporate powers.

Name: _____

Title: _____

Signature: _____

Date: _____

(CORPORATE SEAL)

PARTNERSHIP CERTIFICATE
(To be executed if Bidder is a Partnership)

STATE OF _____

COUNTY OF _____

On this _____ day of _____, 2026, before me personally appeared _____, known to be and known by me to be the person who executed the above instrument, who being by me first duly sworn, did depose and say that he is general partner in the firm of:

_____; that said firm consists of himself and _____; and that he executed the foregoing instrument for and on behalf of said firm for the uses and purposes stated herein.

Name: _____

Title: _____

Signature: _____

(SEAL)

Sworn before me this _____ day of _____, 2026.

_____, Notary Public

My commission expires _____

LIMITED LIABILITY COMPANY CERTIFICATE
(To be executed if bidder is a Limited Liability Company)

STATE OF _____

COUNTY OF _____

I, the undersigned _____, hereby certify that I am the Manager of _____ (the “Company”) or if the Company does not have a Manager, a Member of the Company with full power and authority to bind the Company; that _____ who executed the Proposal on behalf of the Company is _____ of the Company with full power and authority to execute same on behalf of the Company, and that the Proposal and the Contract, if awarded to the Company, are within the powers and authority of the Company.

Name: _____

Title: _____

Signature: _____

(SEAL)

Sworn before me this _____ day of _____, 2026.

_____, Notary Public

My commission expires _____

NONRESIDENT BIDDER CERTIFICATE

(To be executed if Bidder is a Nonresident)

I, _____, hereby certify that the CONTRACTOR,
_____, is domiciled in the State of _____ and

(check and complete one of the following):

() attached is a copy of the State of _____'s current law pertaining to the treatment of nonresident CONTRACTORS. Paragraph ____, page ____ of said law grants resident CONTRACTORS a ____ percent preference over nonresident CONTRACTORS for similar projects.

FAILURE TO ATTACH SAID LAW WILL DISQUALIFY THE BID.

() the State of _____ has no current law pertaining to the treatment to the treatment of nonresident CONTRACTORS.

() I claim "resident contractor" status based upon having been qualified to do business in this state and having maintained a permanent full-time office in the State of Mississippi for two (2) years prior to January 1, 1986. Proof of such claim must be submitted and approved before contract is signed.

Name: _____

Title: _____

Signature: _____

(SEAL)

Sworn before me this _____ day of _____, 2026.

_____, Notary Public

My commission expires _____

NON-COLLUSION AFFIDAVIT
(TO BE EXECUTED IN DUPLICATE)

STATE OF MISSISSIPPI
COUNTY OF _____

I, _____
(name of person signing affidavit)

individually, and in my capacity as _____
(title)

of _____
(name of firm, partnership, limited liability company, or corporation.)

being duly sworn, on oath do depose and say as follows:

(a) That _____, Bidder of the **CITY OF RIDGELAND FY26 TERM BIDS, for the City of Ridgeland, Mississippi**, has not either directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this contract; nor have any of its officers, partners, employees or principal owners.

(b) further, that neither said legal entity nor any of its directors, officers, partners, principal owners or managerial employees are currently debarred from bidding on public contracts by the State of Mississippi or any of its agencies; or by one or more of the other states or any of their agencies; or by the Federal Highway Administration.

Signature _____

Title _____

(SEAL)

Sworn before me this _____ day of _____, 2026.

_____, Notary Public

My commission expires _____

NOTE: FAILURE TO PROPERLY SIGN AND NOTARIZE THIS AFFIDAVIT WILL DISQUALIFY THE BID.

NON-COLLUSION AFFIDAVIT
(TO BE EXECUTED IN DUPLICATE)

STATE OF MISSISSIPPI
COUNTY OF _____

I, _____
(name of person signing affidavit)

individually, and in my capacity as _____
(title)

of _____
(name of firm, partnership, limited liability company, or corporation.)

being duly sworn, on oath do depose and say as follows:

(a) That _____, Bidder of the **CITY OF RIDGELAND FY26 TERM BIDS, for the City of Ridgeland, Mississippi**, has not either directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this contract; nor have any of its officers, partners, employees or principal owners.

(b) further, that neither said legal entity nor any of its directors, officers, partners, principal owners or managerial employees are currently debarred from bidding on public contracts by the State of Mississippi or any of its agencies; or by one or more of the other states or any of their agencies; or by the Federal Highway Administration.

Signature _____

Title _____

(SEAL)

Sworn before me this _____ day of _____, 2026.

_____, Notary Public

My commission expires _____

NOTE: FAILURE TO PROPERLY SIGN AND NOTARIZE THIS AFFIDAVIT WILL DISQUALIFY THE BID.

END OF SECTION 00300

SECTION 00400-A
CONTRACT – CONTRACTOR

THIS AGREEMENT, made this the _____ day of _____, 2026, by and between the **CITY OF RIDGELAND MISSISSIPPI** hereinafter called "OWNER" and _____, doing business as a Corporation hereinafter called "CONTRACTOR".

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

1. The CONTRACTOR will commence and complete the construction of **"CITY OF RIDGELAND FY27 TERM BIDS"** for awarded Term Bids upon receipt of a Purchase Order to complete certain WORK. The following is a list of Awarded Term Bids:

2. The CONTRACTOR will furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the WORK as described in the Purchase Order, which may or may not include drawings. OWNER does not guarantee that a Purchase Order will be issued to CONTRACTOR during the term of this Contract.
3. The CONTRACTOR will commence the WORK required by the Purchase Order within **30** calendar days after the date of the Purchase Order and will complete the Project within **a normal and customary number** of days. If the CONTRACTOR is unable to fulfill the Purchase Order or fails to commence work within 30 days, the OWNER has the right to cancel the Purchase Order and issue a Purchase Order for the same work to an Alternate Contractor. OWNER also reserves the right to use Alternate Contractors in the event of an emergency whether declared officially or not.
4. The CONTRACTOR agrees to perform all of the work described in the Purchase Order and in compliance with the CONTRACT DOCUMENTS, at the rates established by the Bid Form for each Line Item or Aggregate Bid as specified on the Bid Form.
5. The term "CONTRACT DOCUMENTS" means and include the following:
 - (a) This Agreement

- (b) Advertisement for Bids
- (c) Information to Bidders
- (d) Signed Copy of Proposal Form and Bidder's Certificate
- (e) Executed Non-Collusion Form and Compliance Statements
- (f) Executed Performance Bond (if required)
- (g) Executed Payment Bond (if required)
- (h) General Conditions
- (i) Special Provisions
- (j) Technical Specifications and Drawings

(m) ADDENDA:

No. ____ Dated _____

No. ____ Dated _____

- (n) All federal government conditions, specifications, regulations and requirements bound herein.

6. INDEMNIFICATION - In addition to payment for the WORK, CONTRACTOR(S) shall fully indemnify and hold harmless the OWNER, and their officers, personnel, and agents from and against: (1) any and all fines, civil penalties, and assessments levied by the State of Mississippi Office of Pollution Control, State of Mississippi Bureau of Environmental Health or any federal or state court for failure to meet, perform, or comply with any part of the time schedule as defined in the Contract Documents, and (2) any and all claims, damages, losses, expenses, liabilities, actions, judgments, and decrees of any and every nature whatsoever in any manner caused by, resulting from, or arising out of such failure.

RIGHT OF SET-OFF - The OWNER, in addition to its other remedies under this Contract and in law and in equity, may deduct from monies which become due the CONTRACTOR under this Contract any unpaid amounts which become to or for the OWNER under any of the foregoing provisions.

- 7. The OWNER will pay to the CONTRACTOR within 30 days of receipt of a correct and final invoice.
- 8. The CONTRACTOR agrees to allow the Owner or a duly authorized representatives thereof, access to books, documents, papers and records of the Contractor which are directly pertinent to the project which is the subject of this Contract, for the purpose of making audits, examinations, excerpts and transcriptions, and Contractor agrees to insert an identical access to records clause into all subcontracts.
- 9. The Contractor shall be held responsible for forfeiture of monies in the event that an audit indicates his failure to keep adequate records, including change orders, force accounts and payroll records.
- 10. Payment Bond Performance Bonds, executed by a Surety Company doing business in the State of Mississippi, may be required in order to obtain a Purchase Order at the discretion of the City of Ridgeland.

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

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

City of Ridgeland, Mississippi

BY: _____
NAME: Gene F. McGee
TITLE: Mayor

ATTEST:

BY: _____
NAME: Angela Richburg
TITLE: City Clerk

(SEAL)
Contractor

BY: _____
COMPANY: _____
NAME: _____
TITLE: _____

ATTEST:

BY: _____
NAME: _____
TITLE: _____

END OF CONTRACT – CONTRACTOR – 00400-A

SECTION 00400-B
CONTRACT – VENDOR

THIS AGREEMENT, made this the _____ day of _____, 2026, by and between the **CITY OF RIDGELAND MISSISSIPPI** hereinafter called “OWNER” and _____, doing business as a Corporation hereinafter called "VENDOR".

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

1. The VENDOR will provide materials specified in the Contract Documents of the **“CITY OF RIDGELAND FY27 TERM BIDS”** for the awarded Term Bids upon receipt of a Purchase Order to purchase certain MATERIALS. The following is a list of Awarded Term Bids:

2. The VENDOR will furnish all of the materials, supplies, tools, or equipment as described in the Purchase Order and consistent with the Contract Documents. OWNER does not guarantee that a Purchase Order will be issued to VENDOR during the term of this Contract
3. The VENDOR will provide the materials, supplies, tools, or equipment required by the Purchase Order within 7 calendar days after the date of the Purchase Order for normally stocked items and 30 calendar days for special order items. If the VENDOR is unable to fulfill the Purchase Order or fails to supply the materials, supplies, tools, or equipment within 7/30 days as referenced above, the OWNER has the right to cancel the Purchase Order and issue a Purchase Order for the same materials, supplies, tools, or equipment to an Alternate Vendor. OWNER also reserves the right to use Alternate Vendors in the event of an emergency whether declare officially or not.
4. The VENDOR agrees to supply the materials, supplies, tools, or equipment described in the Purchase Order and in compliance with the CONTRACT DOCUMENTS, at the rates established by the Bid Form for each Line Item or Aggregate Bid as specified on the Bid Form.

5. The term "CONTRACT DOCUMENTS" means and include the following:
- (a) This Agreement
 - (b) Advertisement for Bids
 - (c) Information to Bidders
 - (d) Signed Copy of Proposal Form and Bidder's Certificate
 - (e) Executed Non-Collusion Form and Compliance Statements
 - (f) General Conditions, as applicable
 - (g) Technical Specifications and Drawings
 - (h) ADDENDA:
No. ____ Dated _____
No. ____ Dated _____
 - (i) All federal government conditions, specifications, regulations and requirements bound herein.
7. The OWNER will pay to the VENDOR within 30 days of receipt of a correct and final invoice following receipt of the material, supplies, tools, or equipment.
8. The VENDOR agrees to allow the Owner or a duly authorized representatives thereof, access to books, documents, papers and records of the Contractor which are directly pertinent to the project which is the subject of this Contract, for the purpose of making audits, examinations, excerpts and transcriptions, and Contractor agrees to insert an identical access to records clause into all subcontracts.
9. The VENDOR shall be held responsible for forfeiture of monies in the event that an audit indicates his failure to keep adequate records, including change orders, force accounts and payroll records.
11. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

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

City of Ridgeland, Mississippi

BY:

NAME: Gene F. McGee

TITLE: Mayor

ATTEST:

BY:

NAME: Angela Richburg

TITLE: City Clerk

(SEAL)

Contractor

BY: _____
COMPANY: _____
NAME: _____
TITLE: _____

ATTEST:

BY: _____
NAME: _____
TITLE: _____

END OF CONTRACT – VENDOR – 00400-B

**SECTION 00401
PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS:

That _____
(Name of Contractor)

(Address of Contractor)

a _____ hereinafter called "Principal", and
(Corporation, Partnership, Limited Liability Company or
Individual)

(Name of Surety) hereinafter called "Surety",

are held and firmly bound unto the **CITY OF RIDGELAND MISSISSIPPI**, hereinafter called
"**OWNER**" in the penal sum of

_____ Dollars _____

in lawful money of the United States, for the payment of which sum well and truly to be made, we
bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a
certain Contract with the OWNER, dated the _____ day of _____, 2026, a copy of
which is hereto attached and made a part hereof for the construction of:

CITY OF RIDGELAND FY27 TERM BIDS – Specific Project named here:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the
undertakings, covenants, terms, conditions, and agreements of said Contract during the Original
term thereof, and any extensions thereof which may be granted by the OWNER, with or without
notice to the Surety and during the one year guaranty period and if he shall satisfy all claims and
demands incurred under such Contract, and shall fully indemnify and save harmless the OWNER
from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse
and repay the OWNER of all of outlay and expense which the OWNER may incur in making good
any default, then this obligation shall be void; otherwise to remain in full force and effect.
PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and sees that no
change, extension of time, alteration or addition to the terms of the Contract or to the WORK to be
performed hereunder 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,
alteration or addition to the loans of this Contract or to the WORK or to the SPECIFICATIONS.
PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR
shall abridge the right of any beneficiary hereunder, whose claim may not yet be satisfied.

WITNESS WHEREOF, this instrument is executed in ONE (1) counterpart, this the _____ day of _____, 2026.

ATTEST:

(Principal)

(SEAL)

(Principal)

By _____

(Address)

Witness as to Principal

(Address)

ATTEST:

(SEAL)

(Surety)

By _____

Attorney-in-Fact

Witness as to Surety

(Address)

(Address)

NOTE:

Date of BOND **must not be** prior to date of Purchase Order. If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT:

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

END OF SECTION 00401

**SECTION 00402
PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS:

That

(Name of Contractor)

(Address of Contractor)

a

(Corporation, Partnership, Limited Liability Company or
Individual)

hereinafter called "Principal", and

hereinafter called "Surety",

(Name of Surety)

are held and firmly bound unto the **CITY OF RIDGELAND, MISSISSIPPI**, hereinafter called
"OWNER" in the penal sum of

Dollars

in lawful money of the United States, for the payment of which sum well and truly to be made, we
bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a
certain Contract with the OWNER, dated the _____ day of _____, 2026, a copy of
which is hereto attached and made a part hereof for the construction of:

CITY OF RIDGELAND FY26 TERM BIDS – Specific Project named here:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms,
SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the
prosecution of the WORK provided for in such Contract, and any authorized extension or
modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and
coke, repairs on machinery, equipment and tools, consumed or used in connection with the
construction of such WORK, and all insurance premiums on said WORK, and for all labor,
performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall
be void; otherwise to remain in full force and effect. PROVIDED, FURTHER, that the said Surety
for value received hereby stipulates and sees that no change, extension of time, alteration or addition
to the terms of the Contract or to the WORK to be performed hereunder 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, alteration or addition to the loans of this
Contract or to the WORK or to the SPECIFICATIONS. PROVIDED, FURTHER, that no final
settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary
hereunder, whose claim may not yet be satisfied.

WITNESS WHEREOF, this instrument is executed in ONE (1) counterpart, this the _____ day of _____, 2026.

ATTEST:

(Principal)

(SEAL)

By _____

(Address)

Witness as to Principal

(Address)

ATTEST:

(SEAL)

(Surety)

By _____

Attorney-in-Fact

Witness as to Surety

(Address)

(Address)

NOTE:

Date of BOND **must not be** prior to date of Purchase Order. If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT:

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

END OF SECTION 00402

SECTION 00403
INSTRUCTIONS FOR BONDS

PART 1 - GENERAL

- 1-01 **GENERAL:** The following instructions and requirements for Bonds shall apply to this Project.
- 1-02 **SURETY:** The surety on each bond must be a responsible surety company, qualified to do business in Mississippi, and shall be satisfactory to the Owner.
- 1-03 **NAME:** The name, including full Christian name, and residence of each individual party to the bond shall be inserted in the body thereof, and each such party shall sign the bond with his usual signature on the line opposite the seal.

1-04 PARTNERSHIPS

- A. If the principals are partners, their individual names will appear in the body of the bond with the recital that they are partners composing a firm, naming it, and shall have all the partners of the firm execute the bond as individuals.
- B. The signature of a witness shall appear in the appropriate place, attesting to the signature of each individual party to the bond.

1-05 CORPORATIONS

- A. If the principal or surety is a corporation, the name of the State in which incorporated shall be inserted in the appropriate place in the body of the bond, and said instrument shall be executed and attested under the corporate seal as indicated in the form.
- B. The official character and authority of the person or persons executing the bond for the principal, if a corporation, shall be secretary or assistant secretary according to the form attached hereto. In lieu of such certificate, there may be attached to the bond copies of so much of the records of the corporation as will show the official character and authority of the officer signing, duly certified by the secretary or assistant secretary, under the corporate seal, to be true copies.

1-06 LIMITED LIABILITY COMPANIES

- A. If the principal is a limited liability company, the name of the state under which the limited liability company is organized shall be inserted in the appropriate place in the body of the bond, and said instrument shall be executed and attested.
- B. The bond shall be executed by a Manager of the limited liability company if managed by one or more Managers, or by a Member if managed by one or more Members. The bond shall disclose the capacity in which executed by the Member or Manager.
- 1-07 **DATE:** The date shown on these bonds **must not be** prior to the date of the Purchase Order in connection with which they are given.

END OF SECTION - 00403

SECTION 00404
INSURANCE REQUIREMENTS - CONTRACTORS

Note: All references to "Owner" herein shall refer to the City of Ridgeland, Mississippi.

Insurance is only required for Contractors who are providing Labor Services. Material Vendors who provide materials, supplies, tools, or equipment do not have to provide Insurance.

The Contractor shall carry insurance as prescribed herein and all policies shall be with companies satisfactory to the Owner.

If a part of this Contract is sub-let, the Contractor shall require each subcontractor to carry insurance of the same kinds and in like amounts as carried by the prime Contractor.

No Contractor or subcontractor will be allowed to start construction work on this Contract until certificates of all insurance required herein are filed and approved by the Owner. The certificates shall show the type, amount, class of operations covered, effective dates and the dates of expiration of policies.

The Contractor shall secure and maintain in effect for the period of the Contract and pay all premiums for the following kinds and amounts of insurance:

1. Workmen's Compensation and Employer's Liability Insurance:

This insurance shall protect the Contractor against all claims under applicable State Workmen's Compensation Laws. The Contractor shall also be protected and shall cause each subcontractor to be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a Workmen's Compensation law. The liability limits shall not be less than the required statutory limits for Workmen's Compensation and Employer's Liability, in the minimum amount of One Million Dollars (\$1,000,000) for each person. This policy shall include an "all states" endorsement.

2. Contractor's Comprehensive General Liability Insurance, covering all operations in connection with the performance of this Contract in amounts not less than the following:

- a. Each occurrence limit of \$1,000,000, and
- b. \$2,000,000 in the aggregate.

The Comprehensive General Liability policies carried by both the prime and the subcontractors shall provide coverage of the following hazards; but not limited to:

- a. Explosion, collapse, and underground property damage (XCU) to include any damage or destruction of property below the surface of the ground, such as wires, conduits, pipes, mains, sewers, etc. caused by the contractor's operations.
- b. The collapse of or structural injury to buildings, structures or property on or adjacent to the Owner's premises caused by the Contractor's operations in the removal of other buildings, structures, or supports, or by excavation below the surface of the ground.

- c. Contractual Liability Coverage for the "Hold Harmless" segments of the Contract Documents.
- d. Personal, Bodily Injury, Products, and Completed Operations coverages.

3. Automotive Liability:

The Contractor shall maintain automobile liability insurance in the amount of not less than \$1,000,000 combined single limit to protect from any and all claims arising from the use of the following:

- a. Contractor's own automobiles and trucks.
- b. Hired automobiles and trucks.
- c. Automobiles and trucks owned by sub-contractors.

The aforementioned is to cover use of automobiles and trucks on and off the site of the project.

4. Owner's Protective Liability Policy:

The Contractor shall maintain Owner's Protective Liability Insurance with the Owner as the named insured, and its servants and agents, including the Engineer and its employees, as additional insureds in amount not less than the following:

- a. Bodily Injury and Property Damage in the amount of \$2,000,000 per occurrence and \$2,000,000 in the aggregate.

5. Umbrella liability insurance with a limit of not less than two million dollars (2,000,000) providing additional coverage to the policies listed above.

Insurance policies shall remain in effect on portions of the work which have been completed and which may or may not be occupied or utilized by the Owner prior to the completion and acceptance of the entire work included in the Contract.

END OF SECTION - 00404

SECTION 00500
CERTIFICATE OF SUFFICIENCY

I, _____ Mills, Scanlon, Dye & Pittman, P.A., Chief Legal Officer for the **City of Ridgeland, Mississippi** do hereby certify that I have examined the agreement, contract bonds and evidence of insurance offered by the Contractor and I am of the opinion that each of the aforesaid documents is adequate and sufficient and has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said documents on behalf of the respective parties named thereon; and that the foregoing documents constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

Signed By: _____
John P. Scanlon, Chief Legal Officer
Mills, Scanlon, Dye & Pittman, P.A.

Date: _____

END OF SECTION - 00500

SECTION 00600
GENERAL CONDITIONS

ARTICLE 1 – APPLICATION

All of these General Conditions apply to Bid Forms involving Labor provided by CONTRACTOR.
Only certain sections as indicated below apply to VENDORS:

- Article 2 – CONTRACTOR AND VENDOR
- Article 3 – CONTRACTOR AND VENDOR
- Article 4 – CONTRACTOR AND VENDOR
- Article 5 – CONTRACTOR ONLY
- Article 6 – CONTRACTOR ONLY
- Article 7 – CONTRACTOR ONLY
- Article 8 – CONTRACTOR ONLY
- Article 9 – CONTRACTOR AND VENDOR
- Article 10 – CONTRACTOR AND VENDOR
- Article 11 – CONTRACTOR ONLY
- Article 12 – CONTRACTOR ONLY
- Article 13 – CONTRACTOR ONLY
- Article 14 – CONTRACTOR AND VENDOR
- Article 15 – CONTRACTOR ONLY
- Article 16 – CONTRACTOR AND VENDOR
- Article 17 – CONTRACTOR AND VENDOR

ARTICLE 2 - DEFINITIONS

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

Defined Terms:

- 1 Addenda: Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change, the Bidding Documents or the Contract Documents.
- 2 Agreement: The written agreement between Owner and Contractor covering the WORK to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.
- 3 Application for Payment: The form accepted by Engineer which is to be used by Contractor in requesting final payment and which is to include such supporting documentation as is required by the Contract Documents. The OWNER is only allowed to make one payment for Purchase Orders.
- 4 Bid: The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the WORK to be performed.

- 5 Bidder: Any person, firm or corporation submitting a Bid for the WORK.
- 6 Bidding Documents: Notice to bidders or advertisement, if any; instructions to bidders; other bidding information and requirements; bidding forms and attachments; contract and bond forms, and the proposed Contract Documents, including any addenda issued prior to receipt of bids.
- 7 Bonds: Bid, performance, and labor and material payment bonds and other instruments of security furnished by the CONTRACTOR and his SURETY in accordance with the CONTRACT DOCUMENTS.
- 8 Change Order: A written order to the Contractor signed by the Owner authorizing an addition, deletion or revision in the WORK, or an adjustment in the Contract Price or the Contract Time issued after the effective date of the Agreement.
- 9 Contract Documents: The Agreement, Addenda, Contractor's Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award when attached as an exhibit to the Agreement), the Bonds, these General Conditions, the Supplementary Conditions, the Special Conditions, the Instructions to Bidders, the Technical Specifications, the Drawings as the same may be more specifically identified in the Agreement.
- 10 CONTRACTOR: An individual, company, or other entity that enters into an agreement with the OWNER to provide labor, services, materials, or perform WORK for a specified scope and compensation. The contractor is typically responsible for furnishing all necessary labor, equipment, tools, and expertise to complete the contracted work in accordance with the terms, conditions, specifications, and schedules established by the City. Contractors are independent entities and not employees of the OWNER, and they are obligated to comply with applicable laws, regulations, and contractual requirements while performing their work.
- 11 Contract Price: The moneys payable by Owner to Contractor under the Contract Documents as stated in the Agreement.
- 12 Contract Time: The number of days or the date stated in the Agreement for the completion of the WORK.
- 13 Contractor: The person, firm or corporation with whom Owner has executed the Agreement. Whenever the Project is to be constructed under multiple direct contracts, the term "Contractor" shall mean the appropriate prime Contractor. Whenever a specific prime Contractor is referred to, terms such as "General Contractor", "Electrical Contractor", etc. will be used.
- 14 Day: A calendar day of twenty-four hours measured from midnight to the next midnight.

- 15 Defective: An adjective which when modifying the word WORK refers to WORK that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to Engineer's recommendation for final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.5).
- 16 Drawings: The Drawings which show the character and scope of the WORK to be performed and which have been prepared or approved by Engineer and are referred to in the Contract Documents.
- 17 Effective date of the Agreement: The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
- 18 Engineer: As it relates to the term listed in these Contract Documents, it shall mean the Director of Public Works or his designee, often to be the City Engineer or Consulting Engineer.
- 19 Field Order: A written order issued by Engineer which orders minor changes in the WORK which does not affect the price.
- 20 General Requirements: Sections of the Technical Specifications.
- 21 Modifications: (a) A written amendment of the Contract Documents signed by both parties, (b) a Change Order, or (c) a Field Order. A modification may only be issued after the effective date of the Agreement.
- 22 Notice of Award: The written notice by Owner to the apparent successful Bidder stating that upon compliance by the apparent successful Bidder with the conditions precedent enumerated therein, within the time specified, Owner will sign and deliver the Agreement.
- 23 Notice to Proceed: The Notice to Proceed shall be understood to be given upon delivery by Owner to Contractor of Purchase Order unless otherwise stated. Contractor can then start to perform his obligations under the Contract Documents.
- 24 Owner: The City of Ridgeland.
- 25 Project: The total construction of which the WORK to be provided under the Contract Documents may be the whole or a part as indicated elsewhere in the Contract Documents.
- 26 Project manual: The bound documentary information prepared for bidding and constructing the Project. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the tables of contents.

- 27 Purchase Order: A *Purchase Order* issued by the OWNER is an official written document that authorizes the purchase of goods or services on behalf of the City. It serves as a formal offer to a CONTRACTOR or VENDOR, specifying details such as quantities, descriptions, prices, delivery terms, and conditions. The PO ensures that expenditures are properly approved, budgeted, and tracked in accordance with the City's procurement policies and procedures. Once accepted by the CONTRACTOR or VENDOR, the Purchase Order becomes a binding agreement between the City of Ridgeland and the CONTRACTOR or VENDOR, providing a clear record of the transaction and facilitating accurate invoicing and payment. The Terms of the Contract Documents apply to all Purchase Orders.
- 28 Resident Project Representative: The authorized representative of Engineer whom is assigned to the site or any part thereof.
- 29 Samples: Physical examples furnished by the Contractor to illustrate materials, equipment or ownership, and to establish standards by which some portions of the WORK will be judged.
- 30 Shop Drawings: All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for Contractor to illustrate some portion of the WORK and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a manufacturer, fabricator, supplier or distributor and submitted by Contractor to illustrate material or equipment for some portion of the WORK.
- 31 Specifications: Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the WORK and certain administrative details applicable thereto.
- 32 Subcontractor: An individual, firm or corporation having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the WORK at the site.
- 33 Substantial Completion: The WORK for a specified part thereof has progressed to the point where, in the opinion of Engineer as evidenced by Engineer's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the WORK for a specified part can be utilized for the purposes for which it was intended: or if there be no such certificate issued, when final payment is due in accordance with Paragraph 14.8.A. The terms "substantially complete" and "substantially completed" as applied to any WORK refer to substantial completion thereof.
- 34 Special Conditions: Modifications and additions to the General Conditions.
- 35 VENDOR: An individual, company, or organization that supplies goods, materials, equipment, or services to the OWNER in exchange for payment. Vendors may provide standard, off-the-shelf products or specialized items in accordance with the OWNER's procurement processes. Vendors are external parties, not employees of the OWNER, and are responsible for delivering goods or services that meet the specifications, quality standards, and timelines established by the OWNER.

- 36 WORK: The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents and as identified in the Purchase Order. WORK is the result of performing services, furnishing labor and/or furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.
- 37 Order of Precedence: The plans, standard specifications, general conditions, supplemental conditions, technical specifications and all supplemental plans and documents are essential parts of the contract, and a requirement occurring in one is just as binding as though occurring in all. They are intended to be complementary and to describe and provide for the complete WORK. In case of discrepancy, computed dimensions, unless obviously incorrect, shall govern over scaled dimensions. Plans shall govern over standard specifications. Supplemental conditions shall govern over general conditions.
- 38 The Contractor shall not take advantage of any apparent error or omission in the plans. In the event the Contractor discovers any apparent error or discrepancy, he shall immediately notify the Engineer in writing requesting his interpretation and the Engineer will make such corrections and decisions in writing as may be deemed necessary to carry out the intent of the plans and all such corrections and decisions shall be final and binding.

ARTICLE 3 – PRELIMINARY MATTERS

3.1 Estimate of Quantities

A. The quantities itemized in the proposal are shown strictly to set a unit price and will vary depending on the project(s) or materials, tools, and equipment needed. The quantities list on the Bid Form shall be considered estimates, and they are given for use in comparing bids. The right is expressly reserved to increase or diminish the quantities as may be deemed reasonably necessary or desirable by the OWNER to complete the WORK contemplated by this Contract. Such increase or diminution shall in no way vitiate this Contract nor shall any such increase or diminution give cause for claims or liability for damages.

B. Under no circumstances or conditions will the Contractor be paid anything on account of anticipated profits or allocations to overhead, or other related costs, upon the WORK or any portion thereof covered by these Contract Documents, which are not actually performed; nor will the Contractor be paid a Unit Price different than the Unit Price for bid for any item in the Proposal because the actual quantity is greater or less than the quantity shown in the said the Proposal.

3.2 Delivery of Bonds and Insurance Certificates:

- A. When Contractor executes agreement with Owner, Contractor shall deliver to Owner such Bonds as Contractor may be required to furnish in accordance with Article 5.
 - B. When Contractor executes Agreement with Owner, Contractor shall deliver to Owner, with a copy to Engineer, certificates (and other evidence of insurance requested by Owner) which Contractor is required to purchase and sustain in accordance with Article 5, and Owner shall deliver to Contractor certificates (and other evidence of insurance requested by Contractor) which Owner is required to purchase and maintain in accordance with Article 6.
- 3.3 Copies of Documents: Most projects required of this contract will not have construction drawings available to Contractor. If there are any, the Owner shall furnish to Contractor up to two copies or reasonable amount deemed necessary by the Owner for the execution of the WORK.
- 3.4 Commencement of Contract Times Notice to Proceed: Notice to Proceed on projects required of this contract shall be agreed upon by the Owner and Contractor prior to commencement of WORK.
- 3.5 Starting the Project: CONTRACTOR shall start to perform the WORK upon Agreement with Owner within 30 days of the issuance of the Purchase Order. Failure to do so may result in the OWNER voiding the Purchase Order and utilizing an alternate CONTRACTOR.
- 3.6 Supplying materials, tools, or equipment: VENDOR shall supply the materials, tools, or equipment within 30 days of the issuance of the Purchase Order. Failure to do so may result in the OWNER voiding the Purchase Order and utilizing an alternate VENDOR.

ARTICLE 4 – CONTRACT DOCUMENTS: INTENT AND REUSE

4.1 Intent:

- A. The Contract Documents coupled with any Purchase Orders that may be issued comprise the entire Agreement between Owner and CONTRACTOR/VENDOR concerning the WORK. They may be altered only by a written modification through a change order duly signed in advance of contract WORK necessitated by such modification.
- B. The Contract Documents are complementary meaning that what is called for by one is as binding as if called for by all. If during the performance of the WORK, Contractor finds a conflict, error or discrepancy in the Contract Documents, he shall

report it to Engineer in writing at once and before proceeding with the WORK affected thereby.

- C. It is the intent of the Specifications and Drawings to describe a complete Project or part thereof to be constructed in accordance with the Contract Documents. Any WORK that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for at no additional cost to Owner.
- D. The Specifications may describe or the Drawings may show the general arrangement of an item of material or equipment when the actual details of said arrangement will vary with the source of the material or equipment. In such cases, CONTRACTOR/VENDOR shall bear all direct and indirect costs to accommodate the item of material or equipment furnished, whether the item of material or equipment is furnished by a manufacturer named in the Specifications or is furnished as an approved substitute or for equals item of material or equipment.
- E. When words in the Specifications or on the Drawings, which have a well-known technical or trade meaning, are used to describe WORK, materials or equipment such words shall be interpreted in accordance with such meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the code of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual or code in effect at the time of opening of Bids (or on the effective date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall change the duties and responsibilities of Owner, Contractor or Engineer, or any of their agents or employees from those set forth in the Contract Documents. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided for in Paragraph 10.3.
- F. The Contract Documents will be governed by the law of the State of Mississippi.

ARTICLE 5 – AVAILABILITY OF LANDS, PHYSICAL CONDITIONS, AND REFERENCE POINTS

- 5.1 Availability of Lands: Owner shall furnish, as indicated in the Contract Documents the lands upon which the WORK is to be performed, rights-of-way for access thereto, and such other lands which are designated for the use of Contractor. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by Owner, unless otherwise provided in the Contract Documents. The Contractor

shall provide at his own expense and without liability to the Owner any additional land and access thereto that may be required for temporary construction facilities, or for storage of materials.

- 5.2 Physical Conditions-Investigations and Reports: Reference is made to the Supplementary Conditions for identification of those reports of investigations and tests of subsurface and latent physical conditions at the site or those reports that otherwise may affect cost, progress or performance of the WORK which have been utilized by Engineer in preparation of the Drawings and Specifications. These reports are not intended to constitute any explicit or implicit representation as to the nature of the subsurface and latent physical conditions which may be encountered at the site or to constitute explicit or implicit representations as to any other matter contained in any report. Such reports are not guaranteed as to accuracy or completeness.
- 5.3 Unforeseen Physical Conditions: Contractor shall promptly notify Owner and Engineer in writing of any subsurface or latent physical conditions at the site or in an existing structure differing materially from those indicated or referred to in the Contract Documents. Engineer will promptly review those conditions and advise Owner in writing if further investigations or tests are necessary. Promptly thereafter, Engineer shall obtain at Owner's approved expense the necessary additional investigations and tests and furnish copies to Owner and Contractor. If Engineer finds that the results of such investigations or tests indicate that there are subsurface or latent physical conditions which differ materially from those intended in the Contract Documents, and which could not reasonably have been anticipated by Contractor, a Change Order may be issued incorporating the necessary revisions.
- 5.4 Reference Points: Owner shall provide engineering surveys for construction to establish reference points which in Owner's judgment are necessary to enable Contractor to proceed with the WORK. Contractor shall be responsible for laying out the WORK (unless otherwise specified in the General Requirements), and shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations and shall be responsible for replacement or relocation of such reference points by professionally qualified personnel.

ARTICLE 6 – BONDS AND INSURANCE

- 6.1 Performance, Payment and Other Bonds:
 - A. Contractor shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price, as security for the faithful performance and

payment of all Contractor's obligations under the Contract Documents. Contractor shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by the Bidding Documents or Supplementary Conditions and be executed by such sureties as:

1. Are licensed to conduct business in the state where the Project is located, and
 2. Are named in the current list of Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.
- B. If the surety of any Bond furnished by Contractor is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 6.1.A, Contractor shall within five days thereafter substitute another Bond and surety, both of which shall be acceptable to Owner.
- C. The OWNER shall reimburse CONTRACTOR for Bonds if OWNER requires CONTRACTOR to purchase bonds.
- 6.2 Contractor's Insurance requirements: Refer to Section 00404 – Insurance Requirements – Contractors.
- 6.3 Contractors shall be responsible for the premiums as required by the Contract Documents.
- 6.4 Certificates of Insurance: All certificates of insurance and any endorsements associated with the insurance required to be purchased by Contractor pursuant to Article 6 shall be filed in accordance with Paragraph 3.1.B. Certificates shall be acceptable to Owner and shall contain a provision that coverages afforded under the policies will not be canceled, materially changed or renewal refused until at least thirty days' prior written notice has been given to Owner and Engineer by certified mail.
- 6.5 Additional Bonds and Insurance: Owner may require Contractor to furnish such other Bonds and such additional insurance, in such form and with such sureties or insurers as Owner may specify. If such other Bonds or such other insurance are specified in the Contract Documents, the premiums shall be paid by Contractor. If subsequent thereto, they shall be paid by Owner except as otherwise provided in Paragraph 13.8.B.

ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES

7.1 Supervision and Superintendence:

- A. Contractor will supervise and direct the WORK competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the WORK in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but he shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. Contractor shall be responsible to see that the finished WORK complies accurately with the Contract Documents.
- B. Contractor shall keep on the WORK at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor’s representative at the site and shall have authority to act on behalf of Contractor. All communications given to the superintendent shall be as binding as if given to Contractor.

7.2 Labor, Materials and Equipment:

- A. Contractor shall provide competent, suitably qualified personnel to plan, prepare, and lay out the WORK and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the site.
- B. Contractor shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the WORK. Except as otherwise specified in the General Requirements, Contractor shall furnish all fuel, power, light, heat, telephone, water and sanitary facilities necessary for the execution, testing, initial operation and completion of the WORK.
- C. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment.
- D. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in

the Contract Documents but no provision of any such instructions will be effective to impose on Engineer responsibility for the means, methods, techniques, sequences or procedures of construction or for safety precautions incident thereto.

7.3 Substitutions: Because of the prepositioning of the term bids process, substitutions will not be permitted.

7.4 Concerning Subcontractors:

- A. Contractor shall notify OWNER in the event that the CONTRACTOR intends to utilize a Sub-contractor.
- B. Contractor shall not employ any Subcontractor or other person or organization (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom Owner or Engineer may have reasonable objection. A Subcontractor or other person or organization identified in writing to Owner and Engineer by Contractor prior to the Notice of Award and not objected to in writing by Owner or Engineer prior to the Notice of Award will be deemed acceptable to Owner and Engineer. If Owner or Engineer after due investigation has reasonable objection to any Subcontractor, other person or organization proposed by Contractor after the Notice of Award, Contractor shall submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution, and an appropriate Change Order shall be issued. Contractor shall not be required to employ any Subcontractor, other person or organization against whom Contractor has reasonable objection. Acceptance of any Subcontractor, other person or organization by Owner or Engineer shall not constitute a waiver of any right of Owner or Engineer to reject defective WORK.
- C. Contractor shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that Contractor is responsible for the acts and omissions of persons directly employed by Contractor. Nothing in the Contract Documents shall create any contractual relationship between Owner or Engineer and any Subcontractor or other person or organization having a direct contract with Contractor, nor shall it create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any Subcontractor or other person or organization, except as may otherwise be required by law. Owner or Engineer may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to Contractor on account of specific WORK done.

- D. The Divisions and Sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the WORK among Subcontractors or delineating the WORK to be performed by any specific trade.
 - E. All WORK performed for Contractor by a Subcontractor will be pursuant to an appropriate agreement between Contractor and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of Owner and the Engineer and contains insurance provisions as required by Article 6.
- 7.5 Patent Fees and Royalties: Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the WORK or the incorporation in the WORK of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the WORK and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents. Contractor shall indemnify and hold harmless Owner and Engineer and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys' fees) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the WORK or resulting from the incorporation in the WORK of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.
- 7.6 Permits: Unless otherwise indicated in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the WORK, which are applicable at the time of opening of Bid. Contractor shall also pay all charges of utility service companies for connections to the WORK, and Owner shall pay all charges of such companies for capital costs related thereto. The OWNER does not require the CONTRACTOR to pull permits from the City of Ridgeland.
- 7.7 Laws and Regulations: Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the WORK. If Contractor observes that the Specifications or Drawings are at variance therewith, Contractor shall give Engineer prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate modification. If Contractor performs any WORK knowing or having reason to know that it is contrary to such laws, ordinances, rules and regulations, and without such notice to Engineer, Contractor shall bear all costs arising therefrom; however, it shall not

be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with such laws, ordinances, rules and regulations.

7.8 Taxes: Contractor shall pay all sales, consumer, use and other similar taxes required to be paid by him in accordance with the law of the place of the Project.

7.9 Use of Premises:

- A. Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workmen to areas permitted by law, ordinances, permits, or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment.
- B. During progress of the WORK, Contractor shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the WORK. At the completion of the WORK, Contractor shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by Owner. Contractor shall restore to their original condition those portions of the site not designated for alternation by the Contract Documents.
- C. Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the WORK or adjacent property to stresses or pressures that will endanger it.

7.10 Record Documents: OWNER shall be responsible for Record Document preparation.

7.11 Safety and Protection:

- A. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the WORK. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - 1. All employees on the WORK site and other persons who may be affected thereby;
 - 2. All the WORK and all materials or equipment to be incorporated therein, whether in storage on or off the site; and

3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities not designated for removal, relocation or replacement in the course of construction, and livestock.
- B. Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders or any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and utilities when prosecution of the WORK may affect them. Contractor shall cooperate with the utility owner in the protection, removal, relocation, or replacement of such utility property. All damage, injury or loss to any property referred to in Paragraph 7.11.A.2 or 7.11.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor). Contractor's duties and responsibilities for the safety and protection of the WORK shall continue until such time as all the WORK is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.8 that the WORK is acceptable.
- C. Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be Contractor's superintendent unless otherwise designated in writing by Contractor to Owner.
- 7.12 Emergencies: In emergencies affecting the safety or protection of persons or the WORK or property at the site or adjacent thereto, Contractor, without Special instruction or authorization from Engineer or Owner, is obligated to act to prevent threatened damage, injury or loss. Contractor shall immediately notify Engineer and Owner of any such emergencies and give Engineer prompt written notice of any significant changes in the WORK or deviations from the Contract Documents caused thereby
- 7.13 Continuing The WORK: Contractor shall carry on the WORK and maintain the progress schedule during all disputes or disagreements with Owner. No WORK shall be delayed or postponed pending resolution of any disputes or disagreements, except as Contractor and Owner may otherwise agree in writing.

7.14 Indemnification:

- A. To the fullest extent permitted by law, Contractor shall indemnify, defend, and hold harmless Owner and Engineer and their parents, affiliated companies, agents, employees and consultants (the “Indemnified Parties”) from and against all claims, damages, losses and expenses including, but not limited to attorneys' fees (collectively “Damages”) attributable to bodily injury, sickness, disease or death, or to the damage or destruction of property including the loss of use resulting therefrom in any way arising out of or related to:
 - (a) any negligent act or omission of Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable regardless of whether or not it is caused in part by a party indemnified hereunder, or
 - (b) the operation of law as a consequence of any act or omission of Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether any of them has been negligent.
- B. In the event of any claim against any of the Indemnified Parties by any employee of Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, Contractor's indemnification obligation under Paragraph 7.14.A shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or any Subcontractor under workers or workmen's compensation acts, disability benefit acts or other employee benefit acts.
- C. The obligations of Contractor under Paragraph 7.14.A shall not extend to the liability of Engineer, his agents, employees or consultants arising out of the Engineer's preparation or approval of maps, Drawings, opinions, reports, surveys, Change Orders, designs or Specifications or the giving of or the failure to give directions or instructions by the Engineer, his agents or employees provided such giving or failure to give is primary cause of injury or damage.

ARTICLE 8 – WORK BY OTHERS

- 8.1 Owner may perform additional WORK related to the Project by himself, or have additional WORK performed by utility service companies, or let other direct contracts therefor which shall contain General Conditions similar to these. Contractor shall afford the utility service companies and the other contractors who are parties to such direct contracts (or Owner, if Owner is performing the additional WORK with Owner's employees) reasonable opportunity for the introduction and storage of materials and equipment and the execution of WORK, and shall properly connect and coordinate his WORK with theirs.
- 8.2 If any part of Contractor's WORK depends for proper execution or results upon the WORK of any such other contractor or utility service company (or Owner), Contractor shall inspect and promptly report to Engineer in writing any patent or apparent defects or deficiencies in such WORK that render it unsuitable for such proper execution and results. Contractor's failure to so report shall constitute an acceptance of the other WORK as fit and proper for integration with Contractor's WORK except for latent defects and deficiencies in the other WORK.
- 8.3 Contractor shall do all cutting, fitting and patching of his WORK that may be required to make its several parts come together properly and integrate with such other WORK. Contractor shall not endanger any WORK of others by cutting, excavating or otherwise altering their WORK and will only cut or alter their WORK with the written consent of Engineer and the others whose WORK will be affected.
- 8.4 If the performance of additional WORK by other contractors or utility service companies or Owner was not noted in the Contract Documents, written notice thereof shall be given to Contractor prior to starting any such additional WORK. If Contractor believes that the performance of such additional WORK by Owner or others involves additional expense or requires an extension of the Contract Time, Contractor may make a claim therefor as provided in Articles 11 and 12.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

- 9.1 Owner shall issue all communications to Contractor through Engineer, except where, in Owner's judgment, circumstances warrant direct communication to Contractor.
- 9.2 In case of termination of the employment of Engineer, Owner shall appoint an Engineer whose status under the Contract Documents shall be that of the former Engineer.
- 9.3 Owner shall furnish the data required of Owner under the Contract Documents promptly and shall make payments to Contractor promptly after they are due as provided in Paragraphs 14.1 and 14.8.

- 9.4 Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 5.1 and 5.4. Paragraph 5.2 refers to Owner's identifying and making available to Contractor copies of reports of investigations and tests of subsurface and latent physical conditions at the site or those reports that otherwise may affect performance of the WORK which have been utilized by Engineer in preparing the Drawings and Specifications.
- 9.5 Rejecting Defective WORK, materials, tools, or equipment – Owner will have authority to disapprove or reject WORK, materials, tools, or equipment which Owner believes to be defective, and will also have authority to require special inspection or testing of the WORK, materials, tools, or equipment as provided in Article 13, whether or not the WORK is fabricated, installed or completed.
- 9.6 Owner's responsibility in respect of certain inspections, tests and approvals is set forth in Paragraph 13.3.
- 9.7 In connection with Owner's right to stop WORK or suspend WORK, see Paragraphs 13.5 and 15.1. Paragraph 15.2.A deals with Owner's right to terminate services of CONTRACTOR/VENDOR under some circumstances.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

- 10.1 Owner's Representative: Engineer will be Owner's representative (should an agreement be reached between the two) during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of Owner and Engineer.
- 10.2 Visits to Site: Engineer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the WORK. Engineer shall make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed WORK and to determine, in general, if the WORK is proceeding in accordance with the Contract Documents. On the basis of such visits and on-site observations, Engineer will inform Owner of the progress of the WORK and will endeavor to guard Owner against defects and deficiencies in the WORK.
- 10.3 Clarifications and Interpretations: Engineer will issue with reasonable promptness such written clarifications or interpretations of the Contract Documents (in the form of Drawings or otherwise) as Engineer may determine necessary, which shall be consistent with or reasonably inferable from the overall Intent of the Contract Documents.
- 10.4 Rejecting Defective WORK: Engineer will have authority to disapprove or reject WORK, materials, tools, or equipment which Engineer believes to be defective, and will also have

authority to require special inspection or testing of the WORK, materials, tools, or equipment as provided in Article 13, whether or not the WORK is fabricated, installed or completed.

10.5 Any means, process or method of work suggested by the Engineer or any other representative of the Owner to the Contractor shall be used at the risk and responsibility of the Contractor. The Owner and Engineer shall assume no responsibility therefor.

10.6 Non-conforming, Rejected or Condemned Material

A. When material does not conform to the requirements of the Drawings and Specifications has been delivered upon the Project, or has been incorporated into the Work, or when Work has been performed that is of inferior quality, such material or Work shall be considered as defective and shall be removed and replaced or made satisfactory as directed by the Engineer, at the expense of the Contractor, within ten (10) days.

B. Rejected and condemned material and Work shall be removed within ten (10) days from the Project site. Upon failure of the Contractor to remove and properly dispose of the rejected material or Work immediately after receiving formal notice to do so, the Engineer may have such material or Work removed and the cost of such material charged to the Contractor.

10.7 Decisions on Disagreements:

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the WORK there under: Claims, disputes and other matters relating to the acceptability of the WORK or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of the WORK shall be referred initially to Engineer in writing with a request for a formal decision in accordance with this Paragraph, which Engineer will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter shall be delivered by the claimant to Engineer and the other party to the Agreement within five (5) days of the occurrence of the event giving rise thereto and written supporting data will be submitted to Engineer and the other party within ten (10) days of such occurrence unless Engineer allows an additional period of time to ascertain more accurate data. In his capacity as interpreter and judge, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

B. The rendering of a decision by Engineer pursuant to Paragraph 10.6.A with respect to any such claim, dispute or other matter (except any which have been waived by

the making or acceptance of final payment as provided in Paragraph 14.8) will be a condition precedent to any exercise by Owner or Contractor of such rights or remedies as either may otherwise have under the Contract Documents or at law in respect of any such claim, dispute or other matter.

10.8 Limitations on Engineer's Responsibilities:

- A. Neither Engineer's authority to act under this Article 10 or elsewhere in the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of Engineer to Contractor, any Subcontractor, any manufacturer, fabricator, supplier or distributor or any of their agents or employees or any other person performing any of the WORK.
- B. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgement of Engineer as to the WORK, it is intended that such requirement, direction, review or judgement will be solely to evaluate the WORK for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective never indicates that Engineer shall have authority to supervise or direct performance of the WORK or authority to undertake responsibility contrary to the provisions of Paragraphs 10.7.C and 10.7.D.
- C. Engineer will not be responsible for Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and Engineer will not be responsible for Contractor's failure to perform the WORK in accordance with the Contract Documents.
- D. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractors, or of the agents or employees of any Contractor or Subcontractor, or of any other persons at the site or otherwise performing any of the WORK.

ARTICLE 11 – CHANGES IN THE WORK

- 11.1 Without invalidating the Agreement, Owner may, at any time or from time to time, order additions, deletions or revisions in the WORK; these will be authorized in writing from the OWNER as an approved change to the Purchase Order.

ARTICLE 12 – CHANGE OF CONTRACT PRICE

- 12.1 The Contract Price listed in the Purchase Order constitutes the total compensation (subject to authorized adjustments) payable to Contractor for performing the WORK. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at his expense without change in the Contract Price.
- 12.2 The Contract Price listed in the Purchase Order may only be authorize in writing from the OWNER as an approved change to the Purchase Order.
- 12.3 The value of any WORK covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined by Owner in one of the ways listed herein.
 - A. Where the WORK involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.
 - B. By mutual acceptance of a lump sum line items.
 - C. Contractor will submit in form acceptable to Engineer, an itemized cost breakdown together with supporting data.

ARTICLE 13 – WARRANTY AND GUARANTEE; TESTS AND INSPECTION; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

- 13.1 Warranty and Guarantee: Contractor warrants and guarantees to Owner and Engineer that all WORK will be performed in a good and workmanlike manner and in strict accordance with any applicable Specifications and the Contract Documents. Prompt notice after discovery of all defects shall be given to Contractor. All defective WORK, whether or not in place, may be rejected or corrected as provided in this Article 13.
- 13.2 Access to WORK: Engineer and Engineer's representatives, other representatives of Owner, testing agencies and authorized governmental agencies shall have access to the WORK at reasonable times for their observation, inspection and testing. Contractor shall provide proper and safe conditions for such access.
- 13.3 Tests and Inspections:
 - A. Contractor shall give Engineer timely notice of readiness of the WORK for all required inspections, tests or approvals.
 - B. If any law, ordinance, rule, regulation, code, or orders of any public body having jurisdiction requires any WORK (or part thereof) to specifically be inspected, tested or approved, Contractor (unless another party is specified in the General

Requirements) shall assume full responsibility therefor, pay all costs in connection therewith and furnish Engineer the required certificates of inspection, testing or approval. Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required by the Specifications in connection with Owner's or Engineer's acceptance of a manufacturer, fabricator, supplier or distributor of materials or equipment proposed to be incorporated in the WORK, or of materials or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the WORK. The cost of all other inspections, tests and approvals required by the Contract Documents shall be paid by Owner (unless otherwise specified in the Contract Documents).

- C. All inspections, tests or approvals other than those required by law ordinance, rule, regulation, code or order of any public body having Jurisdiction shall be performed by organizations acceptable to Owner (or by Engineer if so specified).
- D. If any WORK that is to be inspected, tested or approved is covered without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover such WORK and Engineer has not acted with reasonable promptness in response to such notice.
- E. Neither observations by Engineer nor inspections, tests or approvals by others shall relieve Contractor from his obligations to perform the WORK in accordance with the Contract Documents.

13.4 Uncovering WORK:

- A. If any WORK is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that WORK (covered in accordance with the Contract Documents) be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose or otherwise make available for observation, inspection or testing as Engineer may require, that portion of the WORK in question, furnishing all necessary labor, material and equipment. If it is found that such WORK is defective, Contractor shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate deductive Change Order shall be issued. If, however, such WORK is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction if he makes a claim therefore as provided in Articles 11. Contractor

shall bear all costs associated with uncovering the work, whether the work is defective or not, if timely notice was not given by the Contractor to the Engineer prior to the covering of the work as stated in 13.3D.

- 13.5 Owner May Stop the WORK: If the WORK is defective, or Contractor fails to supply sufficient skilled Workmen or suitable materials or equipment, Owner may order Contractor to stop the WORK, or any portion thereof, until the cause for such order has been eliminated. However, this right of Owner to stop the WORK shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor or any other party.
- 13.6 Correction or Removal of Defective WORK: If required by Engineer, Contractor shall promptly, without cost to Owner and as specified by Engineer, either correct any defective WORK, whether or not fabricated, installed or completed, or, if the WORK has been rejected by Engineer, remove it from the site and replace it with non-defective WORK.
- 13.7 One Year Correction Period: If, within one (1) year after the date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents, any WORK is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, either correct such defective WORK, or, if it has been rejected by Owner, remove it from the site and replace it with non-defective WORK. If Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective WORK corrected or the rejected WORK removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by Contractor.
- 13.8 Acceptance of Defective WORK:
 - A. If, instead of requiring correction or removal and replacement of defective WORK, Owner (and, prior to Engineer's recommendation of final payment, also Engineer) prefers to accept it, Owner may do so. In such case, if acceptance occurs prior to Engineer's recommendation of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Prices or, if the acceptance occurs after such recommendation, an appropriate amount shall be paid by Contractor to Owner.
 - B. Owner may require Contractor to furnish, at Contractor's expense, performance guarantees and additional Bonds prior to acceptance of defective WORK.

- 13.9 **Owner May Correct Defective WORK:** If Contractor fails within a reasonable time after written notice of Engineer to proceed to correct and to correct defective WORK or to remove and replace rejected WORK as required by Engineer in accordance with Paragraph 13.6, or if Contractor fails to perform the WORK in accordance with the Contract Documents (including any requirements of the progress schedule), Owner may, after seven (7) days' written notice to Contractor, correct and remedy any such deficiency. To the extent necessary to complete corrective and remedial action, Owner may exclude Contractor from all or part of the site, take possession of all or part of the WORK, and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the site and incorporate in the WORK all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees such access to the site as may be necessary to enable Owner to exercise his rights under this Paragraph. All direct and indirect costs of Owner in exercising such rights shall be charged against Contractor in an amount verified by Engineer, and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents and a reduction in the Contract Price. Such direct and indirect costs shall include, in particular but without limitation, compensation for additional professional services required and all costs of repair and replacement of WORK of others destroyed or damaged by correction, removal or replacement of Contractor's defective WORK. Contractor shall not be allowed an extension of the Contract Time because of any delay in his performance of the WORK attributable to the exercise by Owner of Owner's rights hereunder.

ARTICLE 14 – PAYMENTS TO CONTRACTOR/VENDOR AND COMPLETION

- 14.1 **Schedules:** Payments made by the OWNER can only be made by action of the Mayor and Board of Aldermen at a regularly scheduled Board Meeting. The OWNER is able to make payments to the CONTRACTOR/VENDOR within 5 days following each Board Meeting where a claim for payment has been placed on the docket for approval. The City of Ridgeland Mayor and Board of Aldermen meet on the 1st and 3rd Tuesdays of each Month.
- 14.2 **Application for Progress Payment:** Progress Payments cannot be made on Purchase Orders. Only one payment can be made once work is complete or materials, tools, or equipment has been received.
- 14.3 **Contractor's Warranty of Title:** 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 (hereafter in these General Conditions referred to as "Liens").

14.4 Substantial Completion:

- A. When Contractor considers the entire WORK ready for its intended use, Contractor shall, in writing to Owner and Engineer, certify that the entire WORK is substantially complete and request that Engineer issue a certificate of Substantial Completion. Within a reasonable time thereafter, Contractor and Engineer shall make an inspection of the WORK to determine the status of completion. If Engineer does not consider the WORK substantially complete, Engineer will notify Contractor in writing giving his reasons therefor. If Engineer considers the WORK substantially complete, Engineer will prepare and deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven (7) days after receipt of the tentative certificate during which Owner may make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the WORK is not substantially complete, Engineer will within fourteen (14) days after submission of the tentative certificate to Owner notify Contractor in writing, stating his reasons therefor. If, after consideration of Owner's objections, Engineer considers the WORK substantially complete, Engineer will within said fourteen (14) days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner. At the time of delivery of the tentative certificate of Substantial Completion Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, maintenance, heat, utilities and insurance. Unless Owner and Contractor agree otherwise in writing and so inform Engineer prior to his issuing the definitive certificate of Substantial Completion Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- B. Owner shall have the right to exclude Contractor from the WORK after the date of Substantial Completion, but Owner shall allow Contractor reasonable access to complete or correct items in the tentative list.

14.5 Partial Utilization: Use by Owner of completed portions of the WORK may be accomplished prior to Substantial Completion of all the WORK subject to the following:

- A. Owner at any time may request Contractor in writing to permit Owner to use any part of the WORK which Owner believes to be substantially complete and which may be used without significant interference with construction of the other parts of the WORK. If Contractor agrees, Contractor will certify to Owner and Engineer

that said part of the WORK is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the WORK. Within a reasonable time thereafter Owner, Contractor and Engineer shall make an inspection of that part of the WORK to determine its status of completion. If Engineer does not consider that part of the WORK to be substantially complete, Engineer will notify Owner and Contractor in writing giving his reason therefor. If Engineer considers that part of the WORK to be substantially complete, Engineer will execute and deliver to Owner and Contractor a certificate to that effect, fixing the date of Substantial Completion as to that part of the WORK, attaching thereto a tentative list of items to be completed or corrected before final payment. Prior to issuing a certificate of Substantial Completion as to part of the WORK, Engineer will deliver to Owner and Contractor a written recommendation as to the division of responsibilities pending final payment between Owner and Contractor, with respect to security, operation, safety, maintenance, utilities and insurance for that part of the WORK which shall become binding upon Owner and Contractor at the time of issuing the definitive certificate of Substantial Completion as to that part of the WORK, unless Owner and Contractor shall have otherwise agreed in writing and so informed Engineer. Owner shall have the right to exclude Contractor from any part of the WORK which Engineer has so certified to be substantially complete, but Owner shall allow Contractor reasonable access to complete or correct items on the tentative list.

- B. In lieu of the issuance of a Certificate of Substantial Completion as to part of the WORK, Owner may take over operation of a facility constituting part of the WORK whether or not it is substantially complete if such facility is functionally and separately useable provided that prior to any such take over, Owner and Contractor have agreed as to the division of responsibilities between Owner and Contractor for security, operation, safety, maintenance, correction period, heat, utilities and insurance with respect to such facility.
- 14.6 Final Inspection: Upon notice from Contractor that the WORK is complete, Engineer will make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the WORK is incomplete or defective. Contractor shall immediately take such measures as are necessary to remedy such deficiencies.
- 14.7 Final Application for Payment: After Contractor has completed all such corrections to the satisfaction of Engineer and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked up record documents, and other documents--all as required by the Contract Documents, and after Engineer has indicated that the WORK is acceptable (subject to the provisions of Paragraph 14.9) Contractor may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation

called for in the Contract Documents and such other data and schedules as Engineer may reasonably require, together with complete and legally effective releases or waivers (satisfactory to Owner) of all Liens arising out of or filed in connection with the WORK. In lieu thereof and as approved by Owner, Contractor may furnish receipts or releases in full as an affidavit of Contractor that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the WORK for which Owner or his property might in any way be responsible, have been paid or otherwise satisfied and consent of the Surety, if any, to final payment. If any Subcontractor, manufacturer, fabricator, supplier or distributor fails to furnish a release or receipt in full, Contractor may furnish a Bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

- 14.8 Final Payment and Acceptance: After Engineer finds that the WORK is complete or the Materials, Tools, or Equipment have been received, the CONTRACTOR/VENDOR shall submit an Invoice. The Engineer will place the item on the next available Mayor and Board of Aldermen docket for the payment of the Invoice.
- 14.9 Contractor's Continuing Obligation: Contractor's obligation to perform and complete the WORK in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by Engineer, nor the issuance of a certificate of Substantial Completion, nor any payment by Owner to Contractor under the Contract Documents, nor any use or occupancy of the WORK or any part thereof by Owner, nor any act of acceptance by Owner nor any failure to do so, nor the issuance of a notice of acceptability by Engineer pursuant to Paragraph 14.8, nor any correction of defective WORK by Owner shall constitute an acceptance of WORK not in accordance with the Contract Documents or a release of Contractor's obligation to perform the WORK in accordance with the Contract Documents.
- 14.10 Waiver of Claims: The making and acceptance of final payment shall constitute:
- A. A waiver of all claims by Owner against Contractor, except: i) claims arising from unsettled Liens, ii) from defective WORK appearing after final inspection pursuant to Paragraph 14.6, iii) from failure to comply with the Contract Documents, or iv) the terms of any special guarantees specified therein. Further, final payment shall not constitute a waiver by the Owner of any rights in respect of Contractor's continuing obligations under the Contract Documents including its indemnification obligations; and
 - B. A waiver of all claims by Contractor against Owner other than those previously made in writing and still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.1 Owner May Suspend WORK: Owner may, at any time and without cause, suspend the WORK or any portion thereof for a period of not more than ninety (90) days by notice in writing to Contractor and Engineer which shall fix the date on which WORK shall be resumed. Contractor shall resume the WORK on the date so fixed. Contractor may be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if he makes a claim therefor as provided in Articles 11 and 12.

15.2 Owner May Terminate:

A. Upon the occurrence of any one or more of the following events:

1. If Contractor is adjudged as bankrupt or insolvent,
2. If Contractor makes a general assignment for the benefit of creditors,
3. If a trustee or receiver is appointed for Contractor or for any of Contractor's property,
4. If Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws,
5. If Contractor fails to supply sufficient skilled Workmen or suitable materials or equipment,
6. If Contractor fails to make prompt payments to Subcontractors or for labor, materials or equipment,
7. If Contractor disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction,
8. If Contractor disregards the authority of Engineer, or
9. If Contractor otherwise violates in any substantial way any provisions of the Contract Documents,

Owner may after giving Contractor and his Surety seven (7) days' written notice, terminate the services of Contractor, exclude Contractor from the site and take possession of the WORK and of all Contractor's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

incorporate in the WORK all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere, and finish the WORK as Owner may deem expedient. In such case Contractor shall not be entitled to receive any further payment until the WORK is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the WORK, including compensation for additional professional services, such excess shall be paid to Contractor. If such costs exceed such unpaid balance, Contractor shall pay the difference to Owner. Such costs incurred by Owner shall be verified by Engineer and incorporated in a Change Order, but in finishing the WORK Owner shall not be required to obtain the lowest figure for the WORK performed.

- B. Where Contractor's services have been so terminated by Owner, the termination shall not affect any rights of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- C. Upon seven (7) days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy, elect to abandon the WORK and terminate the Agreement. In such case, Contractor shall be paid for all WORK executed and reasonable expenses necessary to wind up the Contractor's Work.

15.3 Contractor May Stop WORK or Terminate: If, through no act or fault of Contractor, the WORK is suspended for a period of more than ninety (90) days by Owner or under an order of court or other public authority, or Engineer fails to acts on any Application for Payment within thirty (30) days after it is submitted, or Owner fails to pay Contractor any sum finally determined to be due, then Contractor may, upon seven (7) days' written notice to Owner and Engineer, terminate the Agreement and recover from Owner payment for all WORK executed and any expense sustained plus reasonable termination expenses. In addition and in lieu if terminating the Agreement, if Engineer has failed to act on an Application for Payment or Owner has failed to make any payment as aforesaid, Contractor may upon seven (7) days' written notice to Owner and Engineer stop the WORK until payment of all amounts then due. The provision of this paragraph shall not relieve Contractor of his obligations under Paragraph 7.13 to carry on the WORK in accordance with the progress schedule and without delay during disputes and disagreements with Owner.

ARTICLE 16 – DISPUTE RESOLUTION

16.1 Any dispute or controversy between the parties relating to this Agreement shall first be submitted to authorized representatives of the parties for good-faith negotiation and resolution. The disputing party shall give written notice to the other party of the existence of the dispute.

- 16.2 In the event the dispute or controversy is not resolved after good-faith negotiations within the thirty (30) days of receipt of notice of the dispute, then each party shall be free to pursue any and all equitable or legal remedies available to it for resolution of the dispute arising or related to this Agreement. Notwithstanding the foregoing, at any time, the Owner may seek immediate equitable relief to enforce Contractor's obligations or protect Owner's rights from irreparable harm. All legal proceedings arising out of or relating to this Agreement shall be brought in the appropriate state court in Rankin County, Mississippi.

ARTICLE 17 – MISCELLANEOUS

- 17.1 Giving Notice: Whenever any provision of the Contract Documents requires the giving of written notice it shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of notice.

- 17.2 General:

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon Contractor, by Paragraphs 7.14, 13.1, 13.6, 13.9, 14.3 and 15.2 and all of the rights and remedies available to Owner and Engineer thereunder, shall be in addition to, and shall not be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by law or contract, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this Paragraph shall be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents shall survive final payment and termination or completion of this Agreement.

- 17.3 Headings: The Article and Paragraph headings are inserted for convenience only and do not constitute part of these General Conditions.

END OF SECTION 00600

SECTION 00601
SPECIAL PROVISIONS - CONTRACTORS

1. APPLICATION OF THIS SECTION: This section shall only apply to Contractors bidding on Bid Forms that involved the use of labor.

2. SCOPE OF WORK

2.1 Location and Description: The work required under this contract includes the furnishing of all materials, tools, equipment, labor and incidentals necessary for satisfactory completion of **“CITY OF RIDGELAND FY27 TERM BIDS”**. The specific scope of work will be identified in a Purchase Order, if issued.

3. TEMPORARY CONTROLS: The Contractor shall provide and maintain methods, equipment, and temporary construction, as necessary to provide control over environmental conditions at the construction site and adjacent areas. Physical evidence of temporary facilities shall be removed after completion of the work.

- 3.2 Noise Control: The Contractor's vehicles and equipment shall be such as to minimize noise to the greatest degree practical. Noise levels shall conform to the latest OSHA standards and in no case will noise levels be permitted which interfere with the work of the City or others.

- 3.3 Water Control:

3.3.1 The Contractor shall provide methods to control surface water and water from excavations and structures to prevent damage to the work, the site, or adjoining properties, including beaver control on-site and adjacent thereto.

3.3.2 Fill, grading, and ditching shall be controlled to direct water away from excavations, pits, tunnels and other construction areas, and to proper runoff course so as to prevent any erosion, damage or nuisance.

3.3.3 The Contractor shall provide, operate and maintain equipment and facilities of adequate size to control surface water.

3.3.4 Drainage water shall be disposed of in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas and in conformance with all environmental requirements.

3.4 Pollution Control:

3.4.1 The Contractor shall provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.

3.4.2 The Contractor shall provide equipment and personnel, perform emergency measures required to contain any spillage, and remove contaminated soils or liquids. The contaminated earth will be removed and disposed of offsite, and replaced with suitable compacted fill and topsoil at no additional cost to the Owner.

3.4.3 The Contractor shall prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers. All sewage, oil and refuse generated during the course of the work shall not be discharged into any watercourses adjacent to the job site.

3.5 Erosion Control:

3.5.1 The Contractor shall plan and execute construction and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation. The areas of bare soil exposure at one time shall be held to a minimum, and temporary control measures such as silt screens, berms, dikes and drains shall be provided.

3.5.2 Fills and waste areas shall be constructed by selective placement to eliminate surface silts and clays which will erode.

3.5.3 The Contractor shall periodically inspect earthwork to detect any evidence of the start of erosion, and shall apply corrective measures to control erosion as required by the Owner at no additional cost to the Owner.

4. **RECORDS:** The Contractor shall maintain a complete and accurate log of work as it progresses. Upon completion of major items or upon request, the Contractor shall submit two (2) copies to the Owner.
5. **CONTRACT DRAWINGS:** Contract Drawings will be prepared by the Owner on an as-needed basis. The City of Ridgeland may elect to describe the work in some instances, and in other cases, the work may be exploratory with time and equipment only until a scope of work can be defined.

6. TIME FOR COMPLETION

It is hereby understood and mutually agreed, by and between the Contractor and the Owner that the date of beginning / Notice to Proceed is the date of the Purchase Order unless otherwise advised.

The Contractor agrees that said work shall be prosecuted regularly and diligently without interruption at such rate of progress as will ensure full completion thereof within a reasonable and customary timeframe.

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 same, taking into consideration the average climatic range and usual conditions prevailing in this locality.

If the CONTRACTOR is unable to fulfill the Purchase Order or fails to commence work within 30 days, the OWNER has the right to cancel the Purchase Order and issue a Purchase Order for the same work to an Alternate Bidder. The OWNER also has the right to select an alternate in the event of CONTRACTOR's inability to respond as needed or in the event of an emergency rather officially declared or not.

7. COOPERATION BETWEEN CONTRACTORS: If separate Purchase Orders are let within the limits of a project to multiple Contractors, such Contractors shall arrange and conduct the performance of their work and handling of materials so as to minimize interference with work being performed by other Contractors within the limits of the same project.

END OF SECTION 00601

SECTION 01001
BID FORMS

BID FORMS

PAGE NO.	FORM NO.	DESCRIPTION
2	1	Water System Components, Materials Only
3	2	Sewer System Components, Materials Only
4	3	Drainage System Components, Materials Only
5	4	Asphalt (Materials FOB/Delivered)
6	5	Aggregate, Soil and Fill Materials
8	6	Pre-cast Concrete Manholes
9	7	Traffic Signs, Street Sign Posts and Miscellaneous Materials
10	8	Decorative Street Name Signs & Posts Materials Only
11	9	Crack Sealant (Hot Applied) Materials Only
12	10	Water, Sewer, and Drainage System Labor (Schedule A)
13	11	Water, Sewer, and Drainage Equipment and Labor Rental Per Hour (Schedule B)
14	12	Asphalt (Installed – Labor and Materials)
16	13	Sewer Rehabilitation Labor and Materials
17	14	Landscape Materials & Installation (Plants, Soil, Sod and Mulch)
19	15	Concrete Installation and Repair, Labor and Materials
21	16	Easement Clearing and Maintenance Labor
22	17	Water Operations Maintenance and Inspection Services
23	18	Construction Work Zone Sign and Equipment Rental
25	19	Temporary Painted Traffic Markings (Labor and Materials)
27	20	Permanent Thermoplastic Pavement Markings (Labor and Materials)
28	21	General Traffic Signal and Street Light Maintenance Service
29	22	Stamping and Printing Asphalt Pavement (Labor and Materials)
30	23	Decorative Stamped and Painted Concrete Pavement (Labor and Materials)

FORM 1

WATER SYSTEM COMPONENTS, MATERIALS ONLY

SEE ATTACHED SPREADSHEET FOR BID FORM

BID TYPE: Line Item

Bidder : _____

Address: _____

Phone #: _____

Email: _____

SPECIFICATIONS

All of the bid materials shall be in accordance with the "Standards of Design and Specifications for Subdivisions" for the City of Ridgeland, a copy of which is on file in the City of Ridgeland and the Term Bid Specifications. Flexible joint restraint materials bid shall be equal to EBAA IRON "MEGALUG" and AWWA C-110 or C-153, and ASTM F1674-96. Brass items must also meet the ISO 9001:2008 standard. Mechanical joint restraint shall be incorporated in the design of the follower gland and shall include a restraining mechanism which, when actuated, imparts multiple wedging action against the pipe, increasing its resistance as the pressure increases. Flexibility of the joint shall be maintained after burial. Glands shall be manufactured of ductile iron conforming to ASTM A 536-80. Restraining devices shall be of ductile iron heat treated to a minimum hardness of 370 BHN. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to the latest revision of ANSI/AWWA A21.11 and ANSI/AWWA C153/A21.53. Twist-off nuts shall be used to insure proper actuating of the restraining devices. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG or equal.

Any reference to name brands is for the purpose of establishing quality. Suppliers wishing to bid other brands must submit a complete set of specifications with the bid for review by the Public Works Department (PWD) at least 3 working days prior to receiving bids. Bids not meeting the minimum specifications, as determined by the PWD, will be rejected.

The quantities noted are not proposed to be purchased immediately, but rather to establish a unit price for the items.

Prices include delivery to the City of Ridgeland's Water Department.

FORM 2

SEWER SYSTEM COMPONENTS, MATERIALS ONLY

SEE ATTACHED SPREADSHEET FOR BID FORM

BID TYPE: Line Item

Bidder : _____

Address: _____

Phone #: _____

Email: _____

SPECIFICATIONS ARE FOUND IN FORM A

FORM 3

DRAINAGE SYSTEM COMPONENTS, MATERIALS ONLY

SEE ATTACHED SPREADSHEET FOR BID FORM

BID TYPE: Line Item

Bidder : _____

Address: _____

Phone #: _____

Email: _____

FORM 4

ASPHALT FOB/DELIVERED

Bid TYPE: Line Item

All asphalt shall be in accordance with the City of Ridgeland Subdivision Regulations. BIDS SHALL BE BASED ON F.O.B. AT PLANT, LOADED IN CITY OF RIDGELAND TRUCKS OR DELIVERED TO VARIOUS LOCATIONS IN CITY OF RIDGELAND.

Bidder : _____

Address: _____

Phone #: _____

Email: _____

SPECIFICATIONS ARE FOUND IN FORM K

ASPHALT FOB OR DELIVERED					
ITEM NO.	ITEM DESCRIPTION	PROPOSAL QUANTITY	ITEM UNIT	UNIT PRICE	TOTAL PRICE
1	Base Course (BB-1 Type 6/19MM) Loaded	100	Ton		
2	Base Course (BB-1 Type 6/19.MM) Delivered	100	Ton		
3	Surface Course (SC-1 Type 8/9.5MM) Loaded	100	Ton		
4	Surface Course (SC-1 Type 8/9.5MM) Delivered	100	Ton		
				TOTAL PRICE	

FORM 5

AGGREGATE, SOIL, AND FILL MATERIALS

Bid Type: Line Item

All aggregate, soil and fill materials shall be in accordance with the 1990 edition of Mississippi Standard Specifications for Road and Bridge Construction, Mississippi Department of Transportation. Prices to include delivery to the City of Ridgeland at various street locations.

Bidder : _____

Address: _____

Phone #: _____

Email: _____

Note: Random spot checks of the above noted items weight tickets may be made. The Contractor shall furnish the Contracting Officers Representative a spot check weight ticket measured to the nearest 0.1 ton from a Mississippi State Bureau of Weights and Measures certified scale. The scale shall be nearest or most convenient to the construction site and the Contracting Officers Representative shall be present during the weighing for the spot check. Variations of the weights shown on the delivery tickets from that of the spot check weights in excess of 1.0 percent shall have adjustments made up or down in all delivery tickets from the previous spot check. As many as 10 percent of the loads may be spot checked.

FORM 5**AGGREGATE AND FILL MATERIALS**

ITEM NO.	ITEM DESCRIPTION	PROP QTY	ITEM UNIT	UNIT PRICE	TOTAL PRICE
1	Clay Gravel	50	CY		
2	Washed Road Gravel	50	CY		
3	River Sand Unwashed & Screened	50	CY		
4	Concrete Sand	50	CY		
5	Mason Sand	50	CY		
6	Pea Gravel	50	CY		
7	Red Sand	50	CY		
8	Top Soil	50	CY		
9	Red Sugar Sand	50	CY		
10	Bedding Material				
	(a) Class B	50	CY		
	(b) Class C	50	CY		
	(c) Class C Modified	50	CY		
11	Crushed Limestone	50	CY		
12	Crushed Concrete	50	CY		
13	100 Pound Rip-Rap (delivered via dump truck)	100	Tons		
14	100 Pound Rip-Rap (delivered via end-dump)	100	Tons		
15	200 Pound Rip-Rap (delivered via dump truck)	100	Tons		
16	200 Pound Rip-Rap (delivered via end-dump)	100	Tons		
	TOTAL BID				

FORM 6

PRECAST CONCRETE MANHOLES

BID TYPE: Line Item

All pre-cast manholes (ASTM C-478, AASHTO M 199) shall be manufactured in accordance with the 1990 edition of Mississippi Standard Specifications for Road and Bridge Construction, Mississippi Department of Transportation. Prices to include delivery to the City of Ridgeland at various street locations.

Bidder : _____

Address: _____

Phone #: _____

Email: _____

ITEM NO.	ITEM DESCRIPTION	PROPOSAL QUANTITY	ITEM UNIT	UNIT PRICE	TOTAL PRICE
1.(a)	48-Inch Diameter	10	V.F.	\$_____	\$_____
(b)	48-Inch Diameter Bottom	1	Each	\$_____	\$_____
(c)	48-Inch Diameter Cone Sections	1	Each	\$_____	\$_____
(d)	48-Inch Diameter Flat Tops w/ Rectangular Hatch	1	Each	\$_____	\$_____
2.(a)	60-Inch Diameter	10	V.F.	\$_____	\$_____
(b)	60-Inch Diameter Bottom	1	Each	\$_____	\$_____
(c)	60-Inch Diameter Cone Sections	1	Each	\$_____	\$_____
(d)	60-Inch Diameter Flat Tops w/ Rectangular Hatch	1	Each	\$_____	\$_____

TOTAL \$ _____

FORM 7

TRAFFIC SIGNS, STREET SIGNS POSTS, AND MISC MATERIALS

BID TYPE: Line Item

Bidder : _____

Address: _____

Phone #: _____

Email: _____

All street sign posts and materials shall be in accordance with the latest Edition of the Manual of Uniform Traffic Control Devices and the Mississippi Standard Specifications for Road and Bridge Construction, Mississippi Department of Transportation. Prices include delivery to the City of Ridgeland's Street Maintenance Department.

SEE ATTACHED SPREADSHEET FOR BID FORM

SPECIFICATIONS ARE FOUND IN FORM F

NOTE: The quantities specified are not actual quantities proposed for immediate purchase, but are simply estimated quantities based upon prior annual purchases by the City. Unit Prices are requested for all items listed even though a zero (0) quantity may show that there have been no recent purchases .

FORM 8

DECORATIVE STREET NAME SIGNS AND POSTS, MATERIALS ONLY

BID TYPE: Line Item

Bidder : _____

Address: _____

Phone #: _____

Email: _____

All street sign posts and materials shall be in accordance with the latest Edition of the Manual of Uniform Traffic Control Devices and the Mississippi Standard Specifications for Road and Bridge Construction, Mississippi Department of Transportation. Prices include delivery to the City of Ridgeland's Street Maintenance Department.

SPECIFICATIONS ARE FOUND IN FORM F

Item No.	Qty	Description	Size / Unit	Unit Price	Total Price
1	1	Street Name Sign, Finished Super-High Efficiency, Full Cube Prismatic Retroreflective Sheeting (Diamond Grade), with Street Name	8" x 30"	\$	\$
2	1	Decorative Street Name Post Complete Assembly (Double Arm)	12 ft	\$	\$
3	1	Mast Arm Street Name Sign	SF	\$	\$
4	1	Mast Arm Street Name Sign Mounting Bracket	EA	\$	\$
5	1	8-inch Sign Mounting Clamp	EA	\$	\$
6	1	16-inch Sign Mounting Clamp	EA	\$	\$
7	1	Gusset Tube, 74"	EA	\$	\$
8	1	Decorative Street Name Post	EA	\$	\$
9	1	Decorative Street Name Finial Top	EA	\$	\$
10	1	Decorative Street Name	EA	\$	\$
TOTAL BID					\$

FORM 9

CRACK SEALANT (HOT APPLIED)

BID TYPE: LINE ITEM

All asphalt crack sealant shall be in accordance with the City of Ridgeland Mississippi Standard Specifications for hot poured asphalt crack sealant. The quantities specified are not actual quantities proposed for immediate purchase, but are simply estimated quantities.

Bidder : _____

Address: _____

Phone #: _____

Email: _____

SPECIFICATIONS ARE FOUND IN FORM I

ITEM NO.	ITEM DESCRIPTION	PROPOSAL QUANTITY	ITEM UNIT	UNIT PRICE	TOTAL PRICE
1.	Asphalt Crack Sealant (Hot Applied)	2250	Pound	\$ _____	\$ _____

FORM 10

WATER & SEWER SYSTEM LABOR

Bid Type: Total Base Bid

The bid for all items will be awarded to one contractor based on the total combined bid price of items on Form 10 Water & Sewer System Labor and Form 11 Water & Sewer System Equipment and Labor Rental Per Hour.

Bidder : _____

Address: _____

Phone #: _____

Email: _____

SEE ATTACHED SPREADSHEET FOR BID FORM

SPECIFICATIONS ARE FOUND IN FORM A

FORM 11

WATER & SEWER SYSTEM EQUIPMENT AND LABOR RENTAL PER HOUR

Bid Type: Total Base Bid

The bid for all items will be awarded to one contractor based on the total combined bid price of items on Form 1 Water & Sewer System Labor and Form 2 Water & Sewer System Equipment and Labor Rental Per Hour.

“Installation Only” materials to be supplied by owner; all tractors, trailers, trucks, flatbed trucks / trailers necessary for the transportation of heavy equipment are absorbed in the hourly unit price for the related equipment.

Bidder : _____
Address: _____

Phone #: _____
Email: _____

SEE ATTACHED SPREADSHEET FOR BID FORM

SPECIFICATIONS ARE FOUND IN FORM A

FORM 12

ASPHALT INSTALLED LABOR AND MATERIALS

Bid Type: Total Base Bid

Bidder : _____

Address: _____

Phone #: _____

Email: _____

SPECIFICATIONS ARE FOUND IN FORM K

FORM 12

ASPHALT INSTALLED VARIOUS LOCATIONS RIDGELAND					
ITEM NO.	ITEM DESCRIPTION	QTY	ITEM UNIT	UNIT PRICE	TOTAL PRICE
General					
1	Base Course (BB-1 Type 6/19MM)	100	Ton		
2	Surface Course (SC-1 Type 8/9.5MM)	100	Ton		
3	Failed Areas (Dig Out & Full Depth Replacement)	10	Ton		
Local Roads					
	Surface Course (SC-1 Type 8/9.5MM)	1000	Ton		
	Milling Asphalt Surface (<3000 SY)	1	LS		
	Milling Asphalt Surface (>3000 SY)	4000	SY		
	Failed Areas (Dig Out & Full Depth Replacement)	10	Ton		
Collector Roads					
	Surface Course (SC-1 Type 8/9.5MM)	1000	Ton		
	Milling Asphalt Surface (<3000 SY)	1	LS		
	Milling Asphalt Surface (>3000 SY)	4000	SY		
	Failed Areas (Dig Out & Full Depth Replacement)	10	Ton		
Arterial Roads					
	Surface Course (SC-1 Type 8/9.5MM)	1000	Ton		
	Milling Asphalt Surface (<3000 SY)	1	LS		
	Milling Asphalt Surface (>3000 SY)	4000	SY		
	Failed Areas (Dig Out & Full Depth Replacement)	10	Ton		
Parking Lots					
	Surface Course (SC-1 Type 8/9.5MM)	1000	Ton		
	Milling Asphalt Surface (<3000 SY)	1	LS		
	Milling Asphalt Surface (>3000 SY)	4000	SY		
	Failed Areas (Dig Out & Full Depth Replacement)	10	Ton		
Multiuse Path					
	Surface Course (SC-1 Type 8/9.5MM)	250	Ton		
	Milling Asphalt Surface (<6000 SY)	1	LS		
	Failed Areas (Dig Out & Full Depth Replacement)	10	Ton		
				TOTAL BID	

FORM 13

SEWER REHABILITATION LABOR AND MATERIALS

Bid Type: Total Base Bid

For furnishing all new materials, labor, equipment, and all that may be incidental to and for the construction of sewer facilities as specified and as outlined below:

Bid Type: Total Base Bid

Bidder : _____

Address: _____

Phone #: _____

Email: _____

SPECIFICATIONS ARE FOUND IN FORM B

Manufacturer of CIPP to be installed: _____

Licensed Installer of CIPP: _____

Manufacturer of FIPP to be installed: _____

Licensed Installer of FIPP: _____

Manufacturer of 100% Solids Epoxy Lining: _____

Licensed Installer of 100% Solids Epoxy: _____

Manufacturer of CIP fiberglass liner: _____

Licensed Installer of CIP fiberglass liner: _____

SEE ATTACHED SPREADSHEET FOR BID FORM

FORM 14

LANDSCAPE MATERIALS AND INSTALLATION PLANTS, SOIL, SOD, AND MULCH

Bid Type: Total Base Bid

Bidder : _____

Address: _____

Phone #: _____

Email: _____

SPECIFICATIONS ARE FOUND IN FORM C

ITEM #	DESCRIPTION	SPECIFICATION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A. TREES						
1	Red Maple <i>Acer rubrum spp.</i>	B&B/Cont., 2" Cal., 10'-12' height	1	EA	\$	\$
2	Nutall Oak <i>Quercus nuttallii</i>	B&B/Cont., 2" Cal., 10'-12' height	1	EA	\$	\$
3	Shumard Oak <i>Quercus shumardii</i>	B&B/Cont., 2" Cal., 10'-12' height	1	EA	\$	\$
4	Willow Oak <i>Quercus phellos</i>	B&B/Cont., 2" Cal., 10'-12' height	1	EA	\$	\$
5	Chinese Elm <i>Ulmus parvifolia spp.</i>	B&B/Cont., 2" Cal., 10'-12' height	1	EA	\$	\$
6	Live Oak <i>Quercus virginiana</i>	B&B/Cont., 2" Cal., 10'-12' height	1	EA	\$	\$
7	Southern Magnolia <i>Magnolia grandiflora</i>	B&B/Cont., 2" Cal., 10'-12' height	1	EA	\$	\$
8	Crape Myrtle <i>Lagerstroemia indica spp.</i>	B&B/Cont., 10'-12' height, multi-trunk	1	EA	\$	\$
9	Savannah Holly <i>Ilex x 'Savannah'</i>	B&B/Cont., 10'-12' height, straight trunk	1	EA	\$	\$
10	Lilac Chaste Tree <i>Vitex agnuscastus spp.</i>	B&B/Cont., 10'-12' height, multi-trunk	1	EA	\$	\$
B. SHRUBS, GROUND COVER, AND SEASONAL COLOR						
11	Carissa Holly <i>Ilex cornuta 'Carissa'</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
12	Dwarf Indian Hawthorn <i>Raphiolepis indica spp.</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
13	Pink Muhly Grass <i>Muhlenbergia capillaris spp.</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
14	Maiden Grass <i>Miscanthus sinensis 'Adagio'</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
15	Knock Out Rose <i>Rosa x 'Radrass' spp.</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
16	Drift Rose <i>Rosa x 'Meigalpio'</i> <i>Rosa x 'Meijocos'</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$

17	Sunshine Ligustrum <i>Ligustrum sinense 'Sunshine'</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
18	Distylium <i>Distylium x spp.</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
ITEM #	DESCRIPTION	SPECIFICATION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
19	Loropetalum <i>Loropetalum chinense spp.</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
20	Abelia <i>Abelia grandiflora spp.</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
21	Eleagnus <i>Eleagnus pungens spp.</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
22	Needlepoint Holly <i>Ilex cornuta 'Needlepoint'</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
23	Azalea <i>Rhododendron indica spp.</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
24	Dwarf Magnolia <i>Magnolia grandiflora 'Little Gem'</i> <i>Magnolia grandiflora 'Teddy Bear'</i>	15 Gallon, full, healthy, well-formed	1	EA	\$	\$
25	Creeping Juniper <i>Juniperus horizontalis spp.</i>	3 Gallon, full, healthy, well-formed	1	EA	\$	\$
26	Liriope <i>Liriope muscari spp.</i>	1 Gallon, full, healthy, well-formed	1	EA	\$	\$
27	Trailing Lantana <i>Lantana montevidensis spp.</i>	1 Gallon, full, healthy, well-formed	1	EA	\$	\$
28	Daylily <i>Hemerocallis spp.</i>	1 Gallon, full, healthy, well-formed	1	EA	\$	\$
C. MULCH						
29	Pinestraw Mulch	Long Needle, Bale	1	EA	\$	\$
30	Pinestraw Mulch	Long Needle, Roll	1	EA	\$	\$
D. SOD						
31	Centipede Sod <i>Eremochloa ophiuroides</i> (TifBlair or approved equal)	1 Pallet (500 sf) Healthy, disease free, 1" min. soil base, solid sod	1	EA	\$	\$
32	Bermuda Sod <i>Cynodon dactylon</i> (Tifway 419, MS Pride, MS Choice, Tifsport, Celebration)	1 Pallet (500 sf) Healthy, disease free, 1" min. soil base, solid sod	1	EA	\$	\$
33	St Augustine Sod <i>Stenotaphrum secundatum</i> (Captiva, Delmar, Floratum, Palmetto, Raleigh, Seville)	1 Pallet (450 sf) Healthy, disease free, 1" min. soil base, solid sod	1	EA	\$	\$
E. SOIL AMENDMENTS						
34	Soil Preparation with River Sand and Loamate	Per Square Feet of Bed Area	1	SF	\$	\$
TOTAL BID (1-34)						\$

FORM 15

CONCRETE INSTALLATION AND REPAIR, LABOR AND MATERIALS

BID TYPE: Total Base Bid

Bidder : _____

Address: _____

Phone #: _____

Email: _____

Bids are to be quoted as listed below. Dirt work prior to placement of forms to be performed by the City of Ridgeland. All concrete, steel dowels and dummy joints to be furnished by the Contractor.

SPECIFICATIONS

Curb and gutter shall be installed in accordance with Section 609 of the latest edition of the Mississippi Standard Specifications for Road and Bridge Construction. Asphalt curbing shall not be allowed.

Miscellaneous-in-place concrete work shall include items shown as sidewalk, drive and concrete median.

Leveling and lifting of concrete sidewalk, curb & gutter, and drainage structures & pipe shall conform to MDOT Special provision 907-420-4 and 907-420-5 and use NCFI Poly System 24-003 or approved equal.

ADA Curb Ramps shall conform to MDOT Standard Construction Details and City of Ridgeland Standard Construction Details. Type of curb ramp is dependent upon location and application. Minor Structures concrete work shall include items such as drainage structures and shall be installed in accordance with Section 601 of the latest edition of the Mississippi Standard Specifications for Road and Bridge Construction. The City at its option will execute the Contractors bid bond for failure to start the work within 30 days of the purchase order date. The City will also at its option execute the Contractors bid bond for failure to complete the work within 60 days of the purchase order date unless otherwise specified on the purchase order. Time extensions will be awarded at the discretion of the Public Works Director in extraordinary circumstances.

FORM 15

CONCRETE INSTALLATION					
ITEM NO.	ITEM DESCRIPTION	QTY	ITEM UNIT	UNIT PRICE	TOTAL PRICE
1a	Cast-in-Place Curb & Gutter (0-50 LF)	25	LF		
1b	Cast-in-Place Curb & Gutter (50-500 LF)	250	LF		
1c	Cast-in-Place Curb & Gutter (>500 LF)	500	LF		
2a	Miscellaneous Cast-in-Place Concrete (0-3 CY)	3	CY		
2b	Miscellaneous Cast-in-Place Concrete (3-8 CY)	8	CY		
2c	Miscellaneous Cast-in-Place Concrete (>8 CY)	10	CY		
3a	Minor Structures (0-3 CY)	3	CY		
3b	Minor Structures (3-8 CY)	8	CY		
3c	Minor Structures (>8 CY)	10	CY		
4a	ADA Curb Ramp - City Standard	2	EA		
4b	ADA Curb Ramp - MDOT Type I	2	EA		
4c	ADA Curb Ramp - MDOT Type II	2	EA		
4d	ADA Curb Ramp - MDOT Type III	2	EA		
4e	ADA Curb Ramp - MDOT Type IV	10	EA		
5a	Remove & Replace Existing Curb & Gutter (0-50 LF)	25	LF		
5b	Remove & Replace Existing Curb & Gutter (50-500 LF)	250	LF		
5c	Remove & Replace Existing Curb & Gutter (>500 LF)	500	LF		
6a	Remove & Replace Existing Misc. Concrete (0-3 CY)	3	CY		
6b	Remove & Replace Existing Misc. Concrete (3-8 CY)	8	CY		
6c	Remove & Replace Existing Misc. Concrete (>8 CY)	10	CY		
7a	Remove & Replace Existing Minor Structures (0-3 CY)	3	CY		
7b	Remove & Replace Existing Minor Structures (3-8 CY)	8	CY		
7c	Remove & Replace Existing Minor Structures (>8 CY)	10	CY		
8	Removal of Existing Curb & Gutter	200	LF		
9	Removal of Existing Misc. Concrete	5	CY		
10	Sawcut Existing Curb & Gutter or Misc. Concrete	10	LF		
11	Concrete Sidewalk Leveling & Lifting	100	LBS		
12	Concrete Curb & Gutter Leveling & Lifting	100	LBS		
13	Drainage Structure & Pipe Leveling & Lifting	100	LBS		
14	Roadbed Undersealing & Void Filling with Polyurethane	100	LBS		
		TOTAL BID			

FORM 16

EASEMENT CLEARING AND MAINTENANCE LABOR

BID TYPE: Total Base Bid

Bidder : _____

Address: _____

Phone #: _____

Email: _____

This work shall consist of completely clearing trees and vegetation within the limits of rights-of-way and easement areas down to ground level so it can be maintained by the City of Ridgeland's mowing and herbicide spraying operations.

The City at its option will execute the Contractors Performance bond for failure to start the work within 30 days of the purchase order date. The City will also at its option execute the Contractors Performance bond for failure to complete the work within 60 days of the purchase order date unless otherwise specified on the purchase order. Time extensions will be awarded at the discretion of the Public Works Director in extraordinary circumstances.

SPECIFICATIONS ARE FOUND IN FORM D

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	Forestry Mowing and Mulching, less than 6" tree diameter	HOUR	8		\$ -
2	Large Tree Removal, greater than 6" tree diameter	HOUR	8		\$ -
3	General Mowing & Bushhogging	HOUR	8		\$ -

FORM 17

WATER OPERATOR SERVICES

BID TYPE: Total Base Bid

The City of Ridgeland intends to enter into a Contract for Water Operations Maintenance and Inspection Services with a capable OPERATOR on an as-needed basis to ensure system operations during an emergency or in the event of needed staff support.

Bidder : _____

Address: _____

Phone #: _____

Email: _____

SPECIFICATIONS ARE FOUND IN FORM E

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	Water Operations Maintenance and Inspection Services	WEEK	4		\$ -
BASE BID SUBTOTAL					\$ -

FORM 18

CONSTRUCTION WORK ZONE SIGN AND EQUIPMENT RENTAL

BID TYPE: Total Base Bid

Bidder : _____

Address: _____

Phone #: _____

Email: _____

This work shall include providing temporary traffic control services in accordance with Section 618 & Section 619 of the latest edition of the Mississippi Standard Specifications for Road and Bridge Construction, and in accordance with Part 6 of the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). All traffic control devices used shall comply with Part 6 of the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).

Bid Prices for Temporary Traffic Control Services will include furnishing all of the material, supplies, tools, equipment, labor and other services necessary for installation, maintenance and removal of temporary traffic control devices at various locations throughout the City of Ridgeland. Any materials and labor necessary and incidental to the complete installation of a traffic control device that is not specified on the proposal as a separate pay item shall be considered as an absorbed item. Traffic Control Devices will be measured on a daily basis for the quantity of units in place. Replacement of Traffic Control Devices will not be measured for payment. The Quantities shown on the proposal forms below are not representative of anticipated projects, but are for the purpose of comparing bids and establishing an annual unit price for application on a variety of projects.

FORM 18

CONSTRUCTION SIGNAGE					
ITEM NUMBER	DESCRIPTION	QUANTITY	ITEM UNIT	UNIT COST	TOTAL COST
1	Road Work Ahead Sign (W20-1)	10	DAY		
2	End Road Work Sign (G20-2)	10	DAY		
3	Lane Ends Merge Left Sign (W9-2L)	2	DAY		
4	Lane Ends Merge Right Sign (W9-2R)	2	DAY		
5	Left Lane Closed Ahead Sign (W20-5L)	2	DAY		
6	Right Lane Closed Ahead Sign (W20-5R)	2	DAY		
7	Merge Left Symbol Sign (W4-2L)	2	DAY		
8	Merge Right Symbol Sign (W4-2R)	2	DAY		
9	Two-Way Directional Arrow Symbol Sign (W6-3D)	2	DAY		
10	Road Closed Ahead Sign (W20-3)	2	DAY		
11	Detour Ahead Sign (W20-2)	2	DAY		
12	Detour Left Sign (M4-9L)	10	DAY		
13	Detour Right Sign (M4-9R)	10	DAY		
14	End Detour Sign (M4-8a)	4	DAY		
15	Road Closed Sign (R11-2)	20	DAY		
16	No Left Turn Symbol Sign (R3-1L)	5	DAY		
17	No Right Turn Symbol Sign (R3-1R)	5	DAY		
18	Right Lane Must Turn Right Sign (R3-7)	2	DAY		
19	42" Channelizing Cones	100	DAY		
20	Sign Stands	40	DAY		
21	Flashing Warning Lights	100	DAY		
22	Flashing Arrow Panel	1	DAY		
23	Changeable Message Sign	1	DAY		
24	Portable Median Barrier	20	DAY		
25	Free Standing Plastic Drums	100	DAY		
26	Traffic Control Device Installation Service	8	HR.		
27	Traffic Control Device Removal Service	4	HR.		
				TOTAL	

FORM 19

TEMPORARY PAINTED TRAFFIC MARKINGS (LABOR AND MATERIALS)

BID TYPE: Line Item

Bidder : _____

Address: _____

Phone #: _____

Email: _____

This work consists of furnishing, and placing temporary painted traffic marking materials in accordance in accordance with the Mississippi Standard Specifications for Road and Bridge Construction, latest edition, Section 619, and all other applicable sections referenced. Existing pavement markings conflicting with temporary markings shall be removed. Temporary painted traffic markings will be measured by the linear foot, as indicated, from end-to-end of individual stripes. In the case of skip lines the measurement will include skips. Detail traffic stripe will be measured by the linear foot from end-to-end of individual stripes. Measurement will be made along the surface of each stripe and will exclude nominal skip intervals where specified. Legend, which is to include individual letters and symbols, railroad markings, pedestrian crosswalks and stop lines, will be measured by the square foot.

The quantities specified are not actual quantities proposed for immediate purchase, but are used to establish unit prices. All temporary painted traffic markings shall be Bid at a unit price that includes all labor, travel, materials and incidentals necessary for a complete installation at various locations. Intent is to award all legitimate bids, and low bidder will be determined on a job by job basis.

FORM 19

TRAFFIC STRIPING (PAINT)					
ITEM NUMBER	DESCRIPTION	QUANTITY	ITEM UNIT	UNIT COST	TOTAL COST
1	Mobilization for projects up to \$10,000	1	EA		
2	Mobilization for projects \$10,001-\$25,000	1	EA		
3	Mobilization for projects \$25,001-50,000	1	EA		
4	Mobilization for projects \$50,001-\$100,000	1	EA		
5	Mobilization for projects over \$100,000	1	EA		
6	4" Temporary Traffic Stripe (Skip White)	1	LF		
7	4" Temporary Traffic Stripe (Continuous White)	1	LF		
8	4" Temporary Edge Stripe (Continuous White)	1	LF		
9	4" Temporary Traffic Stripe (Skip Yellow)	1	LF		
10	4" Temporary Traffic Stripe (Continuous Yellow)	1	LF		
11	4" Temporary Edge Stripe (Continuous Yellow)	1	LF		
12	4" Temporary Detail Stripe (White or Yellow)	1	LF		
13	6" Temporary Traffic Stripe (Skip White)	1	LF		
14	6" Temporary Traffic Stripe (Continuous White)	1	LF		
15	6" Temporary Edge Stripe (Continuous White)	1	LF		
16	6" Temporary Traffic Stripe (Skip Yellow)	1	LF		
17	6" Temporary Traffic Stripe (Continuous Yellow)	1	LF		
18	6" Temporary Edge Stripe (Continuous Yellow)	1	LF		
19	6" Temporary Detail Stripe (White or Yellow)	1	LF		
20	Temporary Legend (White)	1	SF		
21	Red-Clear Reflective Raised Markers	1	EA		
22	Two-Way yellow Reflective Raised Marker	1	EA		
23	Removal of 4" Stripe	1	LF		
24	Removal of 6" Stripe	1	LF		
25	Removal of Legend	1	SF		
			TOTAL		\$

FORM 20

PERMANENT THERMOPLASTIC PAVEMENT MARKINGS

SEE ATTACHED SPREADSHEET FOR BID FORM

BID TYPE: Total Base Bid

Bidder : _____

Address: _____

Phone #: _____

Email: _____

The quantities specified are not actual quantities proposed for immediate purchase, but are used to establish unit prices. All painted traffic markings shall be in accordance with the Latest version of the Mississippi Standard Specifications for Road and Bridge Construction, Section 626 and 627, and all other applicable sections. Bid price includes all labor, travel, materials and incidentals necessary for a complete installation at various locations. The bid for all items will be awarded to one contractor based on the total bid price. The City at its option will execute the Contractor's bid bond for failure to start the work within 30 days of the purchase order date. The City will also at its option execute the Contractors bid bond for failure to complete the work within 60 days of the purchase order date unless otherwise specified on the purchase order. Time extensions will be awarded at the discretion of the Public Works Director in extraordinary circumstances.

FORM 21**TRAFFIC SIGNAL & STREET LIGHT MAINTENANCE SERVICE****BID TYPE: Total Base Bid**

Bidder : _____

Address: _____

Phone #: _____

Email: _____

This work shall consist of providing the labor, tools and equipment on an hourly basis to complete the installation of City of Ridgeland furnished traffic signal and street lighting parts and equipment.

The City at its option will execute the Contractors Performance bond for failure to start the work within 30 days of the purchase order date. The City will also at its option execute the Contractors Performance bond for failure to complete the work within 60 days of the purchase order date unless otherwise specified on the purchase order. Time extensions will be awarded at the discretion of the Public Works Director in extraordinary circumstances.

ITEM NO.	ITEM DESCRIPTION	PROPOSAL QUANTITY	ITEM UNIT	UNIT PRICE	TOTAL PRICE
1	Bucket Truck, business hours (6:00AM - 6:00PM)	8	HOUR	\$	\$
2	Bucket Truck, after hours (6:00PM - 6:00AM)	8	HOUR	\$	\$
3	Foreman, business hours (6:00AM - 6:00PM)	8	HOUR	\$	\$
4	Foreman, after hours (6:00PM - 6:00AM)	8	HOUR	\$	\$
5	Electrician, business hours (6:00AM - 6:00PM)	8	HOUR	\$	\$
6	Electrician, after hours (6:00PM - 6:00AM)	8	HOUR	\$	\$
7	Laborer, business hours (6:00AM - 6:00PM)	8	HOUR	\$	\$
8	Laborer, after hours (6:00PM - 6:00AM)	8	HOUR	\$	\$
				BASE BID SUBTOTAL	\$

FORM 22

STAMPING AND PRINTING ASPHALT PAVEMENT (LABOR & MATERIALS)

BID TYPE: LINE ITEM

Bidder: _____

Address: _____

Phone #: _____

Email: _____

All stamping and printing of asphalt pavement shall be in accordance with attached City specifications. The quantities specified are not actual quantities, but are used to establish unit prices. Bid prices includes all labor, travel, materials and incidentals necessary for a complete installation at various locations. The City at its option will execute the Contractor's bid bond for failure to start the work within 30 days of the purchase order date. The City will also at its option execute the Contractors bid bond for failure to complete the work within 60 days of the purchase order date unless otherwise specified on the purchase order. Time extensions will be awarded at the discretion of the Public Works Director in extraordinary circumstances.

ITEM NO.	ITEM DESCRIPTION	PROPOSAL QUANTITY	ITEM UNIT	UNIT PRICE	TOTAL PRICE
1	Stamping and Printing Asphalt Pavement	1	S.F.	\$_____	\$_____
2	Painting Only Asphalt Pavement	1	S.F.	\$_____	\$_____

Specifications:

Layout, color, and imprinting the pattern into the asphalt surface will be as directed by the City Engineer.

Applications exposed to vehicular traffic should receive a minimum of two coats of color treatment.

An acrylic polymer clear sealer shall be used and must be compatible with color treatment.

The pattern shall be created in accordance with the design as directed by the city. Patterning shall begin once the asphalt has reached its final density and while there is still sufficient heat in the asphalt to permit imprinting. If the asphalt has cooled or if the print is being placed in older asphalt, then the asphalt is required to be heated prior to imprinting.

Patterning shall be achieved using steel rollers and/or vibratory plates and shall be of consistent depth.

FORM 23

DECORATIVE STAMPED AND PAINTED CONCRETE PAVEMENT (LABOR AND MATERIALS)

SPECIFICATIONS FOUND IN FORM J

BID TYPE: Total Base Bid

Bidder: _____

Address: _____

Phone #: _____

Email: _____

Award of bid for Decorative Stamped and Painted Concrete Pavement will be based on the Total Base Bid Amount. All Bid Prices at a unit price that includes all labor, delivery, materials and incidentals necessary for a complete installation at various locations. . Incidental materials and work necessary to complete the work under this section and not listed below will not be measured separately for payment. The quantities specified are not actual quantities proposed for immediate purchase, but are simply estimated quantities used to establish unit prices for purchases by the City for the one year term. The City at its option will execute the Contractors Performance bond for failure to start the work within 30 days of the purchase order date. The City will also at its option execute the Contractors Performance bond for failure to complete the work within 60 days of the purchase order date unless otherwise specified on the purchase order. Time extensions will be awarded at the discretion of the Public Works Director in extraordinary circumstances.

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	Installation of Decorative Stamped & Painted Concrete Pavement	CY	10		\$ -
2	Removal of Existing Pavement and Installation of Decorative Stamped & Painted Concrete Pavement	CY	10		\$ -
3	Cleaning of Decorative Stamped & Painted Concrete Pavement	SY	80		\$ -
4	Sealing of Decorative Stamped & Painted Concrete Pavement	SY	80		\$ -
BASE BID SUBTOTAL					\$ -

FORM A
SPECIAL PROVISIONS & SPECIFICATIONS
WATER & SEWER SYSTEM EQUIPMENT AND LABOR

SECTION 1 – SANITARY SEWERAGE

PART 1 - GENERAL

1-01 DESCRIPTION

- A. In accordance with the requirements of these specifications, the Contractor shall furnish and/or install all materials and perform all work necessary for or incidental to constructing a gravity flow sanitary sewer system complete and ready for use by the Owner.
- B. The work shall include the excavation, trenching and backfilling; furnishing and installing all trench sheeting and bracing; furnishing and installing all pipe, specials, services, manholes and related appurtenances; storage and protection of materials; testing, clean-up and all other operations necessary to complete the work in accordance with the detailed Specifications contained herein.

1-02 CONTRACTOR'S EQUIPMENT

The Contractor shall provide and maintain the principal equipment necessary to prosecute the work in an orderly and safe manner. The equipment shall consist of approved units designed or selected to perform and expedite all of the work and incidental items of construction.

1-03 CONFLICTS WITH OTHER UTILITIES

- A. Where the location of the sewer is not clearly defined by dimensions on the Drawings or unless otherwise directed by the Engineer, the sewer shall not be laid closer horizontally than ten feet (10') to a water supply main except that where the bottom of the water pipe will be at least eighteen inches (18") above the top of the sewer pipe, horizontal spacing may be a minimum of six feet (6'). Where gravity-flow sewers cross above water lines, the sewer pipe, for a distance of ten feet (10') each side of the crossing, shall either be ductile iron pressure pipe without any joint closer horizontally than three feet (3') to the crossing or shall be fully encased in concrete.
 - B. Where sewer construction conflicts with underground utilities which are indicated to remain in place, the Contractor shall be fully responsible for protecting these facilities and for restoring the portions of those lines which are damaged or severed as a result of his operations.
-

Where existing lines in conflict are indicated to be removed by others, the Contractor shall cooperate with the Owner of these utilities to the end that these conflicts may be removed prior to excavation for the sewers.

1-04 PROTECTION OF PROPERTY

- A. General: Existing power lines, telephone lines, trees, shrubbery, fences, water mains, gas mains, sewers, cables, conduits, ditches, embankments and other structures in the vicinity of the work not authorized to be removed shall be supported and protected from injury by the Contractor during the construction and until completion of the work affecting them. The Contractor shall be liable for all damages done to such existing facilities and structures, as herein provided, and he shall save the Owner harmless from any liability or expense for injuries, damages or repairs to such facilities.
 - B. Underground Utilities: The type, size, location and number of all known underground utilities have been shown on the Drawings; however, no guarantee is made as to the true type, size, location or number of such utilities. It shall be the responsibility of the Contractor to verify the existence and location of all underground utilities along the route of the work. The omission from, or the inclusion of utility locations on the Drawings is not to be considered as the nonexistence of or a definite location of existing underground utilities.
 - C. Relocation of Existing Utilities
 - 1. The Contractor shall notify the Owner or Owners of the existing utilities, whether above the ground or underground; prior to proceeding with trench excavation whenever such trenching operations are within ten feet (10') of any existing utility.
 - 2. In the event that during construction it is determined that any underground utility conduit, including sewers, water mains and drainage structures, and any above ground utility facilities are required to be relocated, the Contractor shall notify the utility owner well in advance of his approach to such utility so that arrangements with the Owner or owners of the affected utility can be completed without delay of the work.
 - 3. Should any such utility be damaged in the trenching operations, the Contractor shall immediately notify the owner of the utility, the Contractor shall not attempt to make repairs. Duplicate copies of any written authorization given to the Contractor to make repairs shall be filed with the Engineer and shall be so worded as to save harmless the Owner and Engineer of any responsibility whatsoever relative to the sufficiency of the repairs.
-

4. Vegetation: Reasonable care shall be taken during construction to avoid damage to vegetation. Ornamental shrubbery and tree branches shall be temporarily tied back, where appropriate, to minimize damage. Trees which receive damage to branches shall be trimmed of those branches to improve the appearance of the tree. Tree trunks receiving damage from equipment shall be treated with a tree dressing.

1-05 RAILROADS AND HIGHWAY CROSSING

- A. All work incidental to the construction of sewer lines under railroads, highways or parkways shall be done in strict compliance with the regulations prescribed by the owners of these properties and shall be done with extreme care to safeguard life and property. After the necessary permits and agreements for these crossings have been approved and executed, the Contractor shall confer with the representatives of the Railroad Company, the State Highway Department, the Parkway Manager, of the County owning these properties and arrange schedules and the manner for constructing the work in accordance therewith. In general, the sewer pipe will be installed in steel casing or steel lined tunnels at all railroad, parkway and highway crossings.
- B. Utility crossings shall be constructed in accordance with the Section "Roadway Crossings for Utility Lines" herein, where applicable.

1-06 APPLICABLE DOCUMENTS

- A. The following publications form a part of this Specification and where referred to by basic designation only, are applicable to the extent indicated. Reference is to the latest edition of each unless specified otherwise.

1. American Society for Testing and Materials (ASTM) :

- a. C-76 Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.
- b. C-443 Joints for Circular Concrete Sewer and Culvert Pipe.
- c. C-478 Precast Reinforced Concrete Manhole Sections.
- d. C-700 Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated.
- e. C-425 Compression Joints for Vitrified Clay.
- f. D-2680 ABS Truss Pipe and Fittings.
- g. D-2751 ABS Sewer Pipe and Fittings.
- h. D-2235 Solvent Cement for ABS Plastic Pipe and Fittings.
- i. D-3034 Type PSM-PVC Sewer Pipe and Fittings.
- j. D-3212 Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric

Seals.

- k. D-2564 Solvent Cement for PVC Plastic Pipe and Fittings.

2. American Water Works Association (AWWA):

- a. C-151 Standard for Ductile Iron Pipe, Centrifugally Cast in Metal Molds.
- b. C-111 Joints for Ductile Iron Pipe, Rubber Gasket.
- c. C-110 Gray Iron and Ductile Iron Fittings.

B. Local Building Codes: Any City, County or States Codes applying to the work.

C. MS. Standard Specifications for Road and Bridge Construction, 2004 edition (MSHD): Sections are referenced herein.

1-07 SUBMITTALS:

The Contractor shall submit testing reports, manufacturer's certifications, shop drawings, manufacturer's catalogs, specification sheets and other incidentals to the Engineer when requested.

PART 2 - MATERIALS

2-01 GENERAL

A. The Contractor shall furnish all materials necessary for or incidental to constructing a gravity flow wastewater system. All materials shall be new and of first quality with certified tests for all pipe and pipe fittings made at the manufacturer's plant to assure conformance with these technical provisions. Two (2) certified copies of each Test result shall be furnished to the Engineer.

B. The kinds and classes of materials incorporated into the work shall be designated by the Engineer. The Contractor shall not construe or interpret the several kinds of materials described herein as being equal in their application for the project.

2-02 WATER FOR CONSTRUCTION AND TESTING:

The Contractor shall be responsible for all water needed in construction the work, flushing the completed system, testing and other incidental needs. All water used shall be from an approved source relatively free of pollution and shall be of a satisfactory bacteriological quality.

2-03 SEWER PIPES AND FITTINGS

A. Ductile Iron Pipe: Ductile iron pipe shall be water pipe with push-on rubber gasket joints manufactured in accordance with AWWA C-151. The AWWA Class Designation of ductile iron pipe installed by the open-cut method of construction shall be Class 50 unless otherwise

specified. All ductile iron pipe and fitting shall be coated outside with a standard bituminous coating and lines with a polyethylene lining twenty (20) mils in thickness. Rubber gasket joints for slip joint ductile iron pipe shall conform to the requirements of AWWA C-111. Fittings shall conform to AWWA C-110. Jointing shall be completed in accordance with the manufacturer's specifications.

- B. PVC Plastic Pipe and Fittings: PVC sewer pipe and fittings shall be solid wall in accordance with ASTM D-3034, SDR 35, SDR 26, or ASTM 679. Joints shall be either solvent weld conforming to ASTM D-2564 or elastomeric gasket conforming to ASTM F-477. Depth of bury for PVC sewer pipe shall not exceed manufacturer's recommendations. Jointing shall be completed in accordance with manufacturer's specifications.

2-04 MARKING SEWER PIPE:

Each pipe or fitting shall have plainly and permanently marked thereon: (1) pipe class; (2) date of manufacture; and (3) manufacturer's name or trademark. Marking shall be neatly stamped in the pipe or painted thereon with waterproof paint.

2-05 EPOXY LINING FOR CONCRETE PIPE AND MANHOLES

- A. General: All interior and joint surfaces of each precast concrete manhole section and concrete pipe sections, fittings and specials 15" diameter and larger shall be coated with a coal tar epoxy lining at the concrete casting facilities. Before coating work is commenced, the Contractor shall submit to the Engineer the proposed coating suppliers complete material, data sheets and application specifications prepared for the particular application.
 - B. All surface preparation, coating applications, curing and all other coating materials and procedures shall be in full compliance with the coating suppliers specifications. The Contractor shall furnish an affidavit from the coating supplier that each pipe length fitting or special has been coated in accordance with this Specification prior to installation.
 - C. Materials: All material used in the application of the coating shall comply with the requirements specified herein and are subject to the approval of the Engineer. Protective coatings shall be either Porter Coatings' Tarsol C-200, Amercoat Number 78, Koppers Bitumastic Number 300-M, or approved equal used with approved epoxy structural paste adhesive, primers and thinners.
 - D. Surfaces to be coated shall be clean and dry. All grease, oil, dirt, salts and other foreign matter shall be removed by steam or detergent cleaning. Any such areas shall be allowed to thoroughly dry before any further surface preparation is performed. All surfaces to be coated shall be prepared to the extent that all loose or unsound concrete and laitance are removed.
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- E. Application: The surface temperature and moisture content of the precast concrete unit, air temperature and humidity and all other working conditions shall be in accordance with the coating suppliers specifications and recommendations, and thoroughly compatible with his coating materials. The coating shall be applied by airless spray method in three (3) coats, consisting of a primer, four (4) mils minimum dry film thickness, followed by two (2) coats each with a minimum dry film thickness of ten (10) mils, for a total minimum dry film thickness of twenty-four (24) mils.
- F. The completed coating system shall be free of excessive runs, sags and drips, cracks, crazing, alligatoring, blisters, inclusion, excessive or deficient film thickness, voids, pinholes or other holidays, damaged areas or any other defects. Any such deficiencies shall be corrected by removal and recoating.

2-06 CONTRACTOR'S RESPONSIBILITY

- A. The Contractor shall be responsible for the condition of all excavations made by him. All Slides and cave-ins shall be removed without extra compensation, at whatever time and under whatever circumstances they may occur.
- B. Installation of sheeting and shoring shall be the responsibility of the Contractor. Shoring left in place by the Contractor shall not entitle the Contractor to any claim for extra compensation.

2-07 INCIDENTAL MATERIALS

- A. Masonry brick: Shall conform to the standard specifications for sewer brick, made from clay of shale, ASTM C-32, Grade MS.
 - B. Mortar: Portland Cement Mortar shall consist of one (1) part Portland Cement complying with ASTM C-150, Type 1, and three (3) parts mortar sand and sufficient water to mix mortar to proper consistency.
 - C. Gray Iron Casting: Shall conform to the standard specifications for gray iron casting ASTM A-48, Class 25.
 - D. Manhole Steps: Steps for manholes shall be cast aluminum alloy meeting the requirements of the Aluminum Association (Alloy AA-514) and Federal Specification G4A.
 - E. Foundations: Shall be poured in place reinforced concrete as detailed, set on undisturbed earth of select bedding, where ordered by the Engineer or detailed on the drawings. Concrete shall be Class "B" 3,000 PSI as specified in the Section "Concrete" herein.
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- F. Pre-cast Manhole Sections: Manholes constructed with pre-cast units shall comply with ASTM C-478 and joints shall be preformed plastic joints. Preformed plastic joint compound shall be "Butyl-Title" as manufactured by Blue Ridge Rubber Company, Fletcher, North Carolina, "Kent-Seal" as manufactured by Hamilton Kent Manufacturing Company of Kent, Ohio; or equal. Preformed plastic joint compound shall meet Federal Specification SS-S-00219.
- G. Bituminous Waterproofing: Shall be of the type and make approved by the Engineer.

2-08 MATERIALS FOR SUPPLEMENTARY WORK

Materials for supplementary work consisting of repairs and replacement of street paving, sidewalks, driveways, curbs, grass plats and other related items shall conform to the respective Sections of these Specifications, or as specified on the Drawings.

2-09 BEDDING AND BACKFILL

- A. Native material excavated from the trench shall be used for bedding and backfill under normal circumstances where approved by the Engineer.
- B. Select bedding and backfill shall be provided where called for by the Engineer. Such select bedding shall be a well graded uniform mixture of coarse concrete aggregate and coarse sand. Select backfill shall be a sand-clay material with a maximum liquid limit (LL) of 30 and a plasticity index (PI) of less than 10.

PART 3 - EXECUTION

3-01 SITE PREPARATION

- A. The Contractor shall prepare on a timely basis all right-of-way, easements and sites indicated on the Drawings for construction of the wastewater improvements. The work shall include all clearing and grubbing, removal of structures and obstructions, and the removal of permanent surfaces and landscaping items designated to be restored upon completion of the installations.
 - B. Clearing and grubbing shall conform to the requirements specified elsewhere herein and shall include the removal of trees, roots, vegetation, structures and obstructions unless separate pay items are specifically provided for in the Proposal. The completion of clearing and grubbing shall leave the site free and clear, ready for trench excavation.
 - C. The removal of permanent surfaces and the subsequent restoration of the surfaces shall be as set forth below and in other sections herein where applicable.
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- D. Certain landscape items shall be preserved or replaced after construction. Care shall be taken to avoid damage to existing vegetation to remain in place.

3-02 REMOVAL OF PAVEMENT, SIDEWALKS, DRIVEWAYS AND CURBS

- A. Whenever the wastewater improvements are to be located along or across an improved surface, the width of the trench shall be held as nearly as possible to the maximum width specified below. Where brick or concrete pavement, sidewalk, driveway or curbing is cut, the width of the cut shall exceed the actual width of the top of the trench by twelve inches (12") on each side or a total of two feet (2"). Exposed surfaces of Portland cement or asphaltic concrete shall be cut with a pavement saw before breaking. Care shall be taken in cutting to insure that a straight joint is sawed.

OF SURFACE GUTTER	NOMINAL	MAXIMUM	MAXIMUM WIDTH
	SEWER PIPE	TRENCH	PERMANENT
	DIAMETER	WIDTH	AND CURB &
	(INCHES)	(FEET)	REMOVAL (FEET)
	12 or less	5.00	7.00
	15	5.00	7.00
	18	5.00	7.00
	21	6.00	8.00
	24	6.00	8.00
	27	7.00	9.00
	30	7.00	9.00
	36	7.50	9.50

3-03 REMOVAL OF LANDSCAPE VEGETATION

Developed areas, yards, lawns, shrubbery and other decorative plantings that must be removed shall be stored and growth maintained by watering and fertilizing. The work shall be accomplished in accordance with prevailing local nursery practices with consideration given to seasonal limitations.

3-04 SELECTED STRIPPING

In agricultural or cultivatable areas, the top twelve inches (12") of the ground shall be stripped and stockpiled for subsequent replacement after backfilling the pipe trench. The Contractor shall strip and area that will include the open limits of the trench plus the area that will be used to stockpile all suitable backfill material from the trench excavation. The

stripped material shall be stockpiled in an area that will not hinder or endanger the construction process. The location and manner of stockpiling shall be approved by the Engineer.

3-05 EXCAVATION AND TRENCHING

- A. All excavation of every description and of whatever substances encountered shall be performed to the depths indicated on the Plans or as otherwise specified. Excavation shall be done by open cut from the surface except when tunneling or boring is specified or directed in writing by the Engineer. Trench width shall be kept as narrow as practical to provide a safe working area and to minimize excavation.
 - B. During excavation, material suitable for backfilling shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. All excavated materials not required or not suitable for backfill shall be removed and wasted as directed by the Engineer. Such grading shall be done as may be necessary to prevent surface water from flowing into trenches or other excavations. Any water accumulating therein shall be removed by pumping or by other approved methods. Temporary sheeting and shoring shall be used where necessary for the protection of the work and for the safety of the personnel.
 - C. During excavation, sand material shall be either separately or selectively stockpiled for use as pipe bedding and pipe backfill material to the top of the pipe. Sand material shall be handled and stockpiled in such a manner to prevent mixing with clayed material when re-handled for backfilling.
 - D. Excavation for manholes shall be sufficient to permit the carrying out of the construction as required.
 - E. Trenches for sewer pipe and other appurtenances shall be of only such width as necessary for proper laying of the pipe. The net width of the trench at and below the top of the pipe shall be at least the pipe O.D. plus twenty-four inches. The width of the trench above this level may be as wide as necessary for sheeting, bracing, or backslope and for proper performance of the work.
 - F. The side of the trench shall be as nearly vertical as possible. The bottom of the trench shall be carefully graded, formed and aligned according to the directions furnished by the Engineer and to his full satisfaction before sewers are laid thereon. The bottom of the trench shall be hollowed under each pipe joint to conform to the shape of the pipe, and holes shall be cut for the bells, so as to allow the body of the pipe a uniform contact and support throughout its entire length.
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- G. The Contractor shall leave a berm of at least two feet in width on each side of the trench between the trench and the excavated earth, to allow the free passage of the Engineer and Inspector and to permit the Inspector to perform his work in an expeditious and satisfactory manner.
- H. No more than three hundred (300) feet of the trench shall be opened at any time in advance of the completed sewer, nor shall more than one hundred (100) feet be left unfilled except by permission from the Engineer. In special cases the Engineer may lift the distance to which the trench may be opened by notifying the Contractor in writing.

3-06 TUNNELING OR BORING

Tunneling will be permitted only where indicated on the plans or by special permission of the Engineer.

3-07 SHEETING, SHORING AND BRACING

- A. Sheeting, shoring, and bracing shall be furnished, placed and maintained by the Contractor as may be required to support the sides of the excavation. The Contractor shall be fully responsible for the sufficiency of such supports to prevent any movement which can in any way injure or delay the work or endanger or cause damage to adjacent pavements, buildings or other structures, or create undue hazards to workmen. Where in the opinion of the Engineer, damage is likely to result from withdrawing sheeting, the sheeting shall be left in place.
- B. All sheeting, shoring and bracing which are not ordered by the Engineer to be left in place shall be removed in such manner as not to endanger the constructed sewer or other structures, utilities or property. All voids left or caused by the withdrawal of sheeting shall be immediately refilled with sand by ramming with tools specifically adapted to the purpose, by watering, or otherwise as may be directed.

3-08 EXCAVATED MATERIAL

- A. Excavated material from trench and structure excavation suitable for backfill shall be placed compactly on the sides of the excavation and kept up so as not to endanger the work and be of as little convenience as possible to the public travel and abutting property, and so that free access may be had at all times to fire hydrants and water valves in the vicinity of the work. Any material encountered in the excavation which, in the opinion of the Engineer, is of such unsuitability for use in the work, shall be removed and wasted as directed and not stockpiled along the side of the excavation.
 - B. The disposal of all surplus and unsuitable excavation shall be the responsibility of the Contractor at his own expense. The surplus and unsuitable material not to be used in the
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construction of the project shall not be left on the right-of-way or easement of the project, adjacent thereto, except by written permission of the property owner.

3-09 DEWATERING

- A. The Contractor shall provide and maintain adequate dewatering equipment to remove and dispose of all surface and ground water entering excavations, trenches or other parts of the work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built or the pipe to be installed therein is complete to the extent that no damage from hydrostatic pressure, flotation or other cause will result. The normal water table shall be restored to its natural level in such a manner not to disturb the pipe and its foundation.
- B. All excavations for concrete structures or trenches which extend down to or below static ground water shall be dewatered by lowering and keeping the ground water level beneath such excavations eighteen inches (18") or more below the bottom of the excavation; except where the pipe is laid in an impervious strata, the lower trench section shall be maintained in a dry condition for bedding. The dewatering operation, however accomplished, shall be carried out so that it does not destroy or weaken the strength of the soil under or alongside the trench.
- C. Surface water shall be diverted or otherwise prevented from entering excavated areas or trenches to the greatest extent practicable without causing damage to adjacent property.
- D. The Contractor will be held responsible for the condition of any pipe or conduit which he may use for drainage purposes. All such pipes or conduits shall be left clean and free of sediment.

3-10 STEEL SHEET PILING

- A. Steel sheet piling shall be driven at all locations indicated on the Drawings. Piling may be new or used and shall be in such condition that it can be interlocked and driven satisfactorily.
 - B. The Contractor shall be responsible for adequately bracing the units against lateral forces at all times. Piling shall be driven before final adjacent excavations are made.
 - C. Pile driving equipment used shall be maintained in first class condition and shall operate efficiently at all times in the space provided. All equipment shall be subject to the approval of the Engineer.
 - D. No separate payment will be made for this item.
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3-11 PIPE PLACEMENT

- A. General: Unless otherwise noted on the Plans or as directed by the Engineer, the bed for the pipe shall be so shaped that at least the lower quarter of the pipe shall be in continuous contact with the bottom of the trench.
1. When bell and spigot pipes or pipe couplings are used, spaces shall be cut to accommodate the bells or couplings. These spaces shall be deep enough to ensure that the bells or couplings do not bear the load of the pipes. When the pipes are laid, the barrel of each section of pipe shall be in contact with the quadrant shaped bedding throughout its full length, exclusive of the bell or coupling, to support the entire load of the pipe. All adjustments to line and grade shall be made by scraping away or filling in and compacting the earth under the body of the pipe and not by wedging or blocking up the pipe. Pipe shall not be laid on frozen ground.
 2. Before any pipe is laid in the trench, the section in which pipe is to be placed must be dry and must be kept dry while joints are completed. All pipes, prior to begin lowered into the trench, shall be thoroughly inspected so that when jointed in the trench, there shall be no shoulders or unevenness along the lower half of the pipe. The faces of all spigot ends and of all shoulders in the hubs or sockets shall be true. All abnormal enlargements on these faces shall be cut away before the pipe is lowered into the trench.
 3. The pipe shall be laid upstream, without breaks and with the bell end upgrade. Whenever the work ceases for any reason, the unfinished end of the pipe line shall be securely closed with a tight-fitted plug or cover. All pipe shall be placed and maintained in such a manner that at the time of final acceptance of the project the completed lines will be true to the established alignment and flow line grades.
 4. Construction shall begin at the lowest point, or elevation, and the pipe shall be laid continuously upstream without omitting sections or reaches.
- B. Pipe installation shall conform to the following specifications unless otherwise directed in writing by the Engineer or specified herein:
1. RCP Pipe - Comply with Concrete Pipe Design Manual, Class "B" trench, backfill carefully compacted to one (1') foot above top of pipe.
 2. DI Pipe - Comply with AWWA C-151, Type 3 trench, backfill carefully compacted to one (1') foot above top of pipe.
 3. VC Pipe - Comply with ASTM C-12, Type "C" trench, backfill carefully compacted to one (1') foot above top of pipe.
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4. ABS Pipe - Comply with ASTM D-2321, backfill to one (1') foot above top of pipe compacted to 85% Proctor Density with Class III or better material.
5. PVC Pipe - Comply with ASTM D-2321, backfill to one (1) foot above top of pipe compacted to 85% Proctor Density with Class III or better material.

3-12 PIPE BEDDING

The pipe shall be bedded in compacted select granular material placed on a flat trench bottom or on a prepared trench bottom unless otherwise specified. The bedding material shall be sand or other suitable material approved by the Engineer, stockpiled during the trenching operation or hauled in from off-site. Where used, the granular bedding shall have a thickness of one-eighth (1/8) the outside pipe diameter or a minimum of four inches (4") under the barrel and shall extend one-sixth (1/6) of the outside diameter up the pipe barrel at the sides.

3-13 JOINTING DISSIMILAR PIPES

Where suitable adaptor couplings are not available for connecting dissimilar pipes, the jointing shall be accomplished with a concrete encasement as specified on the Plans.

3-14 ALIGNMENT

- A. The Contractor shall utilize a commercial grade laser beam specifically manufactured to aid in maintaining grade and alignment of pipelines during installation. The primary unit shall be mounted on a heavy duty base and firmly anchored in the downstream manhole of the reach under construction. The maximum distance shall not exceed four hundred feet (400') per set-up unless Engineer approved.
- B. Each joint of pipe will be installed using an approved target to align the pipe with the projected laser beam. The methods and procedures shall be in strict accord with the manufacturer's recommendations and instructions. Proper ventilation shall be maintained at all times. Care shall be exercised in order to prevent bumping or misalignment of the projected beam.

3-15 MANHOLE CONSTRUCTION

- A. General: Manholes shall be constructed of precast concrete sections, unless otherwise specified.
 - B. The construction shall also include the necessary frames, covers, castings, fittings, steps and connections; all installed or constructed in accordance with these Specifications and
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conforming to all requirements, details, lines, grades and dimensions shown on the Plans or established by the Engineer.

- C. Pipe sections connecting to manholes shall not be longer than four feet (4') so that a joint is provided in each line within four feet (4') of the inside face of each manhole.
- D. All manholes and other structures shall receive two (2) coats approved bituminous waterproofing on the exterior surface to the ground line.

3-16 PIPE CONNECTIONS TO MANHOLES

- A. General: When the Plans indicate connections to existing manholes, these connections shall be watertight and all work performed in an acceptable manner.
- B. The size of the opening cut in the existing manhole wall shall be restricted to a nominal diameter sufficient only to insert the sewer pipe. After insertion of the pipe, the void between the outside of the pipe and the manhole wall shall be packed with a non-shrink grout.

3-17 BACKFILLING

- A. General: All trenches and excavation shall be backfilled with select material and compacted until it covers the pipe at least one foot (1') promptly after the pipe is laid. This backfill shall be brought up and tampered equally and thoroughly along each side of the pipe in such a manner as to avoid displacement of or damage to the pipe. The select material shall be thoroughly compacted as specified herein.
 - B. Select Bedding Material: Select granular material for bedding pipe shall be as specified herein. Select bedding shall be considered as material hauled in from off-site. Bedding material from on-site which is used meeting this specification shall not be measured or paid for separately as select bedding. All testing costs required by the Engineer to verify that off-site material meets this Specification shall be borne by the Contractor.
 - C. Select Backfill Material: Select material for backfilling pipe trenches shall be as specified herein. Backfill material from on-site which is used meeting this specification shall not be measured or paid for separately. All testing costs required by the Engineer associated with verifying that on-site or off-site select material meets this specification shall be borne by the Contractor. Select backfill shall be considered as material hauled in from off-site.
 - D. Tamping: The backfill shall be placed in equal thickness lifts, each lift being thoroughly compacted to the density specified. Each lift of the backfill material shall have proper moisture content to permit compaction to this density.
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1. In areas where street paving, sidewalks, driveways and other restoration work is required, the backfill above the one (1) foot cover level shall be completed to the subgrade level or as directed and maintained in such a manner to eliminate voids and future settlement. Special compaction procedures involving 95% density on 6" lifts shall be required by the Engineer at such locations and at other locations shown on the plans.
 2. In open fields or undeveloped areas, the backfill above the one (1) foot cover level may be placed in twelve inch (12") layers and compacted to a density of not less than that of the surrounding earth. The top of the filled trench shall be mounded slightly above the natural ground to allow for settlement.
 3. Cultivable areas shall be restored by the replacement of the stockpiled topsoil stripping to a depth of at least twelve inches (12").
- E. Jetting: This method of backfill shall only be used when approved by the Engineer.

3-18 TEMPORARY SURFACES OVER TRENCHES

- A. Whenever the wastewater improvements are constructed under traveled roadways, driveways, sidewalks or other traveled surfaces, a temporary surface shall be placed over the top of the trench as soon as possible after placement and compaction of the backfill has been satisfactorily completed. The temporary surface shall consist of a minimum of six inches (6") of clay gravel conforming to the requirements of the Section "Clay Gravel Base Course", herein.
- B. The top of the temporary surface shall be smooth and meet the grade of the adjacent undisturbed surface. The temporary surface shall be maintained at the Contractor's expense until final restoration of the street surface is completed as specified. No permanent restoration of street surface shall be initiated until authorized by the Engineer. The temporary surfacing shall be required over the entire width of the trench. Any width in excess of the specified width shall not be used in computing payment quantities.

3-19 REPLACEMENT OF PERMANENT SURFACES

- A. General: The Contractor shall restore all permanent type pavements, sidewalks, driveways, curbs, gutters, shrubbery, fences, poles and other property and surface structures removed or disturbed during or as a result of construction operations to a condition which is equal in appearance and quality to the condition that existed before the work began. The surface of all improvements shall be constructed of the same material and match in appearance the surface of the improvement which was removed. Where select granular trench backfill is used, the restoration shall be made as soon as possible after compaction of the backfill has been completed.
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- B. Concrete Pavement Surface: Where the existing pavement surface is Portland Cement concrete, the pavement replacement shall consist of ten inches (10") concrete pavement reinforced as indicated on the Plans and placed over six (6") inches of compacted clay gravel or sub-base. Concrete shall conform to the Section "Concrete" herein. Pavement joints in the replacement surface shall conform to and match the joints in the adjacent pavement area.
- C. Asphalt Pavement Surface: Where the existing pavement surface is bituminous concrete and the base consists of a material such as bituminous base course, brick, concrete, soil cement, gravel, shell, natural cement or a combination of these materials, the base replacement shall consist of six inch (6") Portland Cement concrete base course placed over six inches (6") of compacted clay gravel sub-base. Concrete base shall conform to the Section "Concrete", herein. The surface replacement shall consist of a bituminous prime coat and two inches (2") minimum thickness bituminous surface course as specified herein in the Section "Asphalt Concrete Paving", where applicable.
- D. The Engineer may revise paving thickness requirements based upon local conditions.

3-20 CONCRETE SIDEWALKS, DRIVEWAYS, CURBS, CURB, AND GUTTER

- A. General: Where necessary to remove and replace concrete sidewalks, driveways, curbs and curb and gutters, replacements shall be made as follows:
- B. Concrete sidewalks, driveways, curbs and curb and gutters shall be replaced with concrete meeting the applicable provisions of the Section "Concrete" of these Specifications. Minimum thickness shall be four inches (4") for sidewalks and six inches (6") for driveways. Materials and construction requirements shall conform to the various Sections of these Specifications. Curb and gutter shall be formed as detailed on the Plans or directed by the Engineer. Sidewalks shall be finished to match existing adjacent sidewalk surfaces, unless otherwise specified or directed by the Engineer.

3-21 RESTORATION OF LANDSCAPE AREAS

- A. All sod, shrubbery, decorative planting and other landscape items shall be replanted, replaced or restored in the manner removed.
- B. Should new construction be required to replace damaged or unsalvageable items, then the Contractor shall furnish all labor, materials, equipment, tools, and incidentals set forth in the applicable Sections of these Specifications.

3-22 MAINTENANCE OF SITE

The Contractor shall take such measure necessary to prevent, control and correct any dust nuisance or muddy conditions developing on roadways as a result of his operation. Direct payment for maintenance of the site shall not be provided as such but shall be considered a subsidiary obligation of the Contractor.

3-23 TESTS

- A. General: Before any backfill is placed, the sewer line shall be checked by the Engineer for line, grade and workmanship. Before acceptance, each section of the line between manholes or such other length as determined by the Engineer to be suitable, shall be thoroughly inspected and any defects in workmanship shall be immediately corrected.
 - B. Requirements: The Contractor shall conduct either an exfiltration or infiltration test of each reach of sewer between manholes. An infiltration test will be required where the crown of the entire reach of sewer being tested lies three feet (3') or more under the existing water table. An exfiltration test shall be required for all other conditions.
 - C. Exfiltration:
 - 1. Exfiltration tests will be required on sewer lines which are above the present ground water level in reaches selected by the Engineer. Exfiltration tests shall be conducted by blocking off all manhole openings except those connecting with the reach being tested, filling the line and measuring the water required to maintain a constant level in the manholes.
 - 2. The total exfiltration shall not exceed two hundred (200) gallons per inch of nominal diameter per mile of pipe per day for each reach tested. For purposes of determining maximum allowable leakage, exfiltration tests shall be maintained on each for at least two (2) hours and as much longer as necessary, in the opinion of the Engineer to locate all leaks.
 - 3. The Contractor shall provide, at his own expense, all necessary piping between the reach to be tested and the source of water supply together with equipment and materials required for the tests. The methods used and the time of conducting exfiltration tests shall be acceptable to the Engineer.
 - 4. If the leakage in any reach exceeds that allowable maximum, the reach shall be retested after the leaks are repaired.
 - D. Infiltration:
 - 1. The allowable infiltration rate shall not exceed two hundred (200) gallons per inch of nominal diameter per mile of sewer per day. For purposes of determining
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maximum allowable infiltration, manholes shall be considered sections of equivalent diameter pipe.

2. If the infiltration rate in any reach exceeds the allowable maximum, the reach shall be retested after the leaks are repaired. A reach is defined as the distance between any two (2) manholes.
3. The Contractor shall be required to repair all visible leaks although both the infiltration and exfiltration requirements are met.
4. The Contractor shall provide, at his own expense, all necessary equipment, materials and personnel required for the tests. The methods used and the time of conducting infiltration tests shall be acceptable to the Engineer.

E. Deflection Tests:

1. After installation, the entire length of PVC solid wall and closed profile pipe shall be checked for deflection by use of a "go-no-go" mandrel.
2. The mandrel shall be constructed of one-half inch (1/2") thick angle iron or number 4 steel bars (ASTM A-15) welded to steel pipe to measure a five percent (5%) deflection. The mandrel design must be approved by the Engineer.
3. The average inside diameter of the pipe shall be used in calculating the five percent (5%) deflection.
4. The line shall be flushed to clean any mud or debris which would hinder the mandrel passage.
5. The mandrel shall be pulled by hand through the pipe after backfill and trench settlement has occurred.
6. The system will be subject to a mandrel check at the eleven (11) month warranty inspection.
7. If any irregularities or obstructions are encountered they shall be corrected by the Contractor at no expense to the Owner and the repaired section of the line again checked for excessive deflection.

F. Air Testing:

1. In lieu of the exfiltration test specified the Contractor may at his option, complete an air test in accordance with the following specifications. The air test shall in no case replace the infiltration test where ground water is present.
2. Procedure: The sewer line to be tested shall be tested between manholes. The line shall be sealed at both ends. The seal at one end shall have an orifice through which to pass air into the pipe. An air supply shall be connected to the orifice at one end of the line. The air supply line will contain an on-off gas valve and a pressure gauge having a range of 0 to 15 psi. The gauge shall have minimum divisions of .10 psi and shall have an accuracy of $\pm .04$ psi. Pressuring equipment should include a regulator or relief valve to avoid over pressuring and damaging an otherwise acceptable line.
3. The pipe line under test shall be pressurized to 4 PSIG. The line will be allowed to stabilize between 4 PSIG and 3.5 PSIG for a period of no less than 5 minutes. If necessary, air should be added to the line to maintain the pressure above 3.5 PSIG. After stabilization period, the gas valve shall be closed. When the line pressure drops to 3.5 PSIG, commence timing with a stop watch. The stop watch should be allowed to run until such time as line pressure drops to 2.5 PSIG. Then the watch should be stopped and time lapse compared with the allowable time lapse in **Table 1** at the end of this Section, and for the pipe size and leakage allowance specified by the Engineer. If the time lapse is greater than that specified, the section undergoing testing shall have passed, and the test may be discontinued at that time. If the time lapse is less than that specified, the line has not passed the test and the Contractor will be required to find the leaks, repair them and retest until the section passes, at his own expense.
4. When air testing is used, manholes must be tested by exfiltration/infiltration.

G. Manhole Vacuum Testing:

1. Vacuum testing of all completed manholes shall be conducted by methods and equipment which have been reviewed by the Engineer.
2. Vacuum tests shall be performed with a circular vacuum manhole tester and the acceptability of the manhole will be determined by the amount of vacuum loss over a specified period of time.
3. The vacuum pump shall have the following CFM capacity:

<u>Inches of Mercury</u>	<u>CFM</u>
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0" Hg.	28 CFM
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10" Hg.	18 CFM
15" Hg.	12 CFM
20" Hg.	8 CFM

4. Plug all manhole inverts with pipeline plugs placed at least 6 inches beyond the wall to prevent temporary sealing of inverts.
5. Follow all local, state, and federal regulations and safety precautions concerning entry of confined spaces. Follow all manufacturers recommendations and warnings for proper and safe installation of plugs and operation of a vacuum testing equipment.
6. Evacuate the manhole to 10 inches mercury vacuum (0.3 bar). Monitor vacuum for the specified time period in accordance with ASTM C924. If the vacuum does not drop in excess of 1 inch of mercury, the manhole is considered to pass the test.
7. If a manhole does not pass, Contractor shall identify leak, repair leak, and repeat test until manholes passes.

3-24 FLUSHING

- A. The completed gravity flow system shall be free of all mud, siltation and other foreign matter deposited or collected during construction. Flushing shall commence at the upstream end of the completed system and continue downstream manhole to manhole. Only water from an approved source will be permitted.
- B. Water used in flushing will not be permitted to enter into the existing system but shall be disposed of in a manner acceptable to the Engineer.
- C. Flushing shall be accomplished prior to testing should the collected matter be sufficient in quantity to obstruct or affect the testing. Flushing will not be required in those sectors of the installed pipes and manholes where the exfiltration test has adequately cleaned the mains.

3-25 CLEAN-UP

- A. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt and rubbish from the site. Surplus dirt shall be removed from the site or deposited at the locations and in the manner directed by the Engineer.
 - B. After all work is completed, the Contractor shall remove all tools and other equipment used by him, leaving the entire site free, clear and in good condition.
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3-26 SERVICE LINES AND CONNECTIONS

- A. Sewer services in laterals shall be installed at points indicated on the detailed plans and at other points as the Engineer may designate during the progress of construction. Service lines and connections shall conform to the detailed drawings in the plans.
- B. All sewer service shall be laid on a uniform grade from the main to the proper location at each lot (see typical service connection). The minimum depth of cover of the service line at the property or easement line shall be three (3) feet unless otherwise shown on the plans or directed by the Engineer. The ends of the service shall be plugged and permanently marked with a 3" treated post extending a minimum 12" above finished grade.
- C. Service lines and fittings shall be six (6) inch diameter of the same material used in construction of the sanitary sewer main to which it is attached.

PART 4 - COMPENSATION

4-01 GENERAL

The compensation as herein provided shall constitute full payment for performance of the work. The compensation shall further constitute full payment for all materials, labor, equipment, and incidental items of construction furnished by the Contractor. No measurement will be made of subsidiary items of work and accessories, excavation, trenching, backfill, dewatering and disposal or surplus excavation and other incidentals included in the related Pay items or called for in the Contract.

4-02 MEASUREMENT

- A. Gravity Mains:
 - 1. General: Gravity mains will be measured in linear feet along the centerline of the pipe from the center to center of manholes and from center of manhole to center of junction with existing main or plugged end. The total length of pipe thus measured will be separated into the various kinds and sizes for each increment of depth to establish the quantities of each Pay Item. Depth zones will be measured from ground line to the invert of pipe.
 - 2. No deduction in length of main will be made for diameter of manholes or for space occupied by other specials installed in the interceptor.
 - 3. Gravity mains installed in cased or tunneled openings will be measured along the center line of the pipe from end to end of the casing.
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4. Gravity mains designated to be jacked or bored through open cut barriers or restrictions shall be measured for payment along the centerline of the pipe from trench end to trench end. Trench end shall be defined as the vertical face of the trench that is perpendicular to the centerline of the jacked or bored pipe and is adjacent to the open cut barrier or restrictive area.
- B. Manholes: Manholes will be measured as the type and number of completed and accepted units in place and of increment depths indicated in the Proposal. Increment depths shall be determined from the finished grade of the top of the completed unit to the invert of the outlet pipe.
- C. Pipe Connections: Pipe connections to existing manholes or structures will be measured for payment in units of each.
- D. Removal and Restoration of Permanent Surfaces:
1. General: Measurement for payment purposes for each specified item of work shall be computed by using the actual length of the trench and the maximum pavement removal width set forth in the previous table for the various diameters of pipes.
 2. Additional removal and replacement, necessary because the top of the trench is wider than the maximum width on which the table is based, shall be at the Contractor's expense and not measured for payment. The length of removal and replacement of permanent type pavements, driveways and sidewalks crossed by conduits shall be measured along the centerline of the pipe line, including manholes, over which removal and replacement shall be included in the Unit Price bid for manholes and special structures. The length of curb and gutter crossing a conduit shall be equal for payment purposes to that specified in the table.
 3. Measurement for payment for concrete pavements, sidewalks, driveways shall be per cubic yard installed at the thickness specified herein or on the Contract Drawing. Measurement for curb and gutter shall be per linear foot installed. No separate measurement will be made for clay-gravel utilized as a temporary surface. This shall be considered an absorbed item.
 4. Measurement for asphalt surface course used for trench patch surfacing shall be per ton or per square yard installed for the type and thickness specified.
- E. Removal and Restoration of Landscaping: Items designated or directed to be removed and restored shall be measured for payment as follows: (1) grass sod and brick paving in square yards; (2) plants, shrubbery, small trees and decorative plantings in units of each; (3) other specialty items.
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- F. Timber Sheeting or Sheet Piling Left in Place: Timber sheeting or sheet piling left in place will not be measured for payment but shall be considered an absorbed item.
- G. Supplementary Items: If provided for in the Proposal, work performed in support of the gravity main construction shall be measured for payment in the manner prescribed in the respective Sections of the Specifications covering new construction of these items.
- H. Select bedding or select backfill hauled in from off-site shall be measured per cubic yard (L.V.M)
- I. Pipe on Piers: Sewer pipe installed on piers across creeks, sloughs and low areas shall be measured along the centerline of the pipe from the point at which the top of the pipe leaves the natural ground to the point where the top of the pipe re-enters the natural ground. Measurement will not be made of excavation, grading or other items incident to completion of the work. Measurement of piers, piles and strapping shall be per each installed.
- J. Sanitary sewer services shall be measured along the centerline of the pipe per linear foot of each type installed with no allowance for cut depth differentials. No separate measurement for payment shall be made of specials, fittings, plugs, marker posts or other incidentals.
- K. Dewatering - Where required shall be paid for per linear foot along the centerline of the ditch.

4-03 PAYMENT

- A. Gravity Mains:
 - 1. General: Payment will be made at the respective Contract Unit Prices bid per linear foot for the various types and sizes of sewer mains at the increment of depth installed, complete in place, and shall include all trench excavation, including the separation of sand material for pipe bedding and backfill, pipe bedding and backfill, backfilling over pipe, compaction, for all sheeting, shoring and grading, for all steel sheet piling, and for testing and flushing the completed system.
 - 2. Payment of the Contract Unit Price for each size and incremental depth of sewer pipe installed shall constitute and include full compensation for the coal tar epoxy linings, asphaltic coatings, jointing, gaskets, lubricants, and other incidentals.
 - 3. Payment for gravity mains installed in cased or tunneled openings will be made at the Contract Unit Price per linear foot installed of the various sizes and types shown on the Proposal.
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4. Payment for gravity mains installed by jacking and boring through open cut barriers shall be made at the respective Contract Unit Prices bid for the specific installation method employed at the unit price bid per linear foot for the various types and sizes of sewer mains.
- B. Select bedding and select backfill material hauled in from off-site shall be paid for separately at the Contract Unit Price per cubic yard (L.V.M.) of each utilized.
- C. Manholes: Manholes will be paid for at the Contract Unit Price per unit for the type and incremental depth installed, complete and in place and accepted. This price shall include all excavation and backfilling necessary for the satisfactory completion of the work. Payment of the Contract Unit Price shall further constitute full compensation for lining the manhole with coal tar epoxy and for painting the exterior with an approved waterproofing material to the ground line. Payment shall also include any and all special transition sections or adaptors, all jointing, manhole castings, grout, steps, and other incidentals.
- D. Pipe Connections: Approved pipe connections to existing manholes shall be paid for at the Contract Unit Price for each.
- E. Removal and Restoration of Permanent Surfaces
1. The cost of furnishing, placing, maintaining and removing the compacted clay gravel for temporary surfacing shall not be paid for separately but shall be an absorbed item.
 2. Pavement removal shall be measured per square yard removed and shall be done by saw cutting or air hammering to disturb the smallest area possible. Pavement removal in excess of that necessary to perform the work shall not be measured or paid for. Should excessive pavement be removed, Contractor shall repair same at no cost to the Owner.
 3. Payment for removal and replacement of concrete curb or concrete curb and gutter shall be made at the Contract Unit Price per linear foot for curb or curb and gutter removal and replacement.
 4. Payment for each of the above items shall also constitute full compensation for the required steel reinforcement.
 5. Where bituminous surface course is designated, payment shall be made at the Contract Unit Price per ton or square yard for the type and thickness specified.
- F. Landscaping Items: Specific landscaping items removed and restored or replaced in-kind shall be paid for at the respective Contract Unit Prices provided for in the Proposal.
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- G. Piling or Sheet piling Left in Place: All sheet piling and piling whether left in place or removed and used by the Contractor in his operations, will not be paid for separately but shall be considered as included in the Contract Pipe bid for gravity mains and appurtenances and thereby considered an absorbed item.
- H. Pipe on Piers: Sewer pipe installed on piers shall be paid for at the Contract Unit Price per linear foot installed and accepted in place. Such payment shall include the cost of all labor, materials, equipment, tools, pipe, excavations, grading and other items incident to completion of the work in accordance with the Contract Documents. Payment for piers, piles and strapping shall be per each installed and accepted. Such payment shall include labor, materials, tools, equipment and incidentals necessary for completion of the pipe support and anchoring system.
- I. Sanitary sewer (including material) shall be paid for at the Contract Unit Price per linear foot of each type installed, accepted and in place specified on the Proposal. Such payment shall constitute full compensation for all labor, tools, materials, excavation, backfill, equipment, fittings, specials and other incidentals necessary to complete the work in conformance with the Contract Documents.
- J. Sanitary sewer shall be paid for at the Contract Unit Price per linear foot of each type installed, accepted and in place specified on the Proposal. Such payment shall constitute full compensation for all labor, tools, materials, excavation, backfill, equipment, fittings, specials and other incidentals necessary to complete the work in conformance with the Contract Documents.
- K. Dewatering shall be paid for at the Contract Unit Price per linear foot.

SECTION 2 - PAVEMENT REPAIRS AND EROSION CONTROL FOR UTILITY LINES

PART 1 - GENERAL

1-01 DESCRIPTION

- A. Work under this item shall include the replacement of various types of pavements and seeding and fertilizing operations at the locations shown on the plans and as described herein. Such work shall include ground surface preparation, blading, harrowing, furnishing seed and fertilizer, watering, compacting, pavement replacement, repairing and other items as may be subsidiary to the completion of the work.
 - B. Work done under this item will generally be related to, associated with and completed following the installation of water, sewer, storm sewer, or other utility improvements along
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or across roadways, driveways, right-of-ways, easements and other routes as may be designated by the Engineer or shown on the plans.

- C. All work shall be done to the extent directed by the Engineer to the Owner's satisfaction.

PART 2 - MATERIALS

2-01 SEED

- A. All seeds shall meet the requirements of the Seed Laws of the State of Mississippi and shall be tested in accordance with the U.S.D.A. guidelines. The seed shall be delivered in bags or containers bearing seed certification tags and other identification showing percent germination and purity of the seed.
- B. Bermuda seed shall be common, hulled, fresh, clean, new crop seed testing at least 95% for purity and 90% for germination.
- C. Fescue seed shall be fresh, clean, new crop seed testing at least 95% for purity and 90% for germination.

2-02 FERTILIZER

- A. All fertilizer shall be an approved commercial grade containing nitrogen, phosphorus and potash and shall be delivered accompanied by identification of the brand and grade being furnished. Fertilizer may be furnished in bulk, in bags or
- B. Unless otherwise specified, fertilizer shall be dry granular grade 13-13-13 (triple thirteen) containing equal parts of nitrogen, phosphorus and potash, respectively.

2-03 CLAY GRAVEL

- A. Clay gravel shall consist of a natural or artificial mixture of uncrushed gravel coarse aggregate, sand or granular material and soil binder composed of silt and clay or other minerals having a satisfactory cementing value. Clay gravel shall be produced by mining and mixing selected materials found in suitable natural deposits or in lieu thereof, by combining mixtures of gravel, coarse aggregate, sand or granular material and soil binder in the proper proportions.
- B. Clay gravel utilized on the project shall meet the gradation, liquid limit and plasticity tests specified by the Engineer.

2-04 ASPHALT

- A. All materials for asphalt paving and related work shall comply with Mississippi Standard Specification for Road and Bridge Construction, MSHD, 1976 Edition including all current special provisions at the time of the Bid Opening, as follows:
 - 1. Base course - Section 301
 - 2. Tack coat - Section 407
 - 3. Binder course - Section 403
 - 4. Surface Course - Section 403
- B. Asphalt materials utilized in the project shall be by Type BB-1 base course, Type BC-1 binder course and Type SC-1 Type VIII surface course, as specified on the Proposal or indicated on the plans.

2-05 CONCRETE

- A. All materials for concrete paving and related work shall comply with the Mississippi Standard Specifications for Road and Bridge Construction, 2004 Edition, as amended as follows:
 - 1. Fine Aggregate - Section 703.02
 - 2. Coarse Aggregate - Section 703.03, Size 467
 - 3. Portland Cement - Section 701.01, Type I
 - 4. Water - Section 714.01
- B. Portland cement concrete utilized in the project shall have a minimum 28-day compressive strength and a maximum slump specified herein for the particular purposes desired.

PART 3 - EXECUTION

3-01 SEEDING AND FERTILIZING

- A. The area to be planted shall be disked and prepared to a depth of at least four (4) inches. The specified amount of fertilizer shall be applied uniformly over the surface and harrowed lightly so that it will be incorporated into the upper two (2) inches of the soil. If the soil is not moist, it shall be watered until it is in workable condition. The completed area to be planted shall present a smooth, uniform surface true to line and cross section. Planting shall follow immediately.
 - B. Seeding shall be completed at a rate of 10 LBS/Acre unless otherwise specified.
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- C. Fertilized shall be completed at a rate of 500 LBS/Acre unless otherwise specified.

3-02 CLAY GRAVEL INSTALLATION

- A. Clay gravel shall be installed for the width of the drive or roadway disturbed during the construction to a depth of at least one (1) foot below the top of the original ground for the width of the trench opened.
- B. Clay gravel shall be deposited in 6" lifts and compacted with mechanical tampers to at least 95% maximum density.

3-03 ASPHALT PAVEMENT INSTALLATION

- A. Asphalt pavement repairs shall be made for the length of the open cut in the drive or roadway at such widths as may be necessary to remove broken or disturbed pavement along each side of the trench.
- B. Asphalt pavement shall be deposited on a prepared subgrade of in place or select materials compacted to 95% maximum density with mechanical tampers.
- C. Pavement replacement shall consist of placement of a 6" base course and 2" surface course unless otherwise specified, which shall be finished to the grade elevation of the existing pavement.
- D. Asphalt utilized in pavement repairs shall be surface course, Type SC-1 Type VIII unless otherwise approved by the Engineer.

3-04 CONCRETE PAVEMENT INSTALLATION

- A. Concrete pavement repairs shall be made for the length of the open cut in the drive or roadway at such width as may be necessary to remove broken or disturbed pavement along each side of the trench.
 - B. Concrete pavement shall be deposited on a prepared subgrade of in place or select materials compacted to 95% maximum density with mechanical tampers.
 - C. Pavement replacement shall consist of placement of a 2 2" concrete base unless otherwise specified, which shall be finished to the grade elevation of the existing pavement.
 - D. Concrete utilized in pavement repairs shall be 2000 PSI Portland cement concrete with a maximum slump of 5 inches unless otherwise approved by the Engineer.
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PART 4 - COMPENSATION

- A. Seeding and Fertilizing: Shall be measured per linear foot along the centerline of the utility main installed. Deductions will be made for the space occupied by pavement, gravel drives or other ground cover other than vegetation. No allowance will be made for width.
- B. Clay Gravel Installation: Shall be measured per linear foot along the centerline of the utility MAIN installed for each parking area repaired. No allowance shall be made for width or depth. Repair over service lines smaller than 3" diameter shall not be measured for payment but shall be considered absorbed.
- C. Pavement Repair: Shall be measured per ton asphalt applied or cubic yard concrete along the centerline of the utility main installed for each street, drive, parking area or apron repaired. No allowance shall be made for excessive width or depth.

4-02 PAYMENT

- A. Seeding and Fertilizing: Payment for seeding and fertilizing shall be made at the Contract Unit Price per acre bid which shall be full compensation for furnishing the seeds, planting, ground preparation, applying fertilizer, watering and maintaining until acceptance of the contract, and for all material, equipment, tools, labor and incidentals necessary to complete the work in accordance with the Contract Documents. No separate payment shall be made of water, watering, maintenance, mowing, protection or other items subsidiary to the completion of the work.
 - B. Clay Gravel Installation: Payment for clay gravel shall be made at the Contractor Unit Price per cubic yard bid, which price shall constitute full compensation for furnishing all material, labor, tools, equipment and incidentals and for performing all hauling, placing, grading and compacting and any other operations necessary to complete the work in accordance with Contract Drawings and Specifications. Testing shall be an absorbed item.
 - C. Pavement Repair: Payment for asphalt repairs will be made at the Contract Unit Price per ton bid and payment for concrete repairs will be made at the Contract Unit Price per cubic yard bid which shall constitute full compensation for furnishing all labor, tools, equipment and incidentals and performing all work necessary for preparation for the paving repairs on streets, drives and parking lots, and shall include disposal of excess material and any other operations necessary to complete the work in accordance with the Contract Drawings and Specifications. No separate payment shall be made for pavement removal, subgrade compaction, testing, maintenance or other items subsidiary to the completion of the work.
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SECTION 3 - WATER DISTRIBUTION SYSTEM

PART 1 - GENERAL

0-01 DESCRIPTION

- A. These specifications shall govern the furnishing and installing of water distribution lines, fittings, valves, fire hydrants, and other appurtenances. The pipe and accessories shall be installed in accordance with the requirements of these specifications at the locations and depths indicated on the plans and shall be of the classes, sizes and dimensions shown thereon.
- B. The installation of pipe shall include all joints, connections to new or existing pipes, and the installation of all fittings, valves, fire hydrants, and other appurtenances. The pipe and accessories shall be of the classes, sizes and dimensions shown thereon.
- C. Water main shall be of PVC or DI manufacture as specified herein.
- D. All materials, whether supplied by the Owner or the Contractor shall meet this Specification.

PART 2 - MATERIALS

2-01 PIPE, COUPLINGS AND ACCESSORIES

- A. PVC Pipe:
 - 1. All PVC pipe and fittings four (4) inches and larger in diameter shall conform to the latest edition of AWWA C-900 and shall be made from Class 12454-A or B materials per the latest edition of ASTM D-1784. Pipe shall be a minimum of SDR 18 unless otherwise specified, for a working pressure rating of 150 PSI. All pipe shall conform with the outside diameter (OD) dimensions of ductile iron pipe to facilitate use of DIP fittings, standard cast iron valves and specials. All joints shall be elastomeric seals conforming to the latest edition of ASTM D-3139 with gaskets conforming to the latest edition of ASTM F-477. All pipe shall bear the seal of the National Sanitation Foundation (NSF). All jointing shall be made in accordance with the manufacturer's recommendations.
 - 2. All PVC pipe three (3) inches and smaller is diameter shall conform to the latest edition of ASTM D-2241 and shall be made from Type 1120 material. Pipe shall be a minimum of SDR 26 unless otherwise specified, for a working pressure of 150 PSI. All joints shall be solvent weld in accordance with the latest edition of ASTM D-2855 with the solvent cement conforming to the latest edition of ASTM D-2564.
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All pipe shall bear the seal of the NSF. All jointing shall be made in accordance with the manufacturer's recommendations.

B. Ductile Cast Iron Pipe:

All pipes shall be centrifugally cast in metal or sand lined molds manufactured in accordance with the latest edition of ANSI A21.51 (AWWA C 151). Pipe shall be class 50 Ductile Cast Iron unless otherwise specified. All pipe and fittings shall be tested for minimum 150 PSI working pressure, laying condition Type 2 flat bottom trench without blocking, tamped, backfilled and under five (5) feet of cover. All pipes and fittings shall be factory-coated on the outside with coal tar enamel conforming to the latest edition of a 21.5 and lined inside with a minimum of 1/16 inch cement lining in accordance with the latest edition of ANSI A 21.4 (AWWA C-104).

1. Ductile cast iron pipe installed pursuant to these specifications shall be encased with as 8 mil thick loose polyethylene encasement in accordance with the latest edition of A 21.5 (AWWA C-105).
2. Joints for ductile cast iron pipe shall be slip-on type unless otherwise specified. All joints for fittings, valves and specials shall be mechanical joints. Slip-on pipe joint for ductile cast iron pipe shall conform to the latest edition of ANSI A 21.11 (AWWA C 111) except that the joints shall be made with a special gasket seal Super-Bel Tite as manufactured by Clow corporation or approved equal. Lubricants shall be non-toxic, odorless, tasteless and shall not support bacteria, and shall be specifically manufactured for the pipe utilized in the construction of potable water systems. Mechanical joint pipes shall conform to the latest edition of ANSI A 21.11 (AWWA C-111).
3. All fittings shall be ductile iron and shall conform to the latest edition of AWWA specifications for ductile iron fittings. The minimum wall thickness of the fittings shall be determined consistent with trench conditions 'B' and less than five (5) feet cover.
4. All fittings shall be coal tar coated outside and cement lined inside in accordance with the latest edition of AWWA C-104 (ANSI 21-4), except cement lining may be half of thickness (enamel type) with bituminous seal coating, per Federal Specification WW-PO42A where approved by the Engineer.

C. Valves:

1. Gate Valves - Shall comply with the latest edition of AWWA C-500 or AWWA C-509 as manufactured by Mueller or M&H. Gate valves, for sizes 14 inch and larger, shall be iron body, fully bronze mounted, double disc, parallel seat, non-rising stem,
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and shall open counter-clockwise. Gate valves for sizes 3-inch through 12-inch shall be resilient-seated for water service. All gate valves shall have a maximum working pressure of 200 PSI and be tested at 400 PSI. The thrust collar and other bearing surfaces shall be permanently lubricated with oil. The disc mechanism shall be designed so that the seating pressure is applied equally at multiple separate contact points near the outer edge of each disc by a bronze or alloy wedging mechanism. Gate valves shall be equipped with mechanical joint connections unless otherwise specified.

2. Check Valves - Shall be iron body, spring loaded, swing type with straight-away passage of full pipe area and renewable bronze seat ring with resilient faced disc. Valves shall be a manufactured by Mueller or M&H.

D. Services: Service piping shall be 200 PSI PVC Polyethylene or Type "K" copper as specified on the Proposal and shall conform to the applicable AWWA/ASTM/ANSI Standards and designed for working pressure compatible with the water mains specified above.

E. Fire Hydrants:

1. Fire hydrants shall be Mueller Model "Centurion" or M&H #129. Hydrants shall be of the compression type with a 5-1/4 inch valve opening. All hydrants shall be nominal 6" size, 3-way construction with one 4-1/2" pumper nozzle and two 2-1/2" hose connections. Nozzle threads shall be National Standard unless otherwise specified. The depth of bury shall be 4 feet unless otherwise specified.
2. Hydrants shall be furnished with a sealed oil reservoir located in the bonnet so that all threaded and bearing surfaces are lubricated when the hydrant is operated. Hydrant shall be furnished with a breakable feature that will break cleanly on impact and shall consist of two part breakable flange with a breakable stem coupling.
3. Hydrants shall be wire brushed as needed and painted one coat of red lead paint and two coats of epoxy paint of the color specified by the Engineer.

F. Valve Boxes:

1. Valve Boxes shall be two piece, screw type, 5 1/4 inch shaft, as manufactured by the Mueller Company, or approved equal. Contractor shall supply boxes with the correct base for all valves and in correct length for field conditions. The letter "W" or the word "WATER" shall be cast in the valve box cover.
 2. Valve box castings shall be manufactured of clean, even grain, gray cast iron conforming to ASTM Designation A48, Class 30B, Gray Iron Castings; and be smooth true to pattern, free from blow holes, projections, or other harmful defects.
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Coat the valve boxes with a single coat of coal tar pitch before machining, so that machined seating surfaces will be free of any coating. Machine the seating surfaces so that the cover will not rock.

- G. Corporation Stops and Curb Stops: Corporation stops and curb stops shall be as manufactured by Mueller Company, Ford Meter Box Company, or approved equal.
- H. Service Clamps: Service clamps shall be double brass strap design as manufactured by Mueller Corporation, Ford Meter Box Company, or approved equal. All service connections or PVC mains shall be equipped with service clamps unless otherwise noted.
- I. Water Meters: Water meters shall be the positive displacement type with hermetically sealed registers and shall be read in gallons. They shall be manufactured by Badger Manufacturing Company or approved equal. Meters shall be complete with stub connections.
- J. Specials: Specials shall be of the same material as the pipe material being used or as approved by the Engineer. The term specials shall include plugs, caps, and other items as needed. Specials shall conform to the applicable AWWA/ASTM/ANSI Standards and shall be designed for the working pressure of the water mains on which they are being installed.

2-02 BEDDING AND BACKFILL

- A. Native material excavated from the trench shall be used for bedding and backfill under normal circumstances where approved by the Engineer.
- B. Select bedding or backfill shall be provided where called for by the Engineer. Such select bedding shall be a well graded uniform mixture of coarse concrete aggregate and coarse sand. Select backfill shall be a sand-clay material with a maximum liquid limit (LL) of 30 and a plasticity index (PI) of less than 10.

PART 3 - EXECUTION

3-01 EXCAVATION

- A. The Contractor shall perform all excavation of every description and of whatever substances encountered to the depth specified in the Plans or as directed by the Engineer. The bottom of all trenches shall be carefully shaped, graded and aligned in accordance with the instructions of the Engineer and to his complete satisfaction before any pipe is placed. All trenches shall be excavated to a depth to maintain minimum cover over the installed pipe of at least 36" for pipe installed under ordinary conditions. The Contractor may reduce or increase the depth of bury at fire hydrant locations to avoid undesirable fire hydrant setting
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with the approval of the Engineer. Minimum cover over the installed pipe shall be 42" under existing creeks or ditches, or as directed by the Engineer.

- B. Care should be taken in shaping and grading the ditch bottom to assure that the barrel of the pipe rests in uniform and continuous contact with the supporting ground over its entire length and that the bells or joints are entirely free from the bottom of the trench.
- C. In the event it is necessary to place fill in the bottom of the ditch to obtain such uniform contact, it shall be made with approved material and thoroughly compacted in a manner satisfactory to the Engineer. Holes of ample size shall be cut under and around all bells and joints to provide adequate room for making joints. A tolerance of 8 inches from the established grade may be permitted, when approved by the Engineer, if excessive breaks in alignment at the joints prevent proper installation of the pipe.
- D. When rock is encountered, the Contractor shall excavate to a depth at least 4 inches below the required grade and backfill to grade with 4 inches of select bedding.
- E. If the established grade conflicts with other utilities, the water line grade shall be changed to avoid the conflict in a manner acceptable to the Engineer.

3-02 SHEETING AND BRACING

- A. The Contractor shall furnish and place to the satisfaction of the Engineer, such sheeting and bracing as may be required to support the sides of the trench and to protect the workmen and pipe or adjacent structures from injury by the sloughing or caving of the trenches. The sheeting and bracing may be removed as the trench is backfilled, or may be left in place when necessary to prevent damage.
- B. In the event sheeting or bracing is left in place, it shall not exceed nearer than 1 foot to the surface of the ground. In no case will extra compensation be allowed for furnishing, placing, or removing any sheeting and bracing. The cost of this work shall be included in the unit price bid for installing the pipe.

3-03 PIPE LAYING

A. General

PVC pipe shall be installed in accordance with the latest edition of ASTM D-2321 assuming the use of Class IV native material or better. Ductile iron pipe shall be installed in accordance with the latest edition of AWWA C-151 using Type 2 bedding and native material. Select bedding or backfill for PVC or DIP water main shall be provided where called for by the Engineer in accordance with the Contract Documents.

- B. Pipe, appurtenances, and fittings shall be laid to the line and grade established on the Plans and as directed by the Engineer. Extra depth shall not be measured unless noted on the Proposal Form.
- C. The inside of the bells and the outside of the spigots shall be thoroughly cleaned before they are placed. The inside of all pipe shall be thoroughly swabbed to ensure that the pipe is clean and free of obstructions and foreign matter until the work is completed.
- D. Where pipe laying ceases at the end of the day or for any cause, the end of the pipe shall be securely closed in order to prevent the entrance of water, mud or any other objectionable matter.
- E. Pipe shall not be lain when water is in the trench.
- F. Thrust Blocking shall be installed at locations shown on the Plans and as otherwise directed by the Engineer.

3-04 MAKING JOINTS

- A. All joints shall be constructed in accordance with the manufacturer's recommendations using the jointing materials, specials and lubricants specified by the manufacturer and approved by the Engineer.

3-05 SETTING FITTINGS, VALVES, HYDRANTS AND SPECIALS

- A. All fittings, valves, valve boxes, hydrants and other appurtenances shall be set at the location indicated on the Plans or as directed by the Engineer. Omission of any of these items shall be corrected by the Contractor without extra cost to the Owner. The addition of any of these items not shown on the plans and requested by the Owner or Engineer which are installed without the expressed consent and agreement of the Engineer shall not be allowed for payment but shall be considered as absorbed costs to the Contractor. In addition, any fittings or specials installed by the Contractor purely for his convenience shall not be allowed for payment unless specifically approved by the Engineer. Valves and fittings shall be jointed to pipe as recommended by manufactures.
 - B. All valves, including by-pass valves, shall be provided with a valve box. The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the operating nut with the cover flush with the pavement surface or such other level as directed. Valve box slabs or marker posts shall be provided where specified on the Drawings or as directed by the Engineer as an absorbed cost to the Contractor.
 - C. Hydrants shall be located as shown on the plans and in a manner that will provide complete accessibility and will prevent damage from vehicles. All hydrants shall stand plumb and
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shall have their pumper connections at right angles to the curb line. The Center of the streamer nozzle shall be 18" above top of finished ground or top of curb where applicable. Where necessary, hydrant extension shall be furnished at no additional cost to the Owner, to meet this requirement.

1. Each fire hydrant shall set truly vertical and securely braced with concrete or stone blocks until it is self-standing. It shall be set on a stone or concrete slab not less than four (4) inches thick and not less than one square foot of surface area placed on well compacted soil surrounded by a minimum of seven (7) cubic feet of sound broken stone or clean gravel to permit free draining of the hydrant. The gravel or stone shall reach from the bottom of the trench to a least six (6) inches above the waste opening of the hydrant.
2. All hydrants, valves and fittings shall be anchored with steel all-thread rods (3/4" minimum) as indicated on the Plans or with anchor couplings approved by the Engineer.

3-06 SERVICE ASSEMBLIES AND SERVICE LINE INSTALLATION

- A. Assemblies shall consist of a corporation stop, service clamp, curb stop and other appurtenances needed to complete the assembly in accordance with the Contract Drawings. They shall be installed in a good and workmanlike manner in the places designated on the Plans or as directed by the Engineer.
- B. Meter boxes, meters and service line shall be as specified herein and will be measured and paid for separately as detailed herein.

3-07 CONNECTION TO EXISTING MAINS

- A. Where indicated on the Plans, cut-ins must be made by the Contractor in order to connect the new main with existing water mains. The Contractor shall furnish all labor and materials and service required for the excavating, cutting the existing mains, removal and relocation of sections of old pipe, de-watering the trench, connection the new main with the old and the setting of necessary fittings, specials and valves as shown on the Plans.
 - B. The Contractor shall provide temporary blocking and bracing properly placed to prevent movement or blowing off of any pipe, valves or fittings due to water pressure on the main. All connections shall be made in a most expeditious and workmanlike manner to cause the least inconvenience to water customers and to traffic, and shall be made at night unless otherwise approved by the Engineer.
 - C. Any time that the interruption of water service in the existing system is necessary because of operations under this Contract, the Contractor shall notify the Owner at least 48 hours in
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advance. Interruptions of water service shall not extend over night or through the weekend unless approved by the Owner and the Engineer.

3-08 BACKFILLING TRENCHES

- A. Backfilling shall be carefully performed and the original surface restored, to the full satisfaction of the Engineer. The trenches shall be backfilled with fine, loose earth, free from large clods or stones, carefully rammed until enough has been placed to provide a cover of not less than 1 foot above pipe. The remainder of the backfill material in unpaved areas shall be placed in the trenches, and any excess materials shall be windowed over the trench. As settlement occurs, trenches shall be refilled, smoothed off, and made to conform to the surface of the ground until settlement ceases.
- B. Backfill in roadways, drives or in areas to be paved shall be made as specified above except that fill above the pipe shall be deposited in layers not to exceed 6 inches. Such fill shall be compacted with mechanical tampers so that the compacted soil shall have a density of at least that of the undisturbed adjacent ground or 95% maximum optimum moisture density. Backfill material shall be sand-clay, clay-gravel or other approved material complying with paragraph 202B. Disposal of surplus material shall be as directed by the Engineer.

3-09 COORDINATION WITH INTERESTED PARTIES OTHER THAN OWNER

- A. The Contractor shall duly notify and coordinate all work with the City, the Board of Supervisors, the local Health Department, Mississippi State Highway Department and other interested parties. No work which affects these interested parties will commence until satisfactory coordination has been achieved.

3-10 HYDROSTATIC TESTS

- A. After the pipe is laid and the line flushed, it shall be filled with water with care being exercised, to expel all air from the pipe. During the test period all pipe, valves, fittings, and joints shall be existing carefully for defects. Any observed leaks or defective pipe shall be satisfactorily repaired or replaced, at the expense of the Contractor and the test repeated until the section tested is within the limits prescribed hereinafter. The entire distribution system or parts thereof shall be tested under hydrostatic pressure of 150 psi, for a period of 4 hours, if joints are exposed, or for an 8 hour period, if joints are covered. Repairs shall be made using approved materials and new replacement fittings, specials, or gaskets where leakages occur.
 - B. Leakage shall be measured by an approved calibrated meter through which all of the water required to maintain test pressure shall be pumped. All testing shall be performed in the
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presence of the Engineer, and the Engineer shall be notified at least 24 hours in advance of the start of the test.

- C. The Contractor shall furnish the pump, pipe connections, fittings, gates, meters, and all necessary apparatus and shall furnish all labor and work required to make the tests. All costs of testing shall be borne by the Contractor and testing operations shall remain in operation until approved by the Engineer. Allowable leakage shall not exceed 10 gallons per 24 hours per inch of diameter per mile of pipe, at the specified test pressure.
- D. Tests shall be completed in accordance with the latest edition of AWWA C-600 except as modified herein.

3-11 STERILIZATION OF PIPELINES

- A. General: Thoroughly disinfect all water pipe on potable water lines prior to being placed in service. Follow the applicable provisions of the procedure established for the disinfection of cast iron pipe as set forth in the latest edition of AWWA C601 entitled "Disinfecting Water Mains."
 - B. During the Construction: Workmen shall be required to use utmost care to see that the surface of parts of the structures, and the inside of pipes, fittings, jointing materials, valves, and specials which come in contact with the City's water, are maintained in a sanitary condition. Every effort shall be made to keep the inside of the pipe, fittings and valves free of all foreign matter, sticks, dirt, rock. As each joint of pipe is being laid, it shall be swabbed so that all foreign matter is removed. All fittings and exposed open ends of pipe shall be blocked or capped until the line is completed.
 - C. When the entire pipe line or certain selected sections thereof have been completed, tested and made ready for turning over to the Owner ready for use, the line or section of line shall be thoroughly sterilized according to the following procedure: The new pipe shall be disinfected by introducing HTH, Percloron, gas chlorine solution or a similar hypochlorite solution, through tape made by the Contractor as directed by the Engineer. The water shall be turned into the mains slowly to allow a thorough mixing of the solution which shall be brought to a strength of 50 parts per million of free, available chlorine. All valves shall then be closed and the sterilizing solution permitted to remain in the pipe line section for not less than 24 hours, after which the mains shall be flushed thoroughly until a chlorine residual not to exceed two tenths (0.2) part per million is obtained.
 - D. Samples shall be collected under supervision of the ENGINEER, using only approved bottles furnished by the State and will be tested by the State Health Department. The Contractor shall arrange for the collection of samples from the end of each dead-end line or from each major loop for bacteriological examination. A copy of test results shall be furnished to the Owner and the results obtained shall be deemed conclusive. If the test
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shows satisfactory quality of water, the line so sterilized may then be placed in service. If the sample shows unsatisfactory quality of water the process of sterilization shall be repeated until a satisfactory water is obtained. All materials, testing and labor required for complete sterilization of the system shall be furnished by the CONTRACTOR at no expense to the OWNER.

- E. Prior to final acceptance, the Contractor shall sterilize and re-sterilize the water mains until two (2) consecutive samples of water are found to meet the State Health Department standards for water supplies. Less than one (1) coliform bacteria per 100 ml and no indication of confluent growth shall constitute a satisfactory sample when analyzed by the Mississippi Department of Public Health Laboratory or a laboratory certified by the Department.

3-12 CLEAN-UP

- A. In areas where the water mains have been backfilled, the **CONTRACTOR** shall clear the right-of-way and surrounding ground, and shall dispose of all waste materials and debris resulting from his operations. He shall fill and smooth holes and ruts and shall repair all miscellaneous and unclassified ground damage done by him and shall restore the ground to such a stable and suitable condition as may be reasonably required, consistent with the condition of the ground prior to construction. Contractor shall maintain areas so that no hazard or inconvenience to traffic results.
- B. Clean-up, including grading, disposal, dress-up work and other incidentals shall be completed by the Contractor at no additional cost to the City to the extent directed by the Engineer.

3-13 CLEARANCE BETWEEN WATER AND SEWER LINES

- A. Where water and sewer lines run parallel to each other, there shall be maintained a 10 foot horizontal clearance between the water line and the sewer line.
- B. Whenever sewer lines cross water lines, the sewer line shall be a depth of not less than 18" below the water line.
- C. Where these conditions cannot be maintained, DIP water main shall be used for a distance of 10 feet either side of the sewer on crossings.

PART 4 - COMPENSATION

4-01 MEASUREMENT

For items listed on the Proposal as "Water System Components - Installed", unless noted otherwise the City will supply the necessary pipe, service piping, fittings, valves with boxes, tapping sleeves, curb stops, corporation stops, service clamps, meters and meter boxes. Measurement for the installation of these items and the furnishing and installation of other necessary items shall be made as set forth below.

- A. The length of pipe of the various sizes and depths, including service line, installed and accepted, will be determined by measurements along the center line of the pipe. No deductions will be made for space occupied by valves, fittings or specials.
 - B. Valves and Fire Hydrant Assemblies will be measured as units per each. Valves, valve boxes and fire hydrants shall be supplied by Owner. Threaded rods of anchors, gravel, concrete and incidentals shall be supplied by Contractor and not measured for separate payment.
 - C. Service Assemblies will be measured as units per each. Installation of Corporation stops, curb stops, service clamps, meters and other service assembly appurtenances will not be measured separately for payment, but shall be included in the Contract Unit Price for Service Assembly installation. Installation of service line shall be measured per linear foot in place.
 - D. Ductile iron fittings shall be measured by the pound of body weight only. No measurement shall be made of glands, bolts, gaskets and lubricants supplied by Owner, or other items incidental to the work. Accessory PVC fittings and specials shall not be measured separately but shall be considered as an absorbed item as part of the installation of each size water main installed.
 - E. Items listed as "Water System Components - Supply Material" require the Contractor to supply the specified material for installation. The items actually installed and accepted in accordance with the Contract Documents shall be measured in the specified units for payment. It is the Contractor's responsibility to review and verify quantities with the Engineer's Representative during construction. Contractors supplied items lost or stolen from stockpiles shall not be measured for payment.
 - F. Thrust blocking shall not be measured for payment. The cost of supplying and installing these items shall be considered an absorbed item.
 - G. Connection to existing water mains shall be measured on a per each basis as specified in the Construction Plans portion of these Documents.
 - H. Select backfill and select bedding hauled in from off-site areas and supplied by Contractor shall be measured per cubic yard (L.V.M.).
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- I. Water main sized described on the proposal as "Not in R.O.W." shall be measured when the water main is installed outside of the congested street right-of-way or where the lack of interfering utilities inside the right-of-way results in similar laying conditions.

4-02 PAYMENT

- A. Payment for the water system piping, including service piping, will be made at the Contract Unit Price per linear foot, which price shall constitute full compensation for installing all pipe, joints, accessories, specials and all other materials not particularly specified for separate payment, for furnishing all labor, tools, equipment and incidentals and performing all work including, stringing pipe, excavation, installation of pipe, backfill, testing, sterilization, clean-up and any other operations essential to completing the water system as specified herein and as shown on the Contract Drawing.
 - B. Payment for valves and fire hydrants will be made at the Contact Unit Price per each, which price shall constitute full compensation for furnishing concrete blocking, gravel and miscellaneous materials, for furnishing all labor, tools, equipment and incidentals and performing all operations essential in completing the installation of valves, boxes and fire hydrants in accordance with the Specifications and Contract Drawings.
 - C. Payment for Service Assemblies will be made at the Contract Unit Price per each, which price shall constitute full compensation for furnishing gravel, concrete and miscellaneous material and for furnishing all labor, tools, equipment and incidentals, performing all operations essential to completing the installation of all curb stops, corporation stops, service clamps, meters and connections in accordance with these Specifications and Contract Drawings.
 - D. Payment for connection to existing water mains will be made on a per each unit cost basis and shall constitute full compensation for furnishing all materials, bedding, labor, tools, equipment, and incidentals and performing all operations essential to installation of the fittings in accordance with these Specifications and Contract Drawings.
 - E. Payment for ductile iron fittings shall be made at the contract unit price per pound of body weight, which price shall constitute full compensation for furnishing all bedding, concrete blocking, labor, tools, equipment and incidentals and performing all operations essential to installation of the fittings in accordance with these Specifications and Contract Drawings. Payment for PVC fittings shall not be made separately but shall be absorbed in the unit price per foot for each size PVC water main installed.
 - F. Payment for Contract-supplied items listed as "Water System Components-Supply Material" shall be made at the Contract Unit Price Bid for each type of Material. Total installed Unit Price shall be the sum of the "Supply Material" Unit Price and the "Install" Unit Price. No additional payment shall be made for taxes, delivery or incidentals.
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SECTION 4 - ROADWAY CROSSING FOR UTILITY LINES

PART 1 - GENERAL

1-01 DESCRIPTION

- A. The work includes providing materials and equipment to install roadway or railroad crossings for water lines as herein specified and shown on drawings.
- B. All work must comply with the terms and conditions as set forth by the City and the County Board of Supervisors.
- C. Include excavation, backfill, construction of cribbing and cofferdams, dewatering, and incidental work associated with installation of the casing.
- D. It must be anticipated that existing piping, cable, telephone lines and utilities shown on drawings will vary. When encountered during excavation or other work, immediately notify Owner, Engineer and applicable utility company. Cost for any required repairs must be paid by the Contractor.
- E. Installer must be experienced in this type of work and be acceptable to the Engineer.

PART 2 - MATERIALS

2-01 MATERIALS

- A. Casing:
 - 1. Steel casing shall be Schedule 30, Grade B, plain end steep pipe, butt welded, of the sizes specified in the Proposal. Minimum metal thickness shall be .375 inches unless otherwise specified.
 - 2. PVC casing shall be SDR 26, Class 160, solvent welded pipe of the sizes specified on the proposal.
- B. Grout for sealing the annular space between carrier pipe and casing at each end shall be non-shrink type.

PART 3 - EXECUTION

3-01 CONSTRUCTION REQUIREMENTS

- A. Restore the work and/or adjacent areas equal to original appearance.
- B. Complete construction in accordance with the roadway or railroad crossings permits and other details shown on the plans.
- C. Refer to Section 3 of these Specifications for fill and backfill requirements.
- D. Where casing is to be extended along an existing line by splitting and re-welding, all welds shall be continuous, water-tight and penetrate at least 1/2 the material thickness.

PART 4 - COMPENSATION

4-01 MEASUREMENT

- A. Measurement shall be along the centerline of the installed casing from end to end in linear feet. Measurement shall not be made of incidental work including sheeting, shoring, grout, excavation, backfill, dewatering, jacking, boring or other work related to installing the casing complete and in place. Measurement shall be made in linear feet for each of the various sizes specified on the Proposal.

4-02 PAYMENT

- A. Payment shall be made at the Contract Unit Price per linear foot of casing of the sizes and types specified on the Proposal, complete, in place and accepted by the Engineer. Such payment shall cover all costs of installation, labor, materials, equipment, tools and incidentals necessary to complete the work.

SECTION 5 - SUPPLY EQUIPMENT AND LABOR

PART 1 - GENERAL

1-01 DESCRIPTION

- A. These specifications shall govern the furnishing and operation of major equipment and the supply and direction of laborers and work crews on an hourly basis.
 - B. Hourly equipment and personnel rates will be utilized by the Owner when a work item is not listed in the Proposal.
 - C. Equipment and operator rates shall include provision for all fuel, routine maintenance, repairs, insurance fees, overhead, licenses, taxes and other operating expenses for providing said service within the Owners operating jurisdiction.
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- D. Pipe layers, laborers and foreman are to be fully equipped by the Contractor to accomplish the work and the listed rates shall include provision of items such as hand tools, power tools, laser systems, wheel barrows, whacker-packers, overhead, insurance fees, taxes, and other incidentals.
- E. Equipment types listed on the proposal represent the desired class, quality, size and performance characteristics. Comparable equipment by other manufacturers may be submitted to the Engineer for approval.

PART 2 - EXECUTION

2-01 GENERAL

- A. Contractor shall vigorously pursue completion of the assigned work items. If it is the opinion of the Owner and/or the Engineer that the efficiency and/or quality the work effort is substandard, the Contractor shall be formed in writing and the necessary corrections made promptly. The Contractor shall be terminated or reduced price paid for that part of the work deemed unsatisfactory.
- B. Work performed shall conform to the applicable provisions of these Specifications.
- C. Time spent by the Contractor to correct errors of omissions shall not be measured or paid for under these Specifications.
- D. The foreman shall review and confirm equipment and personnel time records on a daily basis with the Engineer's project representative.

PART 3 - COMPENSATION

3-01 MEASUREMENT

- A. Only equipment and personnel actually in use on the site shall be measured for payment. No allowance shall be made for travel time to and from the site except that when a particular activity requires use of a major piece of construction equipment for less than one (1) day the Owner may on a case by case basis allow provision for travel time.
 - B. Maintenance time shall not be measured or paid for.
 - C. The time that the equipment and/or personnel are actually in use on the site shall be measured to the nearest quarter hour. Reasonable time shall be measured for movement of equipment between Contract sites in the City.
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- D. When an equipment item is listed in the Proposal with Driver or with Operator the unit rate shall include payment for same. When the piece of equipment is not being utilized and the operator or driver is working as a pipe layer, laborer or foreman his time shall be measured in the appropriate category.

3-02 PAYMENT

- A. Payment for Equipment and Operator or Driver shall be made at the Contract unit price per hour bid which shall be full compensation for furnishing the equipment and operator or driver, fuel, maintenance, insurance fees, overhead, licenses, taxes, profit and other operating expenses and incidentals to complete the work in accordance with the Contract Drawings and Specifications.
 - B. Payment for Pipe Layers, Laborers and Foreman shall be made at the Contract unit price per hour bid which shall be full compensation for furnishing the personnel, tools, overhead, insurance, fees, taxes, profit, and other incidentals.
 - C. No separate payment will be made for incidental items not listed herein or specified on the Proposal.
 - D. No payment shall be made for security personnel required to guard the work or material stockpiled by the Contractor.
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FORM B
SEWER REHABILITATION SYSTEM SPECIFICATIONS

FORM 3 – SPECIAL PROVISIONS & SPECIFICATIONS
SANITARY SEWER REHABILITATION

SECTION 1 – SPECIAL PROVISIONS

1-01: SCOPE OF WORK

The purpose of this Contract is to provide the Owner with a Contractor to rehabilitate existing sanitary sewers, manholes and service laterals on an as-needed basis. The scope and quantity of work will be dependent on the need for the work. This contract consists of an undetermined number of individual sewer rehabilitation projects. All projects will be assigned by the Engineer. The rehabilitation work may include any or all of the bid items defined in the Proposal.

Pay items include expected quantities of work and conditions. Some pay items may not be used at all, while other pay items may over run considerably. Payment will be made for all work completed in accordance with the unit price bid. Consideration will not be given for unit price changes because of overage or under-run of a line item quantity.

This Contract will be used primarily to rehabilitate problem sewers and manholes scattered throughout the City. Location of projects may be anywhere in City or areas served by the City, which are located outside of the City.

The Owner anticipates that this Contract will be used mainly for smaller rehabilitation projects (less than 10,000 feet of main sewer rehabilitation) and that larger projects may be advertised for separate bids.

This Contract will not necessarily be used to perform all of the sewer and manhole rehabilitation work required by the Owner. The Contractor is advised that the Owner may bid other rehabilitation projects throughout the duration of this Contract. The Contractor for this Contract shall not be excluded from bidding on the other rehabilitation projects.

1-02: PROCEDURES FOR ASSIGNING PROJECTS

The Engineer will assign projects to the Contractor found to be the lowest and best bidder for that project. Each project will be given a project number to be referenced by the Contractor during the work.

When the project is assigned, the Engineer will define the scope of work and provide drawings of the project area. The drawings will be based on the Owners base sewer maps and may be hand-drawn or computer-generated. The drawings may be 8½" x 11" to 24" x 36" in size. If manhole rehabilitation work is included in the project, the Engineer will also provide manhole inspection forms completed by the Engineer to document the manhole condition.

Other available television and physical inspections performed by the Engineer will be provided to the Contractor for information only. The Engineer intends to televise sanitary sewers, when determined necessary by the Engineer, to be rehabilitated under this Contract prior to the Notice to Proceed. The purpose

of these inspections is to better define the required work for the first several projects so that the Contractor can better schedule his work and meet the implementation requirements specified herein.

Each project may include any or all of the bid items defined in the Proposal. For example, the work may include lining main sewers, rehabilitating manholes and rehabilitating service laterals, or the work may only include rehabilitating manholes or performing point repairs. Each project that includes sewer rehabilitation will require that the Contractor first thoroughly clean and televise the sewers and submit the inspection tapes and logs to the Engineer for review as specified elsewhere in these Special Provisions. The Engineer will define the final scope of work based on these pre-rehabilitation television inspections.

The intent of this contract is that the Engineer will assign the first project when the Notice to Proceed is issued. The Contractor will then mobilize to the City of Ridgeland to perform the first project in accordance with the project implementation times specified in these Special Provisions. While the Contractor is mobilized, the Engineer intends to assign additional projects such that the Contractor can continue construction on subsequent projects without interruption and without re-mobilizing. The intent is that assigned projects can be completed by one installation crew for each specialty item.

The Contractor shall complete each project in the order it is issued unless otherwise directed by the Engineer. A project shall be considered complete when the final inspection has been completed and the work accepted by the Engineer before beginning another project, unless authorized by the Engineer.

Emergency situations are expected to arise during this Contract which will require immediate sewer rehabilitation. In these emergency situations, the Engineer will notify the Contractor of the required work, and the Contractor shall suspend construction operations on the current project as soon as practicable and immediately proceed to the emergency work.

1-03: MOBILIZATION

The Contractor will be paid for mobilizing to the City of Ridgeland to perform the first project at the unit price bid. If the Contractor completes all assigned projects and de-mobilizes from the City of Ridgeland and work is assigned at a later date, the Contractor will be paid to re-mobilize to the City of Ridgeland at the unit price bid. If the work is identified as emergency work by the Engineer, the Contractor will be paid an additional mobilization cost as agreed upon by the City and Contractor. The Contractor will not be paid to mobilize from project to project within the City of Ridgeland under any circumstances, including to perform emergency work.

1-04: PROJECT IMPLEMENTATION

The Contractor shall have a crew on-site within 14 calendar days after receipt of a project from the Engineer. This crew shall perform preparatory work such as measuring existing pipe diameters and lengths and manhole diameters and depths, determining construction obstacles and issues, cleaning and televising existing sewers, determining and obtaining access to the sewers and manholes, performing required point repairs to sewers and manholes, distributing notices to residents and businesses affected by the work, preparing traffic control plans and project schedules, and all other preparatory work deemed appropriate by the Contractor. Within 21 calendar days after receipt of a project from the Engineer, the Contractor shall begin constructing the project.

If the Contractor is de-mobilized from the City of Ridgeland and an emergency project arises, the Contractor shall have a crew on-site within 4 calendar days after receipt of the project from the Engineer performing preparatory work as defined above. Construction of the project shall begin within 10 calendar days after receipt of the project from the Engineer.

If the Contractor does not respond to the projects within the specified times, the Owner and Engineer reserve the right to terminate the assigned project. Such failure by the Contractor may result in future projects not being assigned to the Contractor.

The Contractor shall diligently perform the work on each project and shall remain on-site until all of the work is completed, and the project is accepted by the Owner. If the Contractor leaves the site prior to completing all of the work, payment for completed work shall be withheld as deemed necessary by the Owner until the Contractor returns to site and completes the work. The Owner's decision on withholding payment shall be final, and the Contractor shall not be due any additional payment based on the Owner's decision. The Contractor will not be authorized to perform additional projects if his work on current projects is not being diligently completed.

If inclement weather requires temporary suspension of work, the Contractor shall not be paid any additional money due to the project suspension or delays or for additional mobilization requirements. The Contractor should expect and plan work accordingly for times of inclement weather.

The work shall be performed in accordance with the requirements specified in these Contract Documents and the cities standards and specifications.

1-05: ACCESS TO SITE

The Projects may be in residential roads, major thoroughfares, easement areas along creeks, easement areas in yards or wherever the City has a sanitary sewer line. The Contractor shall be responsible for accessing the sewers and manholes to perform the work. The Contractor's responsibilities for accessing the sewers include determining access requirements and developing alternate access points as required, removing and replacing to equal conditions moveable obstacles (such as fences), and negotiating with property owners. The costs for accessing the sewer shall be included in the unit prices bid. The Contractor shall be paid for ground surface restoration (seeding and mulching and pavement restoration) required as a result of accessing the sewers at the unit prices bid.

The Contractor shall not be required to build roads to the sewers and manholes or clear easements to access the project. The Owner will perform this work or negotiate costs with the Contractor for the work in which case a change order shall be executed.

1-06: CLEANING AND TELEVISION INSPECTION OF MAIN SEWERS PRIOR TO LINING

When sewer rehabilitation work is required, the Contractor shall first thoroughly clean and televise the sewers and submit one copy of the final television inspection tapes and logs to the Engineer for review as specified herein.

The Contractor's cleaning operations shall fully clean the sewers and remove all roots, grease and debris to facilitate the lining installation. The cleaning shall be performed prior to the pre-rehabilitation television

inspection. A bid item is included for normal cleaning and heavy cleaning. Normal cleaning is defined as less than 1/3 of pipe with debris. Heavy cleaning is defined as more than 1/3 of pipe with debris. Acceptance of the cleaning portion of the work shall be dependent upon the results of the pre-rehabilitation television inspection. Lines not acceptably clean as to permit television inspection or the subsequent sewer lining installation shall be re-cleaned and re-inspected at no additional cost to the Owner.

The equipment used for the cleaning operations shall be specifically designed for cleaning sewers. The Contractor shall use the appropriate equipment to clean all debris, roots and grease from each sewer segment thoroughly. The required equipment may be high velocity water jet cleaning equipment with various attachments or mechanical cleaning equipment such as power buckets or power rodders. The Contractor shall select the cleaning equipment and procedures based on the conditions of the sewers at the time the work commences. All solids shall be removed at the downstream manhole of the section being cleaned - passing material from one sewer segment to another will not be permitted. The solids shall be removed from the site and properly disposed of at approved locations provided by the Contractor. Water for cleaning operations will be made available by the Owner at selected fire hydrants. The Contractor must obtain a meter from the Owner and meet all Owner requirements prior to connecting to a hydrant.

Sewer cleaning shall proceed from upstream sewers to downstream sewers. No cleaning shall take place in a particular sewer segment until all upstream pipe segments have been cleaned. If cleaning is done in a downstream pipe segment in order to facilitate overall cleaning operations, the segment shall be re-cleaned at no additional cost, after all pipe upstream of that segment has been cleaned.

The Contractor shall take precautions to avoid damage or flooding to public or private property being served by the line being cleaned. The Contractor shall be responsible for all flooding and pay for cleanup from flooding to the satisfaction of the property owner. The Contractor shall take care in cleaning older vitrified clay sewers and shall protect existing sewers from damage caused by improper use of cleaning equipment.

After the sewers are completely cleaned, the sewers shall be inspected via closed circuit television (CCTV). The purposes of the CCTV inspections are to verify that the sewers have been thoroughly cleaned, to document the condition of the existing sewers and the locations of service connections and to confirm that the liner can be properly installed and cured. The camera equipment used for the CCTV inspections shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. The camera shall be a color, pan-and-tilt camera. The picture quality and definition shall be to the satisfaction of the Engineer.

The camera shall be moved through the line in either direction at a uniform rate. The camera shall be stopped at major defects and service connections and shall be panned, tilted and rotated to fully view the defects and connections. All such inspections shall be documented. Particular attention should be paid to service connections and whether the services are active or plugged. To perform the inspections, the Contractor may have to locate and raise manholes, cut protruding service connections, perform point repairs, and so forth. Such work shall be authorized by the Engineer. Costs associated with this work shall be paid at the unit prices bid.

The inspections shall be complete from manhole to manhole without the need for reverse setups unless approved otherwise by the Engineer. If, during the work, the CCTV inspection is blocked by debris, a protruding lateral or sewer system defect, the Contractor shall remove the blockage or repair the defect as

authorized by the Engineer and then continue the inspection. No additional payment will be made for the initial CCTV inspections that were blocked.

Reverse setups will only be allowed and accepted for payment if the blockage or defect preventing the CCTV inspection in the initial direction does not need to be removed or repaired prior to installing the liner. The Contractor shall notify the Engineer in writing of such situations for the Engineer's review and approval. If approved, payment will be made for the length of sewer inspected.

Daily calibration of measuring devices shall be performed.

Upon completion of the cleaning and television inspection work, the Contractor shall submit one copy of the final television inspection tapes and logs to the Engineer. The tapes and logs shall be clearly labeled as to their contents. The final inspection shall mean that the sewer has been completely prepared and ready to be lined. The final inspection shall be complete from one manhole to another without the need for a reverse setup unless otherwise approved.

With the submittal, the Contractor shall (1) identify sewer defects that should be repaired prior to lining, (2) identify sewer defects that may cause problems with the final liner installation (such as wrinkles, ribs, and lifts) if not repaired, and (3) recommend the thickness of the liner based on the existing pipe conditions and depths. The Engineer will review the submittal and issue the final scope of work for the assigned project to the Contractor within 5 working days. If the sewer is not clean or the protruding service connections have not been cut as specified, the Contractor shall re-clean or cut connections as necessary to meet the specifications and re-inspect the sewers at no additional cost to the Owner.

The final scope of work will define point repairs required prior to lining and service lateral rehabilitation required prior to or after lining. If the entire sewer segment is in poor condition, the Engineer may elect to replace the sewer from manhole to manhole instead of lining the sewer.

The Contractor will be paid for all cleaning and television inspections at the unit prices bid.

1-07: POST-REHABILITATION CCTV INSPECTIONS

Following installation of the sewer lining and reopening the service connections, the Contractor shall conduct a post-rehabilitation CCTV inspection of the completed work to verify that the liner installation is acceptable as defined in the Material Specifications. The post-rehabilitation CCTV inspections shall be performed such that the sewer lining can be clearly seen (not too much or too little light). The camera shall be panned, tilted and rotated at all lining defects and at service lateral connections for a complete video documentation. The Contractor shall submit a sample CCTV inspection after the first liner is installed so that the Contractor and Engineer can agree on performance and quality of the inspections which must be met throughout the Contract. Sewers not inspected to the Engineer's satisfaction shall be re-inspected by the Contractor at no additional cost to the Owner. One copy of these tapes and logs shall be submitted to the Engineer for review and approval. Payment will not be made for any sewer lining until the Engineer has reviewed and approved these tapes. The Contractor shall submit the tapes a minimum of 10 days in advance of any payment request to provide the Engineer ample time to review the tapes.

1-08: MAIN SEWER REHABILITATION

The main sewers shall be rehabilitated by installing a pipe lining, by performing point repairs either as the sole rehabilitation work or prior to installing the pipe lining, or by complete sewer replacement from manhole to manhole. The Engineer shall identify the required main sewer rehabilitation for each project.

When sewer lining is required, the Engineer will identify the nominal diameter of the existing sewer, the depth of the sewer, the required liner thickness, and point repairs required prior to installing the lining. The Contractor is responsible for final field measurements of the existing sewers to properly size the liner pipes. In addition, the Contractor shall confirm that the liner thickness required by the Engineer is suitable for the depth and existing sewer conditions and shall make recommendations for a different liner thickness as appropriate. The Contractor shall also identify additional point repairs that should be performed prior to installing the lining. The Engineer will authorize the additional point repairs as appropriate. Refer to the Material Specifications and Technical Details included in these Special Provisions.

When point repairs are required, the Engineer will identify the nominal diameter of the existing sewer, and the Contractor shall select new sewer diameters and materials of construction suitable for performing the repairs. Service connections within point repair segments shall be reconnected to the new sewer with a tee. Reconnecting services shall be considered incidental to the point repair work, and all costs associated with the reconnection shall be included in the unit prices bid. Refer to the Technical Details included in these Special provisions.

When complete sewer replacement from manhole to manhole is required, the Engineer will identify the diameter of the existing and new sewer, and the Contractor shall select the new sewer pipe material. The new sewers shall be installed in the same locations and at the same slopes and elevations as the existing sewers. The new sewers shall be connected to the existing manholes or to new manholes. The Contractor shall provide required surveying services to complete the sewer replacement work and all such costs shall be included in the unit prices bid. Refer to the Technical Details included in these Special provisions.

1-09: SERVICE LATERAL REHABILITATION

The service lateral rehabilitation may include reconnecting existing sewers to the pipe lining via a remote cutter, cutting protruding taps prior to installing the pipe lining, replacing the existing service connection as the sole rehabilitation work or prior to installing the pipe lining, or replacing the service lateral from the main sewer to the property line as the sole rehabilitation work or prior to installing the pipe lining.

When connecting services to the new pipe lining, only active services shall be reconnected. The Engineer will identify services known to be plugged. The Contractor shall confirm that the services are plugged and shall submit a list of other services found to be plugged or inactive during the work.

All service connections protruding into the main sewer shall be cut flush prior to installing the lining. The Engineer will identify protruding connections for each project. The Contractor shall cut the protruding connections internally. If the connections cannot be cut internally, the Contractor shall advise the Engineer, and the Engineer may authorize replacement of the service connection.

If service lateral reconnections are required as part of a sewer lining project, the reconnections shall be performed prior to installing the lining. If service lateral replacement is required as part of a sewer lining project, the replacement may be required prior to or after the lining is installed. Refer to the Technical Details included in these Special Provisions and to city standards and specifications for requirements. The

Contractor will be required to submit details for connecting service laterals to the pipe lining if the service laterals are required to be replaced after the pipe lining is installed.

1-10: MANHOLE REHABILITATION

The manhole rehabilitation work may include coating the walls and benches with either a cementitious liner, a 100% solids epoxy product and/or a fiberglass cured-in-place lining system, installing new manholes, and performing miscellaneous manhole rehabilitation work and point repairs. Refer to the Material Specifications and Technical Details included in these Special Provisions.

1-11: RESTORATION WORK

The Contractor shall be responsible for restoring all areas affected by the work to equal or exceed pre-construction conditions. All restoration work shall be performed in accordance with city standards and specifications.

1-12: PRECONSTRUCTION VIDEO INSPECTIONS AND PHOTOGRAPHY

The Contractor shall be responsible for performing video inspections and taking photographs of the project area prior to performing any work. The inspections shall be narrated to document locations and dates of the video inspections. The purpose of the inspections and photographs shall be to document the pre-construction conditions for comparison with the final restoration work. If the Contractor fails to make such inspections and photographs and the Owner or Engineer receive a complaint on the final restoration, the Contractor shall be responsible for additional restoration at no additional cost to the Owner as necessary to completely resolve the complaint.

1-13: SHOP DRAWINGS

Shop drawings are required for all materials proposed for installation under this Contract. The Contractor shall submit complete shop drawings for all materials proposed for each bid item within 30 days from receipt of the Notice of Award. The Engineer will review the shop drawings and provide comments to the Contractor within 14 days of receipt of the shop drawings. This shop drawing schedule is required such that work on all bid items could begin if necessary at the time of the Notice to Proceed.

1-14: FINAL INSPECTION

A final inspection will be held for each assigned project once construction and restoration has been completed. A “punch list” will be developed by the Engineer to identify defects, deficiencies and issues that must be addressed by the Contractor prior to final payment for the project. After the Contractor addresses the punch list to the satisfaction of the Engineer, the final pay estimate for the project can be submitted by the Contractor for payment. Unless otherwise requested by the Contractor, the final inspection will be conducted within 5 working days of completion of all work, as determined by the Engineer.

1-15: MAINTENANCE OF FLOW IN EXISTING SEWERS

The Contractor will be required to submit, for approval by the Engineer, a detailed plan of the method the Contractor proposes to maintain the existing flow during construction for each project. The plan must

include a provision for handling the existing peak flow by pumping or bypassing by gravity. If pumping is used, an identical standby pump(s) shall be on site in the event of failure of the primary pump(s).

If, at any time during construction, effluent from the existing sewer is not fully contained by the bypass system, gravity service will be restored and work shall be suspended until the problem is resolved to the satisfaction of the Engineer. Sewer system overflows will not be tolerated. Any fines associated with overflows, caused by the Contractor's work imposed on the owner, will be paid by the Contractor. Payment for this work shall be included in the unit prices bid.

1-16: LAND AND RIGHTS-OF-WAY

Construction activities will be limited to within existing sewer and highway rights-of-way. For sewers in easement areas, the sewer easement is generally 15 feet wide centered on the sewer centerline, unless otherwise

SECTION 2 – MATERIAL SPECIFICATIONS **CURED-IN-PLACE PIPE (CIPP)**

PART 1 - GENERAL

1.01 SUMMARY

It is the intent of this specification to provide for the reconstruction of pipelines and conduits by the installation of a resin-impregnated flexible tube, which is formed to the original conduit using installation procedures that comply with relevant industry standards. The resin is cured using hotwater under hydrostatic pressure or the application of steam pressure within the tube. The Cured-In-Place Pipe (CIPP) shall extend the full length of the original pipe and shall provide a structurally sound, joint-less, close fitting, and corrosion resistant CIPP.

1.02 REFERENCES

This specification references ASTM test methods which are made a part hereof by such reference and shall be the latest edition and revision thereof.

- A. ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
- B. ASTM F1743 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe
- C. ASTM D790 – Test Methods for Flexural Properties of Non-Reinforced Plastics.

In case of conflicting requirements between this specification and these referenced documents, this specification will govern.

1.03 SUBMITTALS

- A. Product Data: Provide catalog materials for CIPP products.
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- B. Manufacturer's Installation Instructions: Indicate special procedures required to install products specified.
- C. Manufacturer's Certificate: Certify that products meet or exceed ASTM Designations.
- D. Third party test results supporting the long term structural performance of the Manufacturer's product shall be submitted to the Engineer for review and approval. Test samples shall be prepared so as to simulate installation methods and trauma of the product. No product will be approved without testing verification.
- E. Installer Qualifications: Documentation the Installer meets the following requirements and qualifications:
 - 1. License or Certification that the proposed installer is approved to install the proposed CIPP system.
 - 2. A minimum of five (5) years of continuous experience and satisfactory performance installing CIPP Lining in pipe of similar size, length and configuration as proposed in the project on a minimum of five (5) projects.
 - 3. Contractor has installed a minimum of 1,000,000 linear feet of pipe using the specific pipe lining equipment to be used for the construction specified. This experience shall include at least one project where the same pipe materials as are required on this project were used, and at least one project where similar pipe sizes as required by this project were used.
- F. Contractor shall provide the City of Ridgeland with information regarding previous pipe lining projects at the time of bid. This information shall include:
 - 1. Total Linear feet of pipe installed
 - 2. Diameter of pipe
 - 3. Materials used
 - 4. Contact Name, address, and phone number of the Owner to whom the service was provided

The City of Ridgeland may, at its discretion adjust or waive the aforementioned pre-qualifications.

G. Product Qualifications/References

The CIPP Lateral Lining system proposed for this contract must meet the following minimum requirements. The Contractor or Subcontractor shall provide a list of references verifying the compliance with these qualifications.

- 1. A five (5) year history of satisfactory performance of sanitary sewer use.
- 2. A minimum of 500 CIPP lateral installations in the United States.

PART 2 - MATERIALS

2.01 MATERIALS

- A. Tube
 - 1. The sewn Tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F1216 or ASTM F1743, Section 5. The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections.
 - 2. The wet out Tube shall have a uniform thickness that when compressed at installation pressures will meet or exceed the Design thickness.
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3. The Tube shall be sewn to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during inversion.
4. The outside layer of the manufactured Tube (before wet out) shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate monitoring of resin saturation during the resin impregnation (wet out) procedure.
5. The Tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No dry or unsaturated layers shall be evident.
6. 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.
7. Seams in the Tube shall be stronger than the non-seamed felt.
8. The outside of the Tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 ft. Such markings shall include the Manufacturer's name or identifying symbol. The tubes must be manufactured in the USA.
9. A water tight seal is required at each manhole connection. A hydrophilic sealant (or equivalent) should be applied to the backside of the connections to enhance this watertight seal. Said material can be made up of a paste or O-ring type water swelling material to prevent water tracking between CIPP and host pipe. Other methods may be considered after submittal to the Engineer.

B. Resin

1. The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that when properly cured within the tube composite meets the requirements of ASTM F1216 and ASTM F1743, the physical properties herein, and those which are to be utilized in the Design of the CIPP for this project. The resin shall produce CIPP which will comply with the structural and chemical resistance requirements of this specification.
2. The resin used shall be high-grade corrosion resistant isophthalic polyester specifically designed for the cured-in-place pipe (CIPP) being installed. Only PREMIUM, NON-RECYCLED resin shall be used. PET resins or those containing fillers, additives or enhancement agents shall not be used.
3. The Engineer at this discretion shall have the right to inspect the designated wet out facility and randomly draw samples of the resin used to wet-out the CIPP used under this contract.

2.02 STRUCTURAL REQUIREMENTS

- A. The CIPP shall be designed as per ASTM F1216, Appendix X.1. The CIPP design shall assume no bonding to the original pipe wall.
 - B. The Contractor must have performed long-term testing for flexural creep of the CIPP pipe material installed by his Company. Such testing results are to be used to determine the Long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (Tube and Resin) and general workmanship of
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the installation and curing. A percentage of the instantaneous flexural modulus value (as measured by ASTM D-790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. The materials utilized for the contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in Design.

- C. The Enhancement Factor 'K' to be used in 'Partially Deteriorated' Design conditions shall be assigned a value of 7. Application of Enhancement (K) Factors in excess of 7 shall be substantiated through independent test data.
- D. The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If separation of the layers occurs during testing of field samples, new samples will be cut from the work. Any recurrence may cause rejection of the work.
- E. The cured pipe material (CIPP) shall conform to the structural properties, as listed below:

MINIMUM PHYSICAL PROPERTIES

Composite Property	Test Method	Cured Composite	Cured
		min. per ASTM F1216	(400,000 psi Resin)
Modulus of Elasticity	ASTM D-790 (short term)	250,000 psi	400,000 psi
Flexural Stress	ASTM D-790	4,500 psi	4,000 psi

The required structural CIPP wall thickness shall be based as a minimum, on the physical properties in Section 5.5 and in accordance with the Design Equations in the appendix of ASTM F 1216, and the following design parameters:

Design Safety Factor	= <u>2.0</u>
	= <u>1% - 50%</u>
Retention Factor for Long-Term Flexural Modulus to be used in Design (as determined by Long-Term tests described in paragraph 5.2)	
Ovality*	= <u>2%</u>
	= <u>See Section 5.3</u>
Enhancement Factor, k	
Groundwater Depth (above invert)*	= <u>ft.</u>

_____	= _____ ft.
Soil Depth (above crown)*	
_____	= _____ Psi
Soil Modulus**	
Soil Density**	= _____ 120 pcf
Live Load***	= _____ H20
Highway _____	
Design Condition (partially or fully deteriorated)***	= _____ ***

* Denotes information which can be provided here or in inspection video tapes or project construction plans. Multiple line segments may require a table of values.

** Denotes information required only for fully deteriorated design conditions.

*** Based on review of video logs, conditions of pipeline can be fully or partially deteriorated.

(See ASTM F1216 Appendix) The Owner will be sole judge as to pipe conditions and parameters utilized in Design. Refer to the attached Dimensional Ratio table for specific pipe section requirements, based on the pipe condition, depth, ovality, etc. as computed for the conditions shown, using ASTM F 1216 Design Equations.

- F. Any layers of the tube that are not saturated with resin prior to insertion into the existing pipe shall not be included in the structural CIPP wall thickness computation.

2.03 TESTING REQUIREMENTS

- A. Chemical Resistance - The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical testing requirements.
- B. Hydraulic Capacity - Overall, the hydraulic profile shall be maintained as large as possible. The CIPP shall have a minimum of 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.
- C. CIPP Field Samples - When requested by the Owner, the Contractor shall submit test results from field installations in the USA of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the CIPP physical properties specified in Section 5.5 have been achieved in previous field applications. Samples for this project shall be made and tested as described in Section 10.1.

PART 3 - EXECUTION

3.01 INSTALLATION RESPONSIBILITIES FOR INCIDENTAL ITEMS

- A. It shall be the responsibility of the Owner to locate and designate all manhole access points open and accessible for the work, and provide rights of access to these points. If a street must be closed to traffic due to the orientation of the sewer and is approved by the Engineer, the Contractor shall institute the actions necessary to do so in accordance with the Manual for Uniform Traffic Control Devices, latest edition. Contractor shall notify the Engineer 48 hours prior to any road closures so emergency responders can be notified.
 - B. The Owner shall provide free access to water hydrants for cleaning, inversion and other work items requiring water. Contractor shall maintain a log of the water used.
 - C. Cleaning of Sewer Lines - The Contractor, shall remove all internal debris out of the sewer line that will interfere with the installation of CIPP. The Owner shall also provide a dump site for all debris removed from the sewers during the cleaning operation.
 - D. Bypassing Sewage - The Contractor, when required, shall provide for the flow of sewage around the section or sections of pipe designated for repair. The bypass shall be made by plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow. The Owner may require a detail of the bypass plan to be submitted.
 - E. Inspection of Pipelines - Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles and service connections by close circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions, which may prevent proper installation of CIPP into the pipelines, and it shall be noted so that these conditions can be corrected. A video tape and suitable log shall be kept for later reference by the Owner. Prior to submission, all video must be reviewed by a PACP certified technician who is not the original field operator. All segments must be labeled with appropriate PACP ID number for the reviewer.
 - F. Line Obstructions - It shall be the responsibility of the Contractor to clear the line of obstructions such as solids and roots that will prevent the insertion of CIPP. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the inversion process, that was not evident on the pre-bid video and it cannot be removed by conventional sewer cleaning equipment, then the Contractor shall make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the Owner's representative prior to the commencement of the work and shall be considered as a separate pay item.
 - G. Public Notification - The Contractor shall make every effort to maintain service usage throughout the duration of the project. In the event that a service will be out of service, the maximum amount of time of no service shall be 8 hours for any property served by the sewer. A public notification program shall be implemented, and shall as a minimum, require the Contractor to be responsible for contacting each home or business connected to the sanitary sewer and informing them of the work to be conducted, and when the sewer will be off-line. The Contractor shall also provide the following:
 - 1. Written notice to be delivered to each home or business the day prior to the beginning of work being conducted on the section, and a local telephone number of the Contractor they can call to discuss the project or any problems which could arise.
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2. Personal contact with any home or business, which cannot be reconnected within the time stated in the written notice.
- H. The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing and curing the CIPP.

3.02 INSTALLATION

CIPP installation shall be in accordance with ASTM F1216, Section 7, or ASTM F1743, Section 6, with the following modifications:

- A. Resin Impregnation - The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used. To insure thorough resin saturation throughout the length of the felt tube, the point of vacuum shall be no further than 25 feet from the point of initial resin introduction.
- B. After vacuum in the tube is established, a vacuum point shall be no further than 75 feet from the leading edge of the resin. The leading edge of the resin slug shall be as near to perpendicular as possible. A roller system shall be used to uniformly distribute the resin throughout the tube. If the Installer uses an alternate method of resin impregnation, the method must produce the same results. Any alternate resin impregnation method must be proven.
- C. Hydrophilic Material – Prior to the mainline installation of the CIPP, a hydrophilic material shall be applied to any manhole and lateral line connection to create a water tight seal once the CIPP is in place. Contractor shall consult with the Engineer on which type of hydrophilic material they have chosen in order to determine if said material is adequate to use.
- D. Tube Insertion – The wet out tube shall be positioned in the pipeline using either inversion or a pull-in method. If pulled into place, a power winch should be utilized and care should be exercised not to damage the tube as a result of pull-in friction. The tube 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.
- E. Temperature gauges shall be placed inside the tube at the invert level of each end to monitor the temperatures during the cure cycle.
- F. Curing shall be accomplished by utilizing hot water under hydrostatic pressure or steam pressure in accordance with the manufacturer's recommended cure schedule.

3.03 REINSTATEMENT OF BRANCH CONNECTIONS

It is the intent of these specifications that branch connections to buildings be reopened without excavation, utilizing a remote-controlled cutting device, monitored by a video TV camera. The Contractor shall certify he has a minimum of 2 complete working cutters plus spare key components on the site before each inversion. Unless otherwise directed by the owner or his authorized representative, all laterals will be reinstated. No additional payment will be made for excavations for the purpose of reopening connections and the

Contractor will be responsible for all costs and liability associated with such excavation and restoration work.

3.04 INSPECTION AND TESTING

- A. CIPP samples shall be prepared and physical properties tested in accordance with ASTM D5813, Section 7, ASTM F1216 or ASTM F1743, Section 8, using either method proposed. The flexural properties must meet or exceed the values listed in Table 1 of the applicable ASTM.
- B. Wall thickness of samples shall be determined as described in paragraph 6.3.3 of ASTM D5813 or paragraph 8.1.6 of ASTM F1743. The minimum wall thickness at any point shall not be less than 100% of the design thickness as calculated in paragraph 5.6 of this document.
- C. Visual inspection of the CIPP shall be in accordance with ASTM F1743, Section 8.6.
- D. One (1) sample per day per diameter shall be tested to determine if lining materials meet minimum requirements specified in this section. Testing shall be performed by an independent testing laboratory, under contract to the Contractor, in accordance with applicable ASTM Standards.
- E. Final Inspection- Upon Completion of installation, sewers shall be CCTV inspected, providing both a video recording and log which identifies all service connections and openings. The entire pipe sections rehabilitated shall be recorded and delivered to the Engineer.

3.05 CLEAN-UP

Upon acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work.

PART 4 - COMPENSATION

4.01 GENERAL

- A. No separate payment shall be made for any item necessary for the completion of the work indicated on the Contract Drawings and in the Specifications but not shown as a pay item on the proposal form; therefore, full compensation for these items shall be considered absorbed in the Contract Lump Sum or related pay items.
- B. The prices thus paid shall be full compensation for completing the work. Materials or work for which a pay item is not included and are necessary to complete the work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

4.02 MEASUREMENT AND PAYMENT

- A. Measurement for the work included in this section will be in accordance with the units set forth in the proposal. Unit prices shall include all labor, materials and equipment required to complete the work as specified. The unit prices shall also include CCTV prior to and after lining, cleaning, and bypass pumping of main pipe flow.
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- B. Payment for accepted quantities of service pipe lined shall be paid for at the contract unit price bid per linear foot. Said unit price shall constitute full compensation for furnishing of all labor, materials, and any incidental items necessary to complete the work.

4.03 BASIS OF PAYMENT: Payment will be made at the Contract Unit Prices bid per Unit (Each) for the various types of drainage structures as itemized on the proposal. Differing sizes and depths of drainage structures shall be considered absorbed cost with other work shown unless itemized.

MANHOLE STRUCTURE REHABILITATION LINING

PART 1 – GENERAL

1.01 SCOPE

- A. It is the intent of this contract to install a high quality protective or restoration coating system to the interior surfaces of identified manholes, wetwells, or other structures. For existing structures, the structures will be identified after the manhole inspection is completed in order to determine which manholes require (if any) which type of coating system. This specification covers work, materials, equipment, and tools including specially developed application equipment as required for installation of a field applied interior surfacing system. The use of specialized equipment combined with rigorous surface preparation requirements shall be used to apply the products without the use of solvents. Product application requirements and procedures described herein include surface preparation, mixing application, material handling and storage, qualification of the applicator, and application quality control.
- B. The condition of the structures to receive the protective coating will be classified in accordance with the following criteria:

CONDITION	DESCRIPTION
New	New structures or structures that have not been exposed to sanitary sewer. No evidence of infiltration.
A	Minimal damage. Minimal evidence of exposure to sanitary sewer gases. No evidence of infiltration.
B	Moderate damage such as some missing mortar between bricks in brick manholes, some exposed aggregates in concrete structures. Moderate evidence of exposure to sanitary sewer gases. Evidence of minimal to moderate infiltration.
C	Severe damage such as significant missing bricks in brick manholes, severe exposed aggregates or exposed reinforcing steel in concrete structures. Severe evidence of exposure to sewer gases. Evidence of moderate to heavy infiltration.

- C. The minimum coating system type shall be as described in the following table:

STRUCTURE CONDITION	STRUCTURE MATERIAL	NON-STRUCTURAL / STRUCTURAL	SYSTEM TYPE
New	Precast	Non-Structural	1
New	Brick	Non-Structural	2

A	Precast	Non-Structural	2
A	Brick	Non-Structural	3
B	Precast	Structural	4
B	Brick	Structural	5
C	Precast	Structural	6
C	Brick	Structural	7

1.02 DESCRIPTION OF SYSTEMS

A. The following systems have been designated as the minimum acceptable requirements for the conditions listed in the above table.

1. System 1
 - (a) Epoxy System
 - i. Minimum 125 mils DFT of approved epoxy coating
 2. System 2
 - (a) Epoxy System
 - i. Minimum 125 mils DFT of approved epoxy coating
 3. System 3
 - (a) Cementitious System
 - i. Minimum ½" of approved Geopolymer coating
 - (b) Epoxy System
 - i. Minimum 180 mils DFT of approved epoxy coating
 - (c) Composite System
 - i. Minimum ½" of approved Portland cement underlayment with 80 mils of approved epoxy coating
 - (d) CIPM System
 - i. Minimum 0.099 in. thickness of approved CIPM liner
 4. System 4
 - (a) Cementitious System
 - i. Minimum ¾" of approved Geopolymer coating
 - (b) Epoxy System
 - i. Minimum 180 mils DFT of approved epoxy coating
 - (c) Composite System
 - i. Minimum ¾" of approved Portland cement underlayment with 100 mils of approved epoxy coating
 - (d) CIPM System
 - i. Minimum 0.099 in. thickness of approved CIPM liner
 5. System 5
 - (a) Cementitious System
 - i. Minimum ¾" of approved Geopolymer coating
 - (b) Epoxy System
 - i. Minimum 200 mils DFT of approved epoxy coating
 - (c) Composite System
 - i. Minimum ¾" of approved Portland cement underlayment with 100 mils of approved epoxy coating
 - (d) CIPM System
 - i. Minimum 0.117 in. thickness of approved CIPM liner
 6. System 6
 - (a) Cementitious System
 - i. Minimum ¾" of approved Geopolymer coating
 - (b) Epoxy System
-

- i. Minimum 250 mils DFT of approved epoxy coating
 - (c) Composite System
 - i. Minimum ¾" of approved Portland cement underlayment with minimum 100 mils of approved epoxy coating
 - (d) CIPM System
 - i. Minimum 0.122 in. thickness of approved CIPM liner
- 7. System 7
 - (a) Cementitious System
 - i. Minimum 1" of approved Geopolymer coating
 - (b) Epoxy System
 - i. Minimum 350 mils DFT of approved epoxy coating
 - (c) Composite System
 - i. Minimum 1" of approved Portland cement underlayment with minimum 100 mils of approved epoxy coating
 - (d) CIPM System
 - i. Minimum 0.158 in. thickness of approved CIPM liner

1.03 REFERENCES AND STANDARDS

- A. All references and standards listed shall be the latest revisions.
 - B. References
 - 1. American Society for Testing and Materials (ASTM)
 - 2. International standard Organisation (ISO)
 - 3. National Association of Corrosion Engineers (NACE)
 - 4. SSPC
 - 5. International Concrete Repair Institute (ICRI)
 - 6. American Concrete Institute
 - C. ASTM Standards
 - 1. ASTM D638: Tensile Properties of Plastics
 - 2. ASTM D790: Flexural Properties of Un-reinforced and Reinforced Plastics
 - 3. ASTM D695: Compressive Strength of Rigid Plastics
 - 4. ASTM D4541: Pull-off Strength of Coatings Using a Portable Adhesion Tester
 - 5. ASTM D2584: Volatile Matter Content
 - 6. ASTM D2240: Durometer Hardness, Type D
 - 7. ASTM D1653: Water Vapor Transmission of Organic Coating Films
 - 8. ASTM D543: Resistance of Plastics to Chemical Reagents
 - 9. ASTM C297: Flatwise Tensile Strength of Sandwich Constructions.
 - 10. ASTM E-1907: Calcium Chloride Test for Moisture Vapor Transmission.
 - 11. ASTM D-4263: Test Method for Indicating Moisture in concrete by Plastic Sheet Method.
 - 12. ASTM E-337: Test Method for Measuring Humidity with a Psychomotor.
 - 13. ASTM D-6132: Test Method for Nondestructive Measurement of Dry Film Thickness of Applied Organic Coatings Using an Ultrasonic Gauge.
 - 14. ASTM D-4138: Test Method for Measurement of Dry film Thickness of Protective Coating Systems by Destructive Means.
 - 15. ASTM D-4787: Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates.
 - 16. ASTM C39/C39M: Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - 17. ASTM C666/C666M: Standard Test for Resistance of Concrete to Rapid Freezing and Thawing.
 - D. SSPC Standards
 - 1. SSPC Publication No. 91-08: Surface Preparation Specifications
 - 2. SSPC TU-13: Surface Preparation of Concrete
 - 3. SSPC TU-2: Design, Installation and Maintenance of Coating Systems for Concrete
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- E. NACE Standards
 - 1. NACE Standard SP 0188: discontinuity (Holiday) Testing for Protective Coatings
 - 2. NACE Standard SP 0892: Linings Over Concrete for Immersion Service
 - 3. NACE No. 6: Surface Preparation of Concrete
 - 4. NACE 6/SSPC 13: A Joint Standard for Surface Preparation of Concrete
- F. Other Standards
 - 1. ICRI Technical Guidelines 03730: Surface Preparation Guidelines for the Repair of Deteriorated Concrete Resulting from Reinforced Steel Corrosion
 - 2. ICRI Technical Guidelines 03731: Guide for Selecting Application Methods for the Repair of Concrete Surfaces
 - 3. ICRI Technical Guidelines 03732: Guide for Selecting and Specifying Surface Preparation for Sealers, Coatings and Membranes

1.04 SUBMITTALS

- A. All submittals shall be submitted in accordance with the applicable portions of these specifications.
- B. The Contractor shall submit the following information to the Engineer for approval prior to beginning the installation of the protective coating:
 - 1. Manufactures data sheets for the coating materials
 - 2. Third party test results verifying the physical properties of the coating materials meet or exceed the requirements of these specifications.
 - 3. Applicator's procedures for preparing the surface of the structure and installing the coating system.
 - 4. Documentation that the Applicator of the coating has been trained and certified by the Manufacturer.
 - 5. Material Safety Data Sheets (MSDS) for each product used.
 - 6. Certification that the equipment to be used for applying the products has been manufactured or approved by the protective coating manufacturer and Applicator personnel have been trained and certified for proper use of the equipment.
 - 7. Five (5) recent references of Applicator (projects similar size and scope) indicating successful application of coating process proposed to be used for this application.

1.05 QUALITY ASSURANCE

- A. Applicator shall initiate and enforce quality control procedures consistent with applicable ASTM, NACE and SSPC standards and the protective coating manufacturer's recommendations.
 - B. Installer shall use an adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts. These workmen shall be completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
 - C. Installer shall use approved specialty equipment adequate in size, capacity and number sufficient to accomplish the work of this Section in a timely manner.
 - D. Testing and Inspection
 - 1. Thickness of coatings should be measured using non-destructive methods as recommended by the system manufacturer to ensure a uniform thickness during application.
 - 2. The Engineer and Installer shall make a final visual inspection. Any deficiencies in the finished system shall be marked and repaired according to the procedures set forth herein by Applicator.
 - E. Owner Reserves the right to:
 - 1. View surface preparation prior to installation of any primer or surfacer.
 - 2. View primer and/or surface installation prior to installation of topcoat.
 - 3. View installation of surfacer during application to determine wet film thickness.
 - 4. View installation of topcoat during application to determine wet film thickness.
 - F. Contractor shall make each manhole available to Owner or Owner's representative to make the viewings.
-

- G. Any visible “blistering” in any coat will be considered a failure of that coat and contractor shall remove the failed coat before proceeding to the next coat.
- H. After the protective coating has set hard to the touch it shall be inspected with high-voltage holiday detection equipment. Surface shall first be dried, then an induced holiday shall be made on to the coated concrete surface and shall serve to determine the minimum/maximum voltage to be used to test the coating for holidays at that particular area. The spark tester shall be initially set at 100 volts per 1 mil (25 microns) of film thickness applied but may be adjusted as necessary to detect the induced holiday (refer to NACE RPO188-99). All detected holidays shall be marked and repaired by abrading the coating surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional protective coating material can be hand applied to the repair area. All touch-up/repair procedures shall follow the protective coating manufacturer's recommendations.
- I. The municipal sewer system may be put back into non-severe operational service as soon as the final inspection has taken place. However, for severe corrosion duty such as high concentrations of acids, bases or solvents, 3 to 7 days and/or force cure by heat induction to the coated surfaces may be necessary prior to returning to service. Consult coating manufacturer for further details.
- J. After the system has set hard to the touch it shall be inspected by the Engineer verifying the following:
 - 1. Groundwater infiltration of the system shall be zero.
 - 2. All pipe connections shall be open and clear.
 - 3. No cracks, voids, pinholes, uncured spots, dry spots, lifts, delamination, or other type defects shall be evident in the system.

1.06 SITE CONDITIONS

- A. Applicator shall conform with all local, state and federal regulations including those set forth by OSHA, RCRA and the EPA and any other applicable authorities.

1.07 WARRANTY

- A. The contractor shall warranty all materials of construction and repair and all workmanship for a period of five years from the date of acceptance of final work. The five-year warranty of the installed product shall cover the following (but not be limited to):
 - 1. Stop deterioration of the lined surfaces by sewer gas induced corrosion
 - 2. Prevent infiltration of ground water into the collection system through the lined surfaces.
 - 3. Stop root intrusion through the lined surfaces.
- B. Should defects of failures occur during the period of warranty, the contractor shall promptly take whatever steps are necessary to return the work to first class condition.

PART 2 – PRODUCTS

2.01 PORTLAND CEMENT UNDERLAYMENT PRODUCTS

- A. Portland Cement Underlayment - A Portland cement based, single component, high strength, fiber reinforced, shrinkage compensated cement mortar enhanced with a monocrystalline quartz aggregate.
- B. Typical Physical Properties
 - 1. Compressive Strength (ASTM C 579) >9000 psi
 - 2. Tensile Strength (ASTM C 496) > 850 psi
 - 3. Freeze-Thaw No visible damage after 300 cycles
 - 4. Shrinkage (ASTM C 531) <0.0220% linear shrinkage
 - 5. Set Time (ASTM C 191) Final Set time: 80 minutes

2.02 GEOPOLYMER LINING PRODUCTS

- A. Geopolymer Lining - A geopolymer formulated to provide corrosion resistant protection in a high hydrogen sulfide environment, restore structural integrity and eliminate the infiltration of groundwater in deteriorated structures.
 - B. Typical Physical Properties
 - 1. Compressive Strength, PSI >8000
 - 2. Freeze-Thaw No visible damage after 300 cycles
 - 3. Shrinkage <0.02%
-

2.03 100% SOLIDS EPOXY PRODUCTS

- A. Epoxy Coating - The coating system shall be a spray-applied 100% solids epoxy monolithic surfacing system for use in coating new or existing manholes, wetwells, lift stations, treatment plants, and other structures.
- B. Typical Physical Properties
- | | | |
|----|--|-------------------------|
| 1. | Minimum Compressive Strength (ASTM D695) | 13,000 psi |
| 2. | Minimum Tensile Strength (ASTM D 2370) | 8,500 psi |
| 3. | Minimum Flexural Strength (ASTM D790) | 12,000 psi |
| 4. | Minimum Bond Strength (ASTM D4541) | 900 psi |
| 5. | Minimum corrosion resistance suitable for environments pH of 0.5 or higher | |
| 6. | Chemical Immersion: NACE TM 0174 | |
| | (a) | 5% Acetic Acid |
| | (b) | 10% Sulfuric Acid |
| | (c) | 5% Calcium Hydroxide |
| | (d) | 5% Calcium Hypochlorite |
| | (e) | 50% Citric Acid |
| | (f) | 20% Lactic Acid |
| | (g) | 5% Phosphoric Acid |
| | (h) | 5% Potassium Hydroxide |
| | (i) | 5% Nitric Acid |
- Minimum requirement shall be no blistering, cracking, erosion of film, swelling, loss of adhesion or gloss loss after six months continuous immersion.

2.04 CURED IN PLACE MANHOLE (CIPM) LINER PRODUCTS

- A. The following products have been pre-approved for use on this project.
1. Poly-Triplex Liner by Envirocort Technologies
 2. Triplex® Liner System by McNeil Technologies
 3. Pre-Approved Equal(s)
- B. Cured-in-Place Lining System - The lining system shall be a cured-in-place liner method for use in new or existing manholes, wetwells, liftstations, treatment plants, and other structures.
-

C. Materials

1. Liner shall be of the type that allows rehabilitation of a concentric, eccentric, or flat top round structure without removing the access hatch frame, top section or corbel.
2. As a minimum the liner is composed of two outer layers of fiberglass with an impermeable membrane as the middle layer. Various weights of fiberglass are used to accommodate structural needs.
3. The layers of the liner will be impregnated with a modified epoxy resin. For additional liner thickness, additional layers of resin and fiberglass can be incorporated

2.05 WATER “PLUG” / HYDRAULIC CEMENT

- A. Manufactured specifically for use to stop active water leaks in concrete structures
- B. 60-90 second set time per ASTM C 403
- C. 1000 psi minimum compressive strength after 1 hour per ASTM C 109

PART 3 – EXECUTION

3.01 QUALITY ASSURANCE

- A. Installer shall be trained and certified by the manufacturer of the individual products and use surface preparation and product installation procedures and methods as directed by the manufacturer.
- B. Installer shall initiate and enforce quality control procedures consistent with applicable ASTM standards.
- C. Installer shall use an adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts. These workmen shall be completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- D. Installer shall use approved specialty equipment adequate in size, capacity and number sufficient to accomplish the work of this Section in a timely manner.

3.02 SAFETY

- A. Installer shall perform his work in a manner to protect the health and safety of all workmen and the public.
- B. All work shall be in accordance with standard industry safety practices.
- C. All work, including entry into confined spaces shall be performed in strict compliance with current OSHA regulations.

3.03 PRE-COAT INSPECTION

- A. The Installer’s vehicles and equipment must be able to access the structures to be coated under their own power.
- B. Active flows shall be dammed, plugged or diverted as required to ensure that the liquid flow is maintained below the surfaces to be coated.
- C. Installation of the protective coating shall not commence on any surfaces containing freshly poured concrete until the concrete substrate has properly cured, and in no case less than 28 days.
- D. Installer shall identify all services between each manhole to be lined and the first manhole upstream of each manhole to be lined and coordinate with each customer for uninterrupted service.
- E. Installer to keep sewer system active during rehabilitation of each structure.

3.04 SURFACE PREPARATION

- A. Installer shall inspect all surfaces specified to receive the surfacing system prior to surface preparation. Installer shall promptly notify Owner of any noticeable disparity in the surfaces that may interfere with the proper preparation or application of the surfacing system.
- B. All concrete that is not sound or has been damaged by chemical exposure shall be

- restored to a sound concrete surface. All contaminants including all oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants shall be removed.
- C. Surfaces to receive protective coating shall be cleaned to produce a sound concrete or masonry surface with adequate profile and porosity to provide a strong bond between the surfacing system and the substrate. Surface preparation methods shall be based upon the conditions of the substrate and the requirements of the surfacing system to be applied, but as a minimum, shall be in accordance with the manufacturer's guidelines, or this specification, whichever is more stringent.
 - D. All surfaces including benches, inverts, joints, lift holes and walls shall be made smooth and suitable for application of the interior surfacing system. All benches and inverts shall be in place and complete.
 - E. Temperature of the surface to be coated should be maintained between 40 deg F and 120 deg F during application. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated. Where varying surface temperatures do exist, care should be taken to apply the coating when the temperature is falling versus rising (ie. late afternoon into evening vs. morning into afternoon).
 - F. The applicator shall follow all regulations for contained space entry. The first procedure upon entering each structure will be to blast all specified surfaces by low pressure water cleaning as defined by NACE Standard 5. When all loose and/or contaminated debris has been removed, the surface shall be water blasted by the use of a held wand again. The wash water shall include a dilute solution of chlorine to diminish microbiological bacteria growth and to kill any bacteria residing on or in the surface. The surface will be tested at this point to ensure that the pH is within acceptable limits (not to exceed 8.5). These tests will be performed with litmus paper on various areas within the structure. All test results will be retained for review by the Engineer.

3.05 APPLICATION

- A. The interior surfacing system shall be applied to the specified surfaces of all other structures.
- B. The interior surfacing system shall be continuously bonded to all brick, mortar, concrete, chemical sealant, grout, pipe and other surfaces inside the manhole according to ASTM C882 testing and therefore shall be designed for hydrostatic loading.
- C. The cured surfacing shall have proper sealing connections to all un-surfaced areas and shall be placed and cured in conformance with the recommendations of the system manufacturer.
- D. When cured, the system shall form a continuous, tight-fitting, hard, impermeable surfacing that is suitable for sewer system service and chemically resistant to any chemicals, bacteria or vapors normally found in domestic sewage.
- E. The system shall effectively seal the interior surfaces of the structure and prevent any penetration or leakage of groundwater infiltration.
- F. The system shall be compatible with the thermal conditions of the existing sewer structure surfaces.
- G. Application procedures shall conform to the recommendations of the interior surfacing system manufacturer, including material handling, mixing, and environmental controls during application, safety, and equipment.
- H. The equipment shall be specially designated to accurately ratio and apply the specified materials and shall be regularly maintained and in proper working order.
- I. The specified materials must be applied by an approved installer of the surfacing system.
- J. The walls of the structure shall be lined with the surfacing system to provide a thickness as previously specified based on the condition of the existing structure. The cured

- surfacing shall have proper sealing connections to all un-surfaced areas and shall be placed and cured in accordance with the recommendations of the system manufacturer.
- K. Repair materials shall be used to fill voids, structurally reinforce and/or rebuild surfaces, etc. as determined necessary by the engineer and protective coating applicator. Repair materials must be compatible with the specified epoxy coating and shall be applied in accordance with the manufacturer's recommendations to a minimum thickness of ¼ inch.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

Measurement for new and rehabilitated structures shall be per vertical foot and shall be measured as the total area that receives the protective coating. No separate payment shall be made for any item necessary for the completion of the work indicated on the Contract Drawings and in the Specifications but not shown as a pay item on the proposal form; therefore, full compensation for these items shall be considered absorbed in the Contract Lump Sum or related pay items.

4.02 PAYMENT

Payment shall be in accordance with the term bid bid tab and the associated units located there.

INSPECTION AND EVALUATION OF GRAVITY PIPELINES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. It is the intent of this work to assess the internal structural and service condition of the sewer line. Assessment will be performed using visual inspection and pan and tilt color camera-CCTV.
- B. Qualifications of Contractor: If requested by the Engineer, the proposed contractor shall submit a verifiable reference list documenting the successful completion of a minimum of 250,000 linear feet of internal sewer condition assessment on projects of similar size and scope to this project. The reference list along with a list of available equipment and resumes of key personnel shall be submitted to the Engineer a minimum of two weeks prior to bid.
- C. It is the intent of this work to survey individual sewer lines that have been installed as part of this contract, to assess internal structural condition, service condition and identify and locate miscellaneous construction features.
- D. It is the responsibility of the Contractor to comply with applicable OSHA regulations. The Contractor shall provide written documentation that all workers have received the training required under these regulations and guidelines.
- E. Two forms of internal condition assessment are addressed by these specifications:
1. Sewer survey – Detailed viewing of the sewer ("survey"), with the aid of CCTV equipment, to assess internal structural condition, service condition, and identify and locate miscellaneous construction features as well as assess the structural and service condition of laterals.

2. Sewer inspection – Viewing the sewer system pursuant to investigative work following other operational activity including:

- a. Locating manhole(s) and/or lateral(s) with or without radio-sonde
- b. Sewer preconditioning and cleaning activities
- c. Sewer rehabilitation, including point repairs
- d. Such other similar purposes as may be required by the Owner.

1.02 Sewer inspection shall be carried out manually or with the aid of CCTV equipment, to assess overall condition.

1.03 SUBMITTALS

A. As requested by the Engineer, the Contractor shall provide to the Engineer the following information in writing prior to the set deadline, or at the indicated frequency, whichever is applicable.

1. Project Schedule (At Pre-Construction Conference)
2. Listing of Cleaning Equipment & Procedures (At Commencement)
3. Listing of Flow Diversion Procedures (At Commencement)
4. Listing of Preconditioning Procedures (At Commencement)
5. Listing of Safety Precautions and Traffic Control Measures (At Commencement)
6. Listing of CCTV Equipment (At Commencement)
7. Listing of Backup and Standby Equipment (At Commencement)
8. Manufacturers Details of CCTV Equipment (At Commencement)
9. Location where Debris from Cleaning will be Disposed (At Commencement)
10. Updated Schedule of Planned Inspections/Cleaning of Sewer Reaches (Post Commencement, Weekly)
11. Submit Two (2) Copies of completed audio and video recordings of all inspected sewer lines with the corresponding inspection reports
12. Two (2) Copies of Inspection Report incorporating a summary statistical breakdown of defects and main findings
13. Inspection Logs:
 - a. Submit cleaning and television inspection logs for each section of sewer line to be rehabilitated.
 - b. Include following minimum information:
 - 1) Stationing and location of lateral services, wyes, or tees.
 - 2) Date and clock time references.
 - 3) Pipe joints.

- 4) Infiltration/inflow defects.
 - 5) Cracks
 - 6) Leaks
 - 7) Offset Joints
- 14. Confined Space Entry Logs (Daily)
- 15. Submit a specific detailed description for sequencing of work as agreed upon at preconstruction conference.
- 16. Submit collected video in an orderly systematic manner in electronic format. Data to be organized by project name, street name, right-of-way property name, and manhole numbers. Electronic data to include television inspection logs for each section of sewer line televised and or rehabilitated. Include the following as minimum information: stationing and location of lateral services, wyes, or tees, clock references, pipe joints, infiltration/inflow defects, cracks, leaks, offset joints, and other information required to assess condition of sewer using PACP Version 7.0 software compatible with management software.
- B. The Contractor shall complete a daily written record (diary) detailing the work carried out and any small items of work which were incidental to the contract. The Contractor shall include in his daily record, reference to:
 - 1. Delays: e.g. dense traffic, lack of information, sickness, labor or equipmentshortage.
 - 2. Weather: conditions, e.g. rain, etc.
 - 3. Equipment: on site, e.g. specialist cleaning, by-pass equipment, etc.
 - 4. Submittals: to the designated representative
 - 5. Personnel: on site by name, e.g., all labor, Specialist Services, etc.
 - 6. Accident: report, e.g. all injuries, vehicles, etc.
 - 7. Incident: report, e.g. damage to property, property owner complaint, etc.
 - 8. Major defects encountered, including collapsed pipe, if any: e.g. cave-ins, sinkholes, etc.
 - 9. Visitors: on site
- C. The Engineer's designated representative on site shall certify receipt of the daily record noting any items and adding any observations with reference to claims for payment to the Contractor. The Owner may at his discretion, for which the Contractor must receive direction in writing, make an exception to this requirementfor weekly submission of progress rather than for daily submission.

1.04 REQUIREMENTS AND EXTENT OF SURVEY/INSPECTION

- A. The Contractor shall inspect sewer lines with a color pan and tilt CCTV imagery as specified in order to record all relevant features and confirm their structural and service condition.
- B. Inspections of sewer systems shall be carried out in compliance with the NASSCO PACP reporting format and coding standards.
- C. CCTV operator(s) responsible for direct reporting of sewer condition shall have a minimum of 3 years previous experience in surveying, processing, and interpretation

of data associated with CCTV surveys/inspections. If requested by the Engineer, the Contractor shall provide the designated representative with written documentation that all CCTV survey operators meet these experience requirements which shall include a list of projects undertaken as well as client name and telephone number for reference.

- D. Approved Contractors will be required to provide evidence acceptable to the Engineer that all CCTV technicians performing work under this contract have satisfactorily completed NASSCO Pipeline Assessment Certification Program (PACP) training and possess valid PACP Certification documents. All defect coding, as well as material, shape and lining coding used throughout the project will conform to NASSCO's Pipeline Assessment Certification Program, PACP. Required training to meet these requirements will be carried out at the Contractor's expense.
- E. The Contractor shall complete a daily written record (diary) detailing the work carried out and any small items of work which were incidental to the contract as previously described in Item 1.03.

1.05 CCTV SURVEY/INSPECTION AND OPERATIONAL EQUIPMENT REQUIREMENTS

- A. The surveying/inspecting equipment shall be capable of surveying/inspecting a length of sewer up to at least 500 feet.
- B. Each survey/inspection unit shall contain a means to transport the CCTV camera in a stable condition through the sewer under survey and/or inspection. Such equipment shall ensure the maintained location of the CCTV camera when used independently on or near to the central axis of a circular shaped sewer.
- C. Where the CCTV camera is towed by winch and drum through the sewer, all winches shall be stable with either lockable or ratcheted drums. All drums shall be steel or of an equally non-elastic material to ensure the smooth and steady progress of the CCTV camera equipment. All winches shall be inherently stable under loaded conditions.
- D. Each unit shall carry sufficient numbers of guides and rollers such that, when surveying or inspecting, all bonds are supported away from pipe and manhole structures and all CCTV cables and/or lines used to measure the CCTV camera's location within the sewer are maintained in a taut manner and set at right angles where possible, to run through or over the measuring equipment.
- E. Each unit shall carry a range of flow control plugs or diaphragms for use in controlling the flow during the survey/inspection. A minimum of one item of each size of plug or diaphragm – within the range of pipe sizes set out in the contract - shall be carried
- F. Each survey/inspection unit shall have on call equipment available to carry out the flushing, rodding and jetting of sewers as and when such procedures are deemed to be necessary.

1.06 FIELD SUPERVISION BY CONTRACTOR

The Contractor shall maintain on site at all times a competent field supervisor in charge of the survey/inspection. The field supervisor shall be responsible for the safety of all site workers

and site conditions as well as ensuring that all work is conducted in conformance with these specifications and to the level of quality specified.

1.07 APPLICATION OF INSPECTION TYPE

- A. The following guidelines concerning the use of CCTV shall be followed, subject to the review and approval of the designated Engineer:
 - 1. Generally, CCTV alone shall be used for internal condition assessment where the depth of flow of sewage is less than 25% of overall sewer diameter at the start of the survey. The Contractor will make an informed decision to continue should the depth of flow increase beyond the 25% level but no greater than 40% of overall sewer diameter at any time throughout the length.
 - 2. Generally, CCTV combined with plugging and/or bypassing shall be used for internal condition assessment where depth of flow of sewage varies from 25% to 75% of overall sewer diameter for sewers greater than 24-inches in diameter. Where depth of flow of sewage exceeds 25% and is less than 75% of overall sewer diameter the designated Engineer shall instruct Contractor to either:
 - a. Continue using CCTV (where depth of flow is only marginally greater than 25% of overall diameter) or
 - b. Use plugging/bypass pumping to reduce flow levels below 25%.

1.08 RESPONSIBILITY FOR OVERFLOWS OR SPILLS

- A. It shall be the responsibility of the Contractor to schedule and perform his work in a manner that does not cause or contribute to incidence of overflows or spills of sewage from the sewer system.
- B. In the event that the Contractor work activities contribute to overflows or spills, the Contractor shall immediately take appropriate action to contain and stop the overflow, clean up the spillage, disinfect the area affected by the spill, and notify the designated representative in a timely manner.
- C. Contractor will indemnify and hold harmless the Owner for any fines or third-party claims for personal or property damage arising out of a spill or overflow that is fully or partially the responsibility of the Contractor, including the legal, engineering and administrative expenses of the Owner in defending such fines and claims.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PREPARATION

- A. Flush and clean pipeline to remove sludge, dirt, sand, stone, grease, and other materials to ensure clear view of interior conditions.
- B. Debris:
 - 1. Intercept flushed debris at next downstream manhole using weir or screening device.

2. Remove and dispose of debris off site.
- C. Bypassing:
 1. Furnish temporary bypass pumping system (if needed) around work area for time required to complete television inspection.
 2. Provide standby pump of equal or greater capacity at bypass location.

3.02 SEWER CLEANING UNITS AND EQUIPMENT

- A. The Contractor shall provide sufficient sewer cleaning units and equipment in order to complete cleaning operations as specified.
- B. The Contractor shall exert all reasonable care to avoid damage to the sewer or manhole during the cleaning operation.

3.03 REMOVAL OF DEBRIS WITH CLEANING

The Contractor shall provide all equipment and personnel necessary to safely remove and extract silt and debris from the sewer through existing manhole access.

3.04 CCTV - GENERAL

- A. CCTV Camera Prime Position: The CCTV camera shall be positioned to reduce the risk of picture distortion. In circular sewers the CCTV camera lens head shall be positioned centrally (i.e. in prime position) within the sewer. In non-circular sewers, picture orientation shall be taken at mid-height, unless otherwise agreed, and centered horizontally. In all instances, the camera lens head shall be positioned looking along the axis of the sewer when in prime position. A positioning tolerance of $\pm 10\%$ of the vertical sewer dimension shall be allowed when the camera is in prime position.
- B. CCTV Camera Speed: The speed of the CCTV camera in the sewer shall be limited to 30 LF per minute for surveys to enable all details to be extracted from the ultimate recording. Similar or slightly higher speed as agreed by the designated Engineer shall be provided for inspections.
- C. CCTV Color Camera: The Contractor shall provide a color span and tilt camera(s) to facilitate the survey and inspection of all laterals, including defects such as hydrogen sulfide corrosion in the soffit of sewers and benching or walls of manholes over and above the standard defects that require reporting, where required by the designated Engineer. These will be carried out as part of the normal CCTV assessment as the survey or inspection proceeds when instructed by the designated representative.
- D. Linear Measurement:
 1. The CCTV monitor display shall incorporate an automatically updated record in feet and tenths of a foot of the footage of the camera or center point of the transducer, whichever unit is being metered, from the cable calibration point. The relative positions of two center points should also be noted.
 2. The Contractor shall use a suitable metering device, which enable the cable length to be accurately measured; this shall be accurate to $\pm 1\%$ or 3 inches whichever is the greater.
 3. The Contractor shall demonstrate compliance with the tolerance listed above,

using one or both of the following methods in conjunction with a linear measurement audit form which shall be completed each day during the survey:

- a. Use of a cable calibration device
 - b. Tape measurement of the surface between manholes
4. A quality control form will be completed and submitted by the contractor depicting the level of accuracy achieved.
 5. If the Contractor fails to meet the required standard of accuracy, the designated representative shall instruct the Contractor to provide a new device to measure the footage. The designated Engineer retains the right to instruct the Contractor in writing, to re-survey those lengths sewer first inspected with the original measuring device using the new measuring device.

E. Data Display, Recording and Start of Survey/Inspection:

1. At the start of each sewer length being surveyed or inspected and each reverse set-up, the length of pipeline from zero footage, the entrance to the pipe, up to the cable calibration point shall be recorded and reported in order to obtain a full record of the sewer length. Only one survey shall be indicated in the final report. All reverse set-ups, blind manholes and buried manholes shall be logged on a separate log. Video digits shall be recorded so that every recorded feature has a correct tape elapsed time stamp. Each log shall make reference to a start and finish manhole unless abandonment took place because of blockage. Manhole number shall be indicated in the remark's column of the detail report.
2. The footage reading entered on to the data display at the cable calibration point must allow for the distance from the start of the survey/inspection to the cable calibration point such that the footage at the start of the survey is zero.
3. In the case of surveying through a manhole where a new header sheet must be completed, the footage shall be set at zero with the camera focused on the outgoing pipe entrance.
4. At the start of each manhole length a data generator shall electronically generate and clearly display on the viewing monitor and subsequently on the record of data in alpha-numeric form containing all fields required by the PACP information standard.
5. The size and position of the data display shall be such as not to interfere with the main subject of the picture.
6. Once the survey of the pipeline is under way, the following minimum information shall be continually displayed:
 - a. Automatic update of the camera's footage position in the sewer line from adjusted zero.
 - b. Sewer dimensions in feet.
 - c. Manhole or pipe length reference number (PLR). General convention allows upstream manhole number to be designated PLR.
 - d. Direction of survey, i.e. downstream or upstream.
7. Correct adjustment of the recording apparatus and monitor shall be

demonstrated by use of the test tape or other device approved by the Contractor. Satisfactory performance of the camera shall be demonstrated of each day for a minimum period of 30 seconds.

8. Footage and corresponding time elapsed video digit shall be given throughout survey/inspection for all relevant defects and construction features encountered unless otherwise agreed.
 9. Where silt encountered is greater than 10 percent of the diameter of the pipe, the depth of silt shall be recorded at approximately 50-foot intervals.
 10. All continuous defects shall incorporate a start and finish abbreviation in the log report.
- F. Coding: Defect coding, as well as Material, Shape, and Lining Coding, and conventions used throughout the project will be PACP-compliant. The CCTV Contractor must ensure that all surveyors conform to the detailed requirements of the reporting procedure concerning feature description and feature definition as well as the computer file format.

3.05 CODE AND MAN ENTRY SURVEY DATA SPECIFICATION

- A. Survey Reporting: The Contractor shall submit to the Engineer two (2) printed reports, two (2) DVD's with copies of all descriptive data in digital format and two (2) Thumb Drives of recordings. The supplied data and information shall remain the property of the Engineer.
- B. Site Coding Sheets: Each sewer length, i.e. the length of sewer between two consecutive manholes, shall be entered on a separate coding sheet or entered separately electronically. Thus, where a Contractor elects to "pull through" a manhole during a CCTV Survey or "walk through" during a Man Entry survey, a new coding sheet shall be started at the manhole "pulled or walked through" and the footage re-set to zero on the coding sheet. Where a length of sewer between consecutive manholes is surveyed from each end (due to an obstruction), two coding sheets should be used. Where a length of sewer between two consecutive manholes cannot be surveyed or attempted for practical reasons, a (complete header) coded sheet shall be made out defining the reason for abandonment. At uncharted manholes, a new coding sheet must be started and the footage re-set to zero.
- C. Measurement Units: All dimensions shall be in feet and tenths of a foot. Measurement of sewers shall be to the nearest tenth of a foot.
- D. CCTV and Man Entry Photographs:
1. Still photographs (JPEG format) shall be taken of all pipeline defects. Where a defect is continuous or repeated, the photographs shall be taken at the beginning and end of the defect.
 2. CCTV Photographs must clearly and accurately show what is displayed on the monitor, which shall be in proper adjustment.

E. CCTV Picture Quality:

1. An approved test device shall be provided and be available on site throughout the Contract, enabling the test specified in this clause to be checked.
2. The test card shall be Marconi Regulation Chart No. 1 or its approved derivatives with a color bar, clearly differentiating between colors, with no tinting, to show the following: White, Yellow, Cyan, Green, Magenta, Red, Blue and Black.
3. The electronic systems, television camera and monitor shall be of such quality as to enable the following to be achieved:
 - a. Shades of Gray: The gray scale shall allow equal changes in brightness ranging from black to white with a minimum of five clearly recognizable stages.
 - b. Color: With monitor adjusted for correct saturation, the six colors plus black and whites shall be clearly resolved with the primary and complementary colors in order of decreasing luminance. The gray scale shall appear in contrasting shades of gray with no tinge.
 - c. Linearity: The background grid shall show squares of equal size, without convergence/divergence over the whole of picture. The center circle shall appear round and have the correct height/width relationship ($\pm 5\%$).
 - d. Resolution: The live picture must be clearly visible with not interference and capable of registering a minimum number of TV lines/picture height lines. The resolution shall be checked with the monitor color turned down. In the case of tube cameras, this shall be 600 lines.
 - e. Color Constancy: To ensure the camera shall provide similar results when used with its own illumination source, the lighting shall be fixed in intensity prior to commencing the survey. In order to ensure color constancy, no variation in illumination shall normally take place during the survey.
4. The Contractor shall note that the designated Engineer may periodically check both the live and picture consistency against the color bar. Any differences will require re-survey of the new length or lengths affected, at the Contractor's expense.

F. CCTV Focus/Iris/Illumination: The adjustment of focus and iris shall allow optimum picture quality to be achieved and shall be remotely operated. The adjustment of focus and iris shall provide a minimum focal range from 6-inches in front of the camera's lens to infinity. The distance along the sewer in focus from the initial point of observation shall be a minimum of twice the vertical height of the sewer. The illumination must allow an even distribution of the light around the sewer perimeter without the loss of contrast picture, flare out or shadowing.

G. Contractor's Data Quality Control Procedure:

1. The Contractor shall operate a quality control system, to be approved by the designated Engineer, which will effectively gauge the accuracy of all survey reports produced by the operator.
2. The system shall be such that the accuracy of reporting is a function particularly of:
 - a. The number of faults not recorded (omissions)
 - b. The correctness of the coding and classification of each fault recorded.
3. Video with pipe section plugged as to view 100 percent of inside pipe diameter, use flow control methods to eliminate surcharging and reduce flow.
4. If during inspection camera will not pass-through entire segment, move to opposite manhole and perform.

3.06 PHYSICAL INSPECTION OF MANHOLES

A. General

Manholes shall be inspected to assess general physical condition and to locate leaks which are causing or could cause soil erosion and degradation to the sanitary systems, and/or other underground utilities or surface structures, and which are allowing leaks into, or out of, the sewer system.

B. Documentation of Inspection

1. Observations shall be recorded on a manhole physical inspection report form. Information recorded on these forms shall include but not be limited to location of the structure, relationship of a structure's incoming and outgoing lines, size of lines, depth of structure, condition of cover, ring, wall, bench and invert, type of material, and any other pertinent information which would allow sources of Infiltration/Inflow.
2. Color photographs shall be taken of the interior and exposed exterior of all manholes, and shall portray any defects as best as possible. The main purpose of the photographs is to assist management in decisions for future testing or rehabilitation purposes. The "Manhole Inspection Report" form will be used to record the inspection results. The Engineer shall approve the form to be used.
3. Besides any hard copy in the reports, photographs shall be provided to the Owner in a digital electronic version on thumb drives in the JPEG format. Each digital photo file and photograph, shall have a unique I.D. applied to it that will indicate which manhole is pictured, and will correspond to that features I.D. in the data.

- C. Contractor shall furnish all data and photographs gathered in the field investigation, and it shall be incorporated into a report listing all findings and recommendations for future inspection or rehabilitation.

3.07 COLLAPSED SEWERS/DEFECTIVE MANHOLES

- A. Any sewer found with greater than 10% deformation (i.e. collapsed or near to collapse) must be reported to the designated representative immediately for remedial action.
- B. Any manhole found broken, cracked, with missing covers or surcharges, must be reported to the designated representative immediately for remedial action.
- C. Any sewer found with existing conditions that pose a threat of personal injury to the public, such as a collapsed sewer with attendant depression roadway, must be protected by the Contractor until the designated representative arrives at the job site
- D. Any manhole found where the existing conditions pose a threat of personal injury to the public, such as broken, cracked, or missing covers or covers found in traveled portions of any sidewalk or roadway must be protected by the Contractor until the designated representative arrives at the job site.

PART 4 - COMPENSATION

4.01 GENERAL

- A. No separate payment shall be made for any item necessary for the completion of the work indicated on the Contract Drawings and in the Specifications but not shown as a pay item on the proposal form; therefore, full compensation for these items shall be considered absorbed in the Contract Lump Sum or related pay items.
- B. The prices thus paid shall be full compensation for completing the work. Materials or work for which a pay item is not included and are necessary to complete the work under this section shall be furnished or performed and shall be considered incidental to the completed construction.

4.02 MEASUREMENT AND PAYMENT

- A. When listed on the proposal as a separate pay item, payment shall be made under the unit bid item CCTV Inspection. If not listed separately, CCTV shall be absorbed in the cost of other pay items.
- B. CCTV of main lines shall be paid for in the respective CIPP pay items for each pipe size.
- C. CCTV of service laterals prior to CIPP lining shall be paid for under the "CCTV Service Laterals" pay item when a camera is launched into the lateral.
- D. CCTV of service laterals after lining shall be paid for under the respective CIPP Service Lateral pay item.

SANITARY SEWER SERVICE LATERAL LINE

PART 1 - GENERAL

1.01 SUMMARY

It is the intent of this specification to provide for the structural re-construction of 4" thru 6" diameter service laterals and a water tight interface connection seals in 6-inch through 27-inch main line pipes, normally without excavation, by the installation of a one piece resin impregnated, flexible, non-woven felt liner installed into the existing lateral connection utilizing a pressure apparatus positioned in the main pipe. Curing shall be accomplished by use of ambient cure resin or other approved methods to cure the resin into a hard impermeable Cured-In-Place-Pipe (CIPP). When cured, the liner shall have a watertight connection seal at the main pipe and extend over the length of the service lateral in a structural pipe-within-a-pipe.

1.02 QUALIFICATION OF CONTRACTOR

- A. Qualifications: The contractor or subcontractor performing the work must meet the following minimum requirements:
 - 1. License or Certification that the proposed installer is approved to install the proposed CIPP Lateral Lining system.
 - 2. A minimum of five (5) years of continuous experience and satisfactory performance installing CIPP Lateral Lining in pipe of similar size, length and configuration as proposed in the project.
 - 3. A minimum of 1,000 CIPP lateral installations as the contractor of record in a wastewater collection system application.
 - 4. The on-site Superintendent shall have installed a minimum of 500 CIPP laterals of like condition for this geographic area and have a minimum of five (5) years of CIPP industry experience.
 - 5. Qualified Contractors must have confirmed experience with lateral rehabilitation lengths no less than those specified in this contract.
- B. References: The contractor or subcontractor performing the lateral lining work shall provide a list of references in order to verify compliance with these qualifications. These references must include:
 - 1. Owner Name
 - 2. Contact Name with phone number
 - 3. Contract Name
 - 4. Start and completion dates
 - 5. Quantity of laterals lined
 - 6. CIPP Lateral Lining System used
 - 7. Name of the Contractor's site Superintendent that completed the work.

1.03 RELATED SECTIONS

- A. By-pass Pumping (also included within this section)
- B. Pipe Cleaning (also included within this section)
- C. Closed Circuit Television (CCTV) Inspection (also included in this section)
- D. Cleanout Assembly Detail (included in plans)

1.04 REFERENCES

This specification references ASTM test methods which are made a part hereof by such reference and shall be the latest edition and revision thereof.

1. ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
2. ASTM F1743 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe
3. ASTM D5813 – Standard Specification for Cured-in-Place Thermosetting Resin Sewer Piping Systems

1.05 SUBMITTALS

A. Product Data

1. Resin
 - a. Long term creep test data confirming the resin system's 50 year design life in accordance with ASTM D2990
 - b. Chemical Resistance in accordance with ASTM F1216
 - c. Certificate of Compliance in accordance with ASTM F1216
 - d. Material Safety Data Sheets (MSDS)
2. Liner
 - a. Certificate of Compliance in accordance with ASTM 1216
 - b. Certificate of Compliance in accordance with ASTM 1743 for pull in place tubes

B. CIPP wall thickness design calculations in accordance with ASTM F1216. Design calculations shall include applicable designs as follows:

1. 4" thru 6" diameter lateral liner assuming Fully Deteriorated conditions
2. Main line pipe liner assuming Partially Deteriorated conditions when the main line pipe is lined
3. Main line pipe liner assuming Fully Deteriorated conditions when the main line pipe is NOT lined

C. Product Qualifications/References

~~1. The CIPP Lateral Lining system proposed for this contract must meet the following minimum requirements. The Contractor or Subcontractor shall provide a list of references verifying the compliance with these qualifications.~~

- a. A five (5) year history of satisfactory performance of sanitary sewer use.
- b. A minimum of 15,000 CIPP lateral installations in the United States.

PART 2 - MATERIALS

2.01 MATERIALS

A. GENERAL REQUIREMENTS

1. Liner and resin will meet the requirements of ASTM F1216, F1743, and D5813

B. CIPP Lateral Materials

1. The liner shall be fabricated to a size that when installed will neatly fit the internal circumference of the conduit specified by the Owner. Allowance shall be made for circumferential stretching during insertion. The liner shall be a jointless polyester felt "tube" that will create a watertight seal at the main pipe interface.
2. The length shall be a distance to effectively span from the lateral connection at the main pipe or to the desired termination location in the service lateral pipe. For the purpose of this specification, the termination point shall be a distance of 4 feet from the mainline or the first bend in the service line, whichever is less. When required, an overlap method is performed with a pull-in-process installation from a cleanout or access point back to the main pipe. In either case, the lateral liner must provide a watertight seal at the main pipe and a structural repair of the lateral over the specified length. The installer shall verify the lengths in the field before impregnation of the resin.
3. Unless otherwise specified, this Installer shall furnish a specially designed, unsaturated, Polyester or Vinylester resin and catalyst system compatible with the cured-in-place process that provides cured physical strengths specified herein.

C. Physical Strength

1. The structural performance of the finished cured-in-place-pipe must be adequate to accommodate all anticipated loads throughout its design life. No cured-in-place-pipe reconstruction technology will be allowed that requires bonding to the existing pipe for any part of its structural strength. Only resin saturation using vacuum impregnation will be allowed. If reinforcing materials (fiberglass, etc.) are used, the reinforcing material must be fully encapsulated within the resin to assure that the reinforcement is not exposed, either to the inside of the pipe or at the interface of the CIPP and the existing pipe.
2. Design methods are to be derived from traditionally accepted pipe formulas for various loading parameters and modes of failure. All equations will be modified to include

ovality as a design parameter. The design method shall be submitted to the Engineer for approval.

3.The CIPP lateral pipe shall conform to the minimum structural standards as listed below:

<u>Property</u>	<u>ASTM Standard</u>	<u>Result</u>
Flexural Stress	ASTM D790	4,500 psi
Flexural Modulus	ASTM D790	250,000 psi

PART 3 - EXECUTION

3.01 INSTALLATION PREPARATIONS

- A. Access – If a cleanout already exists or is required by the Owner, it shall be constructed of materials which provide a four inch minimum diameter opening if the service lateral is four inches (4"). A six inch minimum diameter opening is required if the service lateral is six inches (6"). Any cleanouts shall comply with the "Cleanout Assembly Detail" in the drawings. Note: it is recommended that the cleanout is a double wye, double sweep Tee (or equivalent) shaped where the lateral and riser pipe joins to allow video inspection, cleaning and lining access. (Tee connections will not be permitted).
- B. Safety – The Installer shall carry out his operations in strict accordance with all applicable OSHA standards. Particular attention is drawn to those safety requirements involving entrance into confined spaces.
- C. Cleaning of Sewer Line – The intent of this specification is for cleaning of the lateral to be accomplished from the main pipe via lateral launching equipment. If the lateral cannot be cleaned using industry standard cleaning heads that can be launched from the main pipe, then a cleanout or access point will be required. The laterals shall be cleaned a sufficient length to ensure the specified length of sewer is ready for lining. It shall be the responsibility of the Installer to verify, prior to installation, that all internal debris has been removed from the sewer line. Internal debris consists of broken pipe sections, roots, loose gravel, etc.
- D. Inspection of Pipelines – It is the intent of this specification for inspection of the lateral to be accomplished from the main pipe via lateral launching equipment. If the lateral cannot be inspected using industry standard inspection equipment that can be launched from the main pipe, then a cleanout or access point will be required. Inspection of pipelines shall be performed by experienced personnel trained (PACP Certification) in locating breaks and obstacles by closed circuit television (CCTV). The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation of the lateral liner into the pipelines, and it shall be noted

so that these conditions can be corrected. A DVD and suitable log shall be kept for later reference by the Owner.

- E. Bypassing Sewage – The Installer, when required, shall provide for the flow of sewage around the section(s) of main pipe where the service lateral designated for lining is located. The bypass shall be made by plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow. It is assumed that flows in the lateral specified for lining will not require bypass pumping.
- F. It is required that the service lateral be inactive during the time of installation. This is normally accomplished by turning off the homeowner's services or requesting that the homeowner relinquish using his services during the period of installation. Notification shall be distributed to impacted residents a minimum of 24 hours in advance of the lateral liner installation.
- G. Line Obstructions – If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment, as in solids, dropped joints or collapsed pipe, then the Installer shall make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the Owner's representative prior to the commencement of the work and shall be considered as a separate pay item.
- H. In case of lined main pipes, the lateral connection specified for rehabilitation shall be reinstated to 100% of its original size.

3.02 INSTALLATION

- A. The Installer shall designate a location where the liner will be vacuum impregnated prior to installation. The Installer shall allow the Owner to inspect the materials and resin saturation (wet-out) procedure. A catalyst system compatible with the resin and liner shall be used
- B. The wet-out liner shall be loaded inside a pressure apparatus above ground, utilizing a hydrophilic sealant (or equivalent) on the backside of the connection to enhance a watertight seal. Also, a Silicate Resin or a two-part 100% solid epoxy (reference ASTM C-881) shall be applied to the lateral interface to enhance adhesion against the host pipe. The pressure apparatus, with an end attached to a robotic device, shall be winched through the main pipe to the service connection. The robotic device, together with a television camera, will be used to position the pressure apparatus' inversion elbow at the service connection opening. Air pressure, supplied to the pressure apparatus through an inversion hose, shall be used to invert the wet-out liner through the lateral pipe to the cleanout/access point or "Right of Way" point. The inversion head will be adjusted to be of sufficient pressure to cause the impregnated liner to invert completely in the lateral

pipe and hold the liner tight to the pipe wall. Care shall be taken during the curing process so as not to overstress the liner.

- C. Curing – In most circumstances, an ambient-temperature curing resin system will be utilized. If a heat cure is required, the installer shall supply a suitable heat source and recirculation equipment. The equipment shall be capable of delivering the approved heating medium throughout the section to the temperature required to affect a cure of the resin. This temperature shall be determined by the resin/catalyst system employed. If a heat cure is required, the heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing air/steam or water supply. Fluid temperature in the line during the cure period shall be recommended by the resin manufacturer.
- D. Initial cure shall be deemed to be completed when inspection of the exposed portions of the CIPP appear to be hard and sound and/or the temperature gauge indicates that the temperature is of a magnitude to realize an exotherm. The cure period shall be of a duration recommended by the resin manufacturer, as modified for the installation process.
- E. Cool-down – The Installer shall cool the hardened CIPP to a temperature to approximately 100° F before relieving the pressure in the pressure apparatus. Care shall be taken to maintain proper pressure throughout the cure and cool-down period.
- F. Finish – The finished CIPP shall be a watertight connection seal at the main pipe and extend continuous over the entire length of the service lateral and be free of dry spots, lifts, and delamination. This continuous one piece structural pipe-within-a-pipe shall not inhibit the closed circuit television (CCTV) post video inspection of the main or service lateral pipes.
- G. Testing – For every 25 laterals, one flat plate sample shall be taken and sent to a 3rd party test laboratory for confirmation of short term flexural modulus and strength properties in accordance with ASTM F1216. The test results shall meet or exceed the values used in the design of the CIPP lateral liner.
- H. During the warranty period, any defects which will affect the integrity or strength of the CIPP liner shall be repaired at the Installer's expense in a manner mutually agreed upon by the Owner and the Installer.
- I. After the work is completed, the Installer will provide the Owner with a digital video showing the completed work including the restored conditions.

3.03 CLEAN-UP

After the work is completed, the Installer shall reinstate the project area affected by his operations.

3.04 MEASUREMENT AND PAYMENT

- A. Measurement for the work included in this section will be in accordance with the units set forth in the proposal. Unit prices shall include all labor, materials and equipment required to complete the work as specified.
- B. CCTV prior to lining of the service lateral shall be paid for under the "CCTV Service Lateral" pay item except for service laterals in which the camera is not launched into the lateral.
- C. The CIPP Service lateral (Length: 0' – 8') is intended for situations where the length of pipe to be lined can be seen from the main pipe without extending the camera. In these cases, CCTV of the service lateral by the launching of the camera prior to lining is not needed, but rather everything for lining of the lateral can be seen from the mainline. CCTV of the lateral shall not be included for this pay item.
- D. Service laterals that are to be lined more than eight feet shall be covered under the CIPP Service Lateral pay item with the respective length. These bid items are intended for situations where the camera must be extended into the service lateral in order view the length of pipe to be lined. In these situations, CCTV prior to lining shall be paid for separately.
- E. CIPP service lateral pay items shall also include lateral cleaning, bypass pumping of mainpipe flow, and CCTV after lining.
- F. If the method of service lateral lining requires a cleanout access point, a cleanout shall be installed as needed at the right of way and absorbed under the respective CIPP Service Lateral unit price.
- G. Payment for accepted quantities of service pipe lined shall be paid for at the contract unit price bid per each. Said unit price shall constitute full compensation for furnishing of all labor, materials, and any incidental items necessary to complete the work

3.05 WARRANTY

Contractor warrants to Owner that all products and work provided by Contractor to Owner under this Agreement will be free from material defects in workmanship and materials for a period of five (5) years from the earlier of the date on which Contractor's work is accepted by Owner or the date on which the Contractor completes performance and leaves the worksite. In the event that a material defect in workmanship or materials supplied by the Contractor is found during the five (5) year period following acceptance of the work, then such defect shall be repaired, replaced or adjusted by Contractor at no additional cost to the Owner. The Owner's exclusive remedy in the event of any warranty claim hereunder is limited to correction of such defect, adjustment, repair or replacement as the Contractor shall at its sole option elect. The foregoing warranty is the exclusive warranty provided by the Contractor and is given in lieu of all other warranties, whether express, implied or statutory, including but not limited to, any implied warranties of merchantability or fitness or suitability for a particular purpose or use; and all other warranties are hereby expressly disclaimed.

FORM C
LANDSCAPE MATERIALS and INSTALLATION – PLANTS, SOIL, SOD, AND
MULCH

PART 1 - SCOPE

- 1) The City of Ridgeland desires to establish an Agreement and Contract with a Landscape Contractor to furnish and install landscape materials including, but not limited to plants, mulch, sod, and soil preparation.
- 2) Bidders shall have a valid and current Landscape Horticulturist License with the Mississippi Department of Agriculture and Commerce's Bureau of Plant Industry.
- 3) The City does not guarantee any minimum amount of expenditures for the contractor during the Agreement period.
- 4) The City reserves the right to order any quantities necessary under each purchase order. No minimum order quantity shall be stipulated by the City.
- 5) This agreement shall be for materials and installation (unless otherwise noted).

PART 2 – PLANT MATERIAL REQUIREMENTS

- 1) All plant materials shall conform to the specifications of Federal, State, and County laws, requiring inspection for plant diseases and insect infestations.
- 2) All plant materials must comply with American Nursery Stock Standards.

PART 3 – PLANT MATERIAL INSTALLATION REQUIREMENTS

- 1) Ensure root systems are moist at the time of planting.
- 2) Remove all ties and wrap from branch system, except plant identification tag.
- 3) Planting pit:
 - a) For 15 Gallon containers and larger - Planting pit shall not be less than two (2) feet wider than the root ball diameter and no deeper than the height of the root ball.
 - b) For 5 Gallon containers and less – Planting pit shall not be less than six (6) inches wider than the diameter of the root ball and no deeper than the height of the root ball.
 - c) Planting pits should be angular with roughened sides and loose soil on the bottom.

- d) When conditions detrimental to plant growth are encountered, such as unsatisfactory soil conditions, obstructions, or adverse drainage conditions, notify City before planting.

4) Container Plants:

- a) Remove plant root system carefully from the container prior to planting without disturbance to the root systems.
- b) Inspect root system and untangle, straighten, or cut any circled (girdled) roots.
- c) Loosen the potting medium and shake away from the root mat into planting pit.
- d) Place plants centered, upright, plumb, and with desired orientation in planting pit with the root flare (collar) matching, or slightly above, the existing grade.

5) Balled and Burlap Plants:

- a) Place plants centered, upright, plumb, and with desired orientation in planting pit with the root flare (collar) at, or slightly above, existing grade or 2 to 3 inches above grade if in compacted clay or poorly drained soils.
- b) After plant placement, cut and remove the top ½ of the wire, burlap, and twine from the root ball.

6) Carefully place and lightly tamp a small amount of backfill material around the root ball base to stabilize the root ball.

7) Place loose excavated soil 2/3 of the depth of the planting pit. Water in the tree. Allow water to completely soak into the soil.

8) Continue placing backfill material up to grade level. Lightly tamp but do not compact the soil around the plant. Water in a second time.

9) Plants shall not be heavily pruned at time of planting. Pruning is required at time of planting to correct defects in the tree structure, including removal of injured branches, dead branches, double leaders, suckers, or interfering branches. In no case should more than ¼ of the branching structure be removed. If any removal is required the normal shape of the plant shall be retained.

10) Guy and stake trees immediately after planting.

- a) Remove all nursery stakes.

- b) Stake each tree with two (2) steel T-posts.
 - c) One post shall be placed compass north of the tree and one post placed compass south of the tree.
 - d) Posts shall be driven into the undisturbed soil outside of planting pit / root ball. Posts shall be driven so that they are stable and a min. of 48" of the post is above the soil level.
 - e) Guy tree to posts no higher and 2/3 the height of the tree.
 - f) The loop in the guy material at the trunk of the tree shall be three (3) times the diameter of the trunk to avoid girdling, and shall be padded or constructed of soft material to prevent trunk damage.
 - g) Guy straps shall be slightly slack to allow limited trunk movement, but not excessive movement in high winds.
 - h) Following installation, guy wires shall be flagged with white flagging tape to be easily seen.
 - i) Alternative staking techniques or staking systems (installed per manufacturer instructions) may be used contingent upon city approval.
- 11) Work areas shall be clean following plant installation. Remove all excess materials, debris, and equipment from the site. Clean all paved surfaces. Repair any damage resulting from the planting operation.

PART 4 – SOIL PREPARATION MATERIAL REQUIREMENTS

- 1) All sand shall be clean / free of organic matter, salt, deleterious materials, and clumps larger than 1".
- 2) Organic soil amendments shall be well-composted, stable, and weed-free organic matter not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings. The compost shall be a dark brown to black color and be capable of supporting plant growth with appropriate management practices in conjunction with addition of fertilizer and other amendments as applicable, with no visible free water or dust, with no unpleasant odor.

PART 5 – SOIL PREPARATION REQUIREMENTS

- 1) Till the first 4"-6" of the existing soil with the use of a mechanical tiller. Remove all

sticks, roots, rubbish, large stones, or other extraneous matter.

- 2) Mixing: Apply equal parts of sand and loamate on surface, and thoroughly blend/till them into full depth of tilled soil.
- 3) Finish Grading: Grade amended soil to a smooth, uniform surface. Roll and rake, remove ridges, and fill depressions to meet finish grades. In areas adjacent to foundations, work grades to drain away from structures.
- 4) Work areas shall be clean following soil preparation. Remove all excess materials, debris, and equipment from the site. Clean all paved surfaces. Repair any damage resulting from the soil preparation.

PART 6 – SOD MATERIAL REQUIREMENTS

- 1) Harvesting operations shall be coordinated with the city so that not more than seventy-two (72) hours elapse between harvesting and placement, rolling, tamping, and watering of sod.
- 2) Sod shall not be harvested when its moisture condition is so excessively wet or dry that its survival will be affected.
- 3) Sod shall be protected before, during, and after shipment from exposure to wind, sun, and freezing until satisfactory acceptance from City.
- 4) Sod shall be alive, healthy, and free of insects, mold and mildew, disease, stones, undesirable foreign materials, weeds, or other grass varieties.
- 5) Sod shall have a minimum soil thickness of 1" and a maximum of 2".
- 6) Sod shall have an average grass height of 1- ½" to 2".
- 7) Sod shall be machine cut in strips to a dimension of 16" wide x 24" long or approved equal. Sod shall be cut in equal widths and of a size that permits the sod to be lifted, handled, and rolled without breaking.
- 8) Broken or torn sod or sod with uneven ends shall be rejected.

PART 7 – SOD INSTALLATION REQUIREMENTS

- 1) Prior to planting sod, remove all rocks and debris, eradicate and physically remove all vegetation and weeds (dead or alive) from the site.
- 2) Rototill or spade the area to a depth of 4" to 6".

- 3) Rake and smooth the soil, removing rocks, roots, and large clods.
- 4) Roll the area lightly, leaving the grade 1" below finish grade (or average thickness of sod to be installed).
- 5) Water the area to provide a moist base prior to laying the sod.
- 6) Lay sod in strips with tight joints. Do not overlap.
- 7) Stagger strips to offset joints in adjacent courses.
- 8) Minimize traffic on newly laid sod during installation. Provide plank or wood sheets to protect sod already laid from equipment and vehicles.
- 9) Finish sod edges at walks, curbs, plant bed edges, and vertical surfaces by cutting and fitting tightly to the edge.
- 10) Place sod approximately 1/2 inch below the finished surface of walks, pavement, or curbs. Remove the sod and adjust the subgrade, if needed.
- 11) Where new sod joins existing lawns, cut straight and neatly into existing lawn and level subgrade to match height.
- 12) All sod shall be soaked and rolled with a water filled roller after laying to ensure a smooth surface and good ground contact.
- 13) Work areas shall be clean following sod installation. Remove all excess materials, debris, and equipment from the site. Clean all paved surfaces. Repair any damage resulting from the sodding operation.

PART 8 – PINESTRAW / MULCH MATERIAL REQUIREMENTS

- 1) All mulch material shall be free of mold, mildew, or artificial dyes.
- 2) All pine straw bales or rolls shall be free of large amounts non-pine straw material such as twigs, sticks, leaves, and pine cones.
- 3) Fresh pine straw bales or rolls will only be accepted. Pine straw bales and rolls that are old, faded, or decaying will be returned to the Vendor.
- 4) Pine straw bales and/or rolls shall all be properly baled and rolled and be securely fastened with the proper twine binding or netting.

PART 9 – PINE STRAW / MULCH INSTALLATION REQUIREMENTS

- 1) Apply 6” of fluffed pine straw to entire planting bed, unless otherwise specified. The depth of the pine straw should be 2-3” after watering in / compaction.
- 2) Taper mulch / pine straw to ground level at tree trunks. Do not allow the mulch to pile up against tree trunk or stems of plants.
- 3) Work areas surrounding the perimeter of the beds and tree rings shall be raked and cleaned following the pine straw installation.
- 4) The bed edges and tree rings shall be defined and rolled/tucked with blower following installation and site clean-up.
- 5) Remove all excess materials, debris, and equipment from the site. Clean all paved surfaces.

PART 10 – ACCEPTANCE AND WARRANTY OF PLANT MATERIAL

- 1) The contractor shall warranty that all plant materials installed under this contract will be healthy, true to name, and installed according to industry standards at the time of installation. This warranty will be valid for a period of one (1) year from the date of installation.
- 2) Coverage under this warranty will provide for the One-time replacement of each failed plant with a comparable size and species. Replacement of plant material does not extend the original warranty period.
- 3) Coverage under this warranty does not include physical damage to plant material after installation by acts of nature (drought, flood, fire, freezes) or damage caused by vandalism, theft, pets, wildlife, or vehicles.
- 4) The warranty is not applicable to plant materials installed in non-irrigated areas.

FORM D
EASEMENT CLEARING AND MAINTENANCE SPECIFICATIONS

Description:

- A. This work shall consist of completely clearing trees and vegetation within the limits of rights-of-way and easement areas down to ground level so it can be maintained by the City of Ridgeland's mowing and herbicide spraying operations.
- B. Contractor will assume full responsibility for providing tree and brush removal services for various easement and right-of-way areas. The contractor is responsible for ensuring that all work is done in a safe and responsible manner that will not damage existing utility infrastructure or adjacent property.
- C. Prospective bidders are urged to make a complete inspection of the rights-of-way and easement areas that may be cleared. Failure to do so will not relieve bidder of any of the provisions of these specifications.
- D. The contractor will be required to maintain ingress and egress to all businesses and dwellings, and easy access to utility infrastructure within the easements such as fire hydrants, valves and manholes.
- E. The contractor shall mark all hazards or infrastructure to be protected within the project limits. Any damage done to either public or private property shall be the responsibility of the Contractor to repair prior to final payment.
- F. Any damage to private property, sidewalks, curbs, or streets shall be repaired at the expense of the contractor prior to requesting final payment. Contractor shall immediately notify the City of damages.

Execution:

- A. The Contractor and a Public Works Department representative will inspect all areas to be cleared prior to beginning work to identify any potential problems and estimate the number of hours needed on the Purchase Order.
- B. The Contractor will not begin work on any requested task until a written Purchase Order has been issued by the City of Ridgeland.
- C. Contractor will be required to clear the easement or right-of-way area, as defined by a representative of the City's Public Works Department, of all trees and brush, including limbs, logs, vines, and debris from tree removal process.
- D. Surface objects, trees, stumps, roots and other protruding obstructions, not designated to remain, shall be cut flush with the ground.

- E. Felling of trees and other clearing operations shall be conducted in a manner that prevents damage to trees that are to remain and to protect existing improvements, structures, utility lines or other items.
- F. Tree branches extending over the easement and right-of-way area shall be trimmed to give a clear height of at least 20-feet above the ground.
- G. Stump holes, ruts and other holes resulting from clearing operations shall be backfilled with suitable material and compacted to the satisfaction of the City of Ridgeland.

Disposal of Materials:

- A. It shall be the responsibility of the Contractor to remove and dispose of all logs, brush, vines and debris resulting from the tree removal operations at an off-site location at no additional cost to the City of Ridgeland.
- B. All merchantable timber shall become the property of the CONTRACTOR for his disposal unless otherwise noted.
- C. Burying of stumps, trees, logs, snags or other vegetative materials will not be permissible within the project site limits unless otherwise provided for in these Specifications.
- D. Cut material may be chipped or shredded by mechanical means and mulched on the easement and right-of-way areas to the satisfaction of the City of Ridgeland.
- E. BURNING WILL NOT BE ALLOWED.
- F. The cost of hauling, stockpiling and disposal of material will not be measured separately for payment and shall be included in the Contract Price bid for EASEMENT CLEARING SERVICES.

Compensation:

- A. Measurement

EASEMENT CLEARING SERVICES will be measured per HOUR for any hour the Contractor provides equipment and/or personnel actively working on site to complete the defined scope of work.

1. The Contractor will be compensated for the ACTUAL number of hours used to complete the scope of work, and will not be bound to the estimated quantity presented on the Purchase Order.

2. The Contractor understands that the quantities included on the issued Purchase Order are approximate only and subject to either increase or decrease, and hereby agrees to perform ANY increased or decreased quantities of work at the Unit Price Bid.
3. The City of Ridgeland reserves the right to reduce the limits of clearing or modify the scope of work to avoid a cost overrun on a Purchase Order.
4. No allowance shall be made for travel time to and from the site unless it relates to material disposal.
5. No allowance shall be made for unproductive days the Contractor has equipment on site not actively working such as rain days or days when progress is halted for any reason.
6. The Contractor shall be responsible for documenting, reviewing and confirming equipment and personnel time records on a daily basis with the appointed representative of the City's Public Works Department.
7. The Contractor will vigorously pursue completion of the assigned work items. The Contractor may be terminated if it is the opinion of the Owner that the efficiency or quality of the work is substandard.
8. Time spent by the Contractor to correct error of omissions shall not be measured or paid for under these specifications.

B. Payment

Payment for EASEMENT CLEARING SERVICES shall be made at the Contract unit price per hour bid which shall be full compensation for furnishing the equipment, operators, laborers, fuel, tools, maintenance, insurance fees, permit fees, disposal fees, overhead, licenses, taxes, profit and other operating expenses and incidentals to complete the Owner's scope of work as defined in the issued Purchase Order.

FORM E
WATER OPERATIONS, MAINTENANCE, AND INSPECTION SERVICES
SPECIFICATIONS

GENERAL PURPOSE:

- A. The City of Ridgeland intends to enter into a Contract for Water Operations Maintenance and Inspection Services with a capable OPERATOR on an as-needed basis to ensure system operations during an emergency or in the event of needed staff support.
- B. The City of Ridgeland is seeking to ensure quality, continued operation of all water tanks, water wells, water sampling collections, and sewer lift station operation by contracting with an OPERATOR capable of providing all labor, tools and equipment necessary to perform full-service operations, maintenance and monitoring.
- C. The City of Ridgeland will remain responsible for maintenance of all distributions mains, valves, hydrants, service lines, easements, warranties, licenses, and permits for operation of the water distribution system and sewer collection system.
- D. The City of Ridgeland will issue written Purchase Orders to the OPERATOR for periods of time when services are needed.
- E. The minimum duration for any issued Purchase Order for these services will be one week.
- F. Upon receipt of a written Purchase Order, the OPERATOR will be responsible for providing services twenty four hours per day, seven days per week until such time the OWNER's normal operations staff can resume their duties.

DEFINITIONS:

- A. OWNER: Any references to OWNER within this specification shall be understood to be City of Ridgeland working through the Public Works Department. The OWNER is the author of this specification and reserves the right for any interpretations and clarifications that arise during the bidding or performance of the services described herein.
- B. OPERATOR: Any references to OPERATOR shall be understood to be the person or company providing services herein. The OPERATOR whether a singular person or a company must maintain a current Class "D" or greater water operator license from the Mississippi State Department of Health.

INSPECTION & DUE DILIGENCE:

- A. Bidders shall satisfy themselves through personal investigation and any such means deemed necessary concerning the conditions which may affect delivery or cost of the services described herein. No information derived from any part of this specification or from the OWNER shall relieve the Bidder from any risk or from fulfilling the provisions of these services.
- B. The OWNER requires the OPERATOR to assume responsibility for the services based on the condition of the system "AS-IS". Bidders are strongly encouraged to make all inspections and review all available and relevant data and information, prior to the submittal of their Bid, which are necessary in their judgement to undertake this responsibility.
- C. OWNER will provide interested parties with accompanied access to the system facilities for inspections prior to the Bid date. All inspections must be scheduled a minimum of two days in advance with the Public Works Director or City Engineer.
- D. No interpretation or clarification of the meaning of any part of this specification will be made orally to any potential Bidder.
- E. All requests for information and clarifications shall be made in writing and directed to:
 - Alan Hart, PLA
Director of Public Works
P.O. Box 217
100 West School Street
Ridgeland, MS 39157
alan.hart@ridgelandms.org
 - Paul Forster, P.E.
City Engineer
P.O. Box 217
100 West School Street
Ridgeland, MS 39157
paul.forster@ridgelandms.org

MBE / WBE / DBE:

The City of Ridgeland encourages participation from Minority Business Enterprises (MBE's), Women Business Enterprises (WBE's) and Disadvantaged Business Enterprises (DBE's) in the performance of this service. The City of Ridgeland, Mississippi hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement,

disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, religion or national origin in consideration for an award.

SAFETY QUALIFICATIONS:

Bidder shall submit with their Bid a copy of their last three (3) years' Experience Modification Data Sheets as published by the bidder's governing state agency. The Experience Modification Data Sheets should reflect the bidder's interstate experience modification rate to which an average EMR for the past three years can be determined. In order for a bid proposal to be considered responsive, and EMR Average rate of 1.00 or less must be reflected or the proposal will be rejected. This requirement does not alter in any way the Bidder's sole responsibility for safety while providing the services described herein.

EXISTING SYSTEM:

A. Public Water System Facilities:

The City of Ridgeland Public Water System serves approximately 10,000 service connections in an area of 20.75 square miles by the operation and maintenance of 8 water wells and associated treatment facilities, 5 storage tanks, and 180 miles of distribution mains. A copy of the water system's most recent facilities plan can be found using the following link:

<https://www.ridgelandms.org/wp-content/uploads/2020-Ridgeland-Water-Facility-Plan-Final.pdf>

The water system facilities included with this bid are listed below:

1. Charity Church Water Well – 399 Charity Church Road
2. Old Canton Road Water Well and Elevated Storage Tank – 7113 Old Canton Road
3. Lake Harbour Water Well – 555 Lake Harbour Drive
4. Peach Orchard Water Well – 220 Peach Orchard Drive
5. Northpark Elevated Storage Tank – 250 Towne Center Blvd.
6. School Street Water Well – 115 West School St. (behind police department)
7. Natchez Trace Elevated Storage Tank – 102 Old Town Crossing
8. Hardy Road Water Well and Ground Storage Tank – 120 Hardy Road
9. Walter Payton Water Well and Elevated Storage Tank – 574 North Livingston Road
10. Samuels Lane Water Well – 146 Samuels Lane
11. Highland Colony Elevated Storage Tank and Water Well - 414 Highland Colony Parkway

B. Sewer System Lift Station Facilities:

The City of Ridgeland owns, operates and maintains 15 sewer lift stations within its sewer collection system. Detailed information pertaining to these lift stations can be found in the most recent wastewater facilities plan using the following link.

<https://www.ridgelandms.org/wp-content/uploads/2020-Ridgeland-WasteWater-Facility-Plan-Final.pdf>

The sewer lift station facilities included with this bid are listed below:

1. Tico's
2. Dyess Road
3. M&F Bank
4. Salem Square
5. Rice Road
6. Beaver Creek
7. Stokes Road
8. Matthews Road
9. Brame Road
10. Woodmont 1 – 126 Woodmont Way
11. Woodmont 2 – 149 Woodmont Way
12. Hidden Oaks
13. Windsong Cove

EQUIPMENT & FACILITIES:

- A. OPERATOR will not be allowed to operate the OWNER's vehicles and equipment.
- B. OPERATOR shall provide at its own expense its own vehicles, equipment and tools for use or work on the Systems under this Bid, of which it shall retain sole ownership and sole possession. OWNER shall have no responsibility for maintenance, repairs or insurance coverage of such equipment. OWNER shall not be responsible for capital, repair or maintenance expenditures for any equipment or property owned by OPERATOR.
- C. OWNER shall provide keys for the facilities being maintained to the OPERATOR solely for the OPERATOR's use in performing its duties and responsibilities under this Bid. OPERATOR shall maintain an updated list of all individuals who have been provided keys or access to the OWNER's facilities.
- D. OWNER will not provide keys to the OPERATOR for access to parts and chemical feed supplies. The OPERATOR will be responsible for coordinating with the OWNER to access these materials during normal business hours.

MATERIALS & UTILITIES:

- A. OWNER shall be responsible for purchasing all materials and equipment necessary for the operation and maintenance of the systems.
- B. OPERATOR shall be responsible for obtaining materials, parts and equipment from the OWNER and delivering and installing them at their intended site as soon as practical.
- C. OWNER shall be responsible for all energy bills at all water and sewer facilities.

- D. OWNER shall be responsible for purchasing and providing to the OPERATOR all treatment chemicals such as chlorine and fluoride.
- E. OPERATOR shall be responsible for obtaining treatment chemicals from the OWNER and immediately delivering and installing these chemicals at their intended site within the same business day.
- F. OPERATOR shall be responsible for providing the OWNER a detailed description of the materials and equipment that need to be purchased. OPERATOR requests for OWNER purchases should be made far enough in advance to avoid system failure when possible.

SCOPE OF SERVICES:

- A. OPERATOR shall be responsible for the operation of all water tanks, water wells and treatment facilities, water sample collection, and sewer lift station operation 24 hours per day for the period of time procured by the OWNER in a written Purchase Order.
- B. Provide routine operational and maintenance duties for water system operations to ensure that key operational tasks occur on schedule and as necessary to provide safe drinking water that meets or exceeds the standards for potable water as established by the Mississippi State Department of Health, Federal and State Safe Drinking Water Acts and the Mississippi Department of Environmental Quality.
- C. Persons under the direct supervision of the certified operator shall be the only individuals allowed to modify treatment parameters/operations consistent with the regulatory requirement of the Federal and State Safe Drinking Water Acts. Those individuals shall be competent under the supervision of the certified operator as having the necessary ability, knowledge, or skills to provide operational and emergency support to the public water system.
- D. The OPERATOR will not be responsible for mowing or vegetation maintenance trimming at any of the facilities.
- E. The OPERATOR will not be permitted to assign its rights or obligations for providing these services without prior written consent from the OWNER.
- F. Upon turnover of water system operation and maintenance responsibility to the OWNER, the OPERATOR shall deliver to the OWNER all records of operations, maintenance, testing, and other related materials in both electronic and hard copy formats.

G. Water System Operations, Maintenance and Inspection Services shall include but not be limited to the following:

1. OPERATOR shall provide all necessary supervision, labor (including any required overtime), materials, transportation vehicles, tools, equipment and consultants to operate and maintain the systems in accordance with the systems' design, manufacturer's specifications and approved permits.
2. OPERATOR shall perform operational and maintenance duties necessary to provide safe drinking water that meets or exceeds the standards for potable water as established by the Mississippi State Department of Health.
3. OPERATOR shall maintain, monitor and perform minor repairs to all water wells, water tanks, backup power supplies and chemical injection systems.
4. OPERATOR shall be responsible for all preventative maintenance including coordinating with the OWNER for procurement of all chemicals, parts and supplies.
5. OPERATOR shall regularly communicate to the PWS legally responsible official(s) the operational status of facilities that comprise the public water system. This includes responding to required SDWA Assessments (RTCR), Significant Deficiencies (SWTR or GWR), Sanitary Defects (RTCR) and Public Notification.
6. Inspect water supply wells and water system treatment components at a minimum of 2-days each week, with no more than 4-days between inspections to ensure proper operation.
7. OPERATOR will provide troubleshooting, repair and replacement for motor control center panels, variable frequency drives, well pumps, well motors and standby power generators.
8. OPERATOR will prepare the pump or motor for removal and assist in the re-installation for well pump and motor repairs or replacements outside of the OPERATOR's capabilities.
9. OPERATOR shall be responsible for providing labor to make minor electrical equipment replacements.

10. OPERATOR will coordinate with equipment manufacturers as needed for troubleshooting, repair and replacement.
11. OPERATOR will be responsible for any manufacturer service or diagnostic fees that were not specifically procured by the OWNER.
12. OPERATOR shall assist and advise the OWNER in its management, operation and maintenance program including provisions for record keeping. This assistance shall include tracking labor, materials, and equipment used for system operation and maintenance.
13. OPERATOR shall make recommendations to the OWNER for capital improvements to improve and maintain the OWNER's systems and to assure compliance with Federal, State and local laws and regulations.
14. OPERATOR shall be responsible for notifying OWNER for any maintenance needs to ensure all site and building facilities are in good operating order, and in a clean, neat and attractive condition including but not limited to painting, fence repair, door repair, air-conditioner repair, washouts, pest control and janitorial services as needed.
15. Ensure water tanks, wells and treatment facilities are properly secured to prevent vandalism or accidents.
16. Regulate the injection of Chlorine gas and Sodium Fluoride in accordance with Mississippi State Department of Health (MSDH) requirements.
17. OPERATOR shall be responsible for providing labor for the maintenance, repair and replacement of the chemical feed systems including but not limited to chlorine booster pumps, chlorine regulators, chlorine injectors, chemical piping and tubing, chlorine analyzers, chlorine leak detectors, probes, scales, load cells, tanks and saturators in accordance with manufacturers' recommendations.
18. Check the chlorinator and other chemical feed equipment at each site inspection to see if it is operating properly.
19. Check chemical feed equipment and tubing for leaks and labor to replace immediately when needed.
20. Monitor chlorine tank levels and provide labor to replace promptly when needed.

21. OPERATOR shall check flow meters at each well to see if it is operating properly and record readings.
22. Test and record the disinfection residual on the discharge of the treatment facilities a minimum of 2-days each week
23. Periodically test and record the disinfection residual on the distribution system. Maintain a disinfection residual to the ends of the water distribution system.
24. Flush the distribution system as needed based on the chemical quality of the water.
25. Maintain a minimum free chlorine residual of 0.5-mg/l at the ends of the water distribution system.
26. Flush dead-end water lines on a routine schedule based on the chemical quality of the water.
27. Conduct bacteriological, chlorine, fluoride and other testing as required by the Mississippi State Department of Health.
28. Ensure collection of all compliance water samples on the system as required by the Safe Drinking Water Act. Compliance samples dependent upon Bureau approved sample site plans must be collected from locations that are on those plans for the water system.
29. OPERATOR shall monitor the SCADA system on a daily basis to ensure tanks, wells, chemical treatment and power systems are operating properly, and field readings match SCADA readings.
30. OPERATOR shall monitor water tank levels manually and on the SCADA system on a daily basis to ensure they are operating properly to keep the water in the tank circulating.
31. OPERATOR will be responsible for ensuring generators are operating properly through weekly exercise and annual tests under load conditions.
32. OPERATOR shall notify OWNER when regular generator maintenance service is due to include but not be limited to oil/filter changes, fuel filter changes, hoses, belts, batteries, and antifreeze.
33. Provide an on-call service technician 24 hours a day to include weekends to answer all complaints, investigate and resolve problems with the operation of water quality of the system.

34. OPERATOR shall provide staff response to OWNER or OWNER's contractor for emergency services, repairs and replacements as requested by the OWNER to maintain and manage the operation of the systems during such emergencies.
35. OPERATOR shall provide staff response for emergency repairs, as required. This shall include emergency on-call telephone numbers for assigned staff. OPERATOR staff will maintain availability for emergency call out throughout the term of an issued Purchase Order.
36. OPERATOR shall document all maintenance activities to include labor, materials and equipment, and ordering for failed equipment repairs and replacements. Maintenance documentation shall include but not be limited to equipment identification and history, spare part inventory, preventative maintenance tasks and schedules, repair history, warranty coverages and routine standard operating procedures.
37. OPERATOR shall perform and document all preventative maintenance in accordance with the manufacturer's requirements.
38. OPERATOR shall provide and maintain a complete and accurate inventory of equipment. The inventory shall include but not be limited to location, equipment name, model & serial number, date of acquisition, date of installation, date of repair and/or date taken out of service.
39. Record and analyze daily, monthly and annual water use and water quality to help detect leaks or other problems on the system.
40. Maintain a Public Water System (PWS) Operations Log Book documenting all activities completed on the public water system. This Log Book must be available for inspection by MSDH staff. The PWS Operations Log Book is the property of the PWS and must remain as part of the official records of the PWS. Certified Operator of Record must review and initial record entries for staff working under his/her supervision. The PWS Operations Log Book should include the date, time, location and description of the following information:
 - a. Site visits
 - b. Equipment Checks
 - c. Equipment Repairs and Replacement
 - d. Preventative maintenance work performed
 - e. Water Quality Parameter sampling performed
 - f. Disinfection Residual recordings at the treatment facilities
 - g. Disinfection Residual recordings on the distribution system
 - h. Master meter readings
 - i. Well run times

- j. Chemical Feed Rates
- k. Available Chlorine on site
- l. Current chlorine cylinder in use
- m. Replacement of Chlorine cylinders
- n. Tank levels
- o. Pressure readings at the elevated storage tanks, well discharge, and distribution system.
- p. System alarms
- q. Flushing operations performed
- r. Important Correspondence relative to the treatment and operation of the system.

H. Sewer Lift Station Operations, Maintenance and Inspection Services shall include but not be limited to the following:

1. Maintain and monitor all sanitary sewer lift stations on a regular basis to prevent station failure and pursue the most efficient operations possible.
2. Provide routine on-site inspections to manually read and record information appropriate to each lift station including, as applicable, pump run-time meter readings, start counters, amperage readings, checking and resetting conditions, wet-well points, grease accumulations, and any other information that is necessary for the proper operation of a lift station.
3. Monitor SCADA system on a daily basis to ensure lift stations are operating properly, and field readings match SCADA readings.
4. Provide labor to make minor repairs on sewer lift station equipment on a daily basis in accordance with the manufacturer's recommendation.
5. Periodically Pull pump and ensure shaft will spin freely by hand. Inspect pumps and impellers to assure they are free of debris and in good operating condition.
6. Weekly inspections at each lift station site should include, but not be limited to, the following activities to monitor the current status of all stations and establish priorities for maintenance requirements and other needs:
 - a. Visually inspect the station for vandalism or damage.
 - b. Clean up any trash or debris found on the site.
 - c. Record pump run time hours for each pump.
 - d. Record kilowatt-hour meter reading for the pump station.
 - e. Run each pump by hand (manual control) to ensure pumps/motors are operating properly.
 - f. Check controls for proper operation
 - g. (starters, overloads, alternating relay, phase monitor)

- h. Assess operating set points (on/off) for pumps and reset as necessary to improve system performance.
 - i. Inspect electrical motor control equipment to identify any potential issues, such as poor connections and worn parts. This inspection shall include appropriate scheduled panel maintenance.
 - j. Perform thermographic scan of control panels, motors, and bearings with infrared camera.
 - k. Inspect, service, and calibrate instrumentation, such as SCADA instrumentation, level sensors, alarms, and run time meters to ensure reliable reporting of station operations.
 - l. Inspect wet well for excessive grease build up and loose guide rails to determine need for cleaning or repairs.
 - m. Clean floats as needed
 - n. Inspect and exercise check valves
 - o. Inspect and exercise isolation valves
 - p. Test alarm system panel light and high water SSO alarm
 - q. Test panel lights and change as needed to ensure proper operation.
 - r. Place pump controls back in auto position prior to leaving station.
 - s. Lock up station, including exterior power panels if required, prior to leaving.
7. All safety rules and regulations must be followed when performing pump station O&M.
8. Use of lock out tag out procedures is required.
9. Confined space entry guidelines must always be followed.
10. All sanitary sewer overflows (SSOs) that occur at lift station must be reported to the Mississippi Department of Environmental Quality (MDEQ) in an SSO report form.
11. Emergency lift station operations must be provided by the operator in the event of wet well high water alarms, power failures, SSO response, pump station damage, or any other event that requires immediate operator response to continue lift station operation. The operator will employ generators, bypass pumping, or vacuum excavation as needed to continue lift station operations.
12. Maintain a Sewer Lift Station Operations Log Book documenting all activities completed on the sewer system, and will be used to generate a weekly report to the City of Ridgeland. This Log Book must be available for inspection by City and MDEQ staff. The PWS Operations Log Book is the property of the City of Ridgeland. Certified Operator of Record must review and initial record entries for staff working under his/her supervision. The Sewer Operations Log Book should include the date, time, location and description of the following information:
- a. Site visits
 - b. Equipment Checks
 - c. Pump run time hours for each pump

- d. Kilowatt-hour meter reading
- e. Inventory of all lift station equipment including, but not limited to, pump model, serial number, horsepower, RPM, voltage, resistance, amperage)
- f. Operating set points
- g. Equipment Replacement
- h. Preventative maintenance work performed
- i. Alarms and subsequent actions taken to correct alarm conditions.
- j. Emergency Operations performed.
- k. Important Correspondence relative to the treatment and operation of the system.

OPERATOR CAPABILITIES:

OPERATOR shall possess the following minimum capabilities in order to receive and complete written Purchase Orders for providing services.

- A. OPERATOR shall be able to provide professional utility operational, maintenance and emergency services to operate and maintain the systems included within this Bid.
- A. OPERATOR shall comply with all Federal, State and local regulations.
- B. OPERATOR shall maintain a current Class “D” or greater water operator license from the Mississippi State Department of Health to perform the work under this Bid.
- C. OPERATOR shall provide the labor, supervision and professional expertise required to provide such services in a good and workmanlike manner according to normal and customary industry standards.
- D. All employees shall possess the skills, knowledge, education, and experience necessary to manage Systems of the size of Ridgeland’s.
- E. OPERATOR’s responsible staff shall possess cellular phones that can be contacted by OWNER’s staff twenty-four hours per day, seven days per week.
- F. OPERATOR shall be capable of mobilizing and assuming duties contained herein within 24-hours of notification by the OWNER to request the services described herein.
- G. OPERATOR shall have the ability to respond to emergency events within 1-hour of notification.

OPERATOR OBLIGATIONS:

During the period of time OPERATOR is providing services under a written Purchase Order, the following obligations must be met:

- A. OPERATOR shall hire, train, employ and supervise a sufficient number of employees to operate and manage the system and perform the services required.

- B. OPERATOR's staff shall be neat in appearance and be dressed in a uniform with identification.
- C. OPERATOR's staff shall deal in a professional manner with the surrounding neighbors and passerby's who are interested or concerned with any facet of system operations.
- D. OPERATOR shall have sole responsibility for the cost of labor and benefits of all employees required to operate the system.
- E. OPERATOR shall provide personal protection equipment for its employees including but not limited to hardhats, boots, raingear, uniforms, safety vests, safety glasses, work gloves, ear plugs, respirators and medical supplies.
- F. OPERATOR shall provide all traffic control devices including but not limited to barrels, cones, signs, and barricades.
- G. OPERATOR shall continually seek way to improve efficiency as the environment changes due to laws, regulations, Owner Ordinances, software, customer demands, new technology, system expansions, etc.
- H. OPERATOR will provide the OWNER cost-benefit documentation for equipment "repair or replace decisions" prior to taking any actions.
- I. OPERATOR shall notify the OWNER of complaints on the same day they are received.
- J. OPERATOR shall report to the OWNER any existing defective equipment of systems and also report to the owner any recommended capital improvements.
- K. OPERATOR shall immediately notify the OWNER of any known instances of dangerous conditions occurring in the course of its operations which may deem to be necessary and prudent to warn the public.
- L. OPERATOR shall meet at least once monthly with the OWNER's water system Responsible Official, Operator of Record and City Engineer to review ongoing operations and maintenance activities and upcoming schedules.
- M. OPERATOR shall develop, implement and maintain standard operating procedures for the water system.

- N. OPERATOR shall perform work planning and scheduling for the OPERATOR's staff including documentation of work task completion during the period of time OPERATOR is providing services under a written Purchase Order.
- O. OPERATOR shall prepare and submit to the OWNER for acceptance, its employees; work schedules. The OWNER must be notified of any significant changes to this schedule.
- P. OPERATOR shall establish a standard operating procedure for response to on-call repair needs and complaints in a reasonable and timely manner.
- Q. OPERATOR shall provide the OWNER with a monthly report documenting a general status description for each site and document all work tasks completed during the time period reported.
- R. OPERATOR shall ensure site security of all facilities twenty-four hours per day, seven days per week by locking doors, gates etc. and shall notify the OWNER of any required facility maintenance or improvements necessary to reliably ensure security.
- S. The OPERATOR shall timely abate any hazardous condition to its employees or the public in order to protect the public health and safety.
- T. OPERATOR shall establish, post and maintain an emergency on-call service, twenty-four hours per day, seven days per week, to ensure that the OPERATOR can be notified immediately of any emergency issues that may arise at any time.
- U. OPERATOR's responsible staff shall possess cellular phones that can be contacted by OWNER's staff twenty-four hours per day, seven days per week.
- V. The OPERATOR shall respond by telephone or site visit and begin their emergency standard operating procedures within 1-hour of receiving an on-call notification.
- W. The OPERATOR shall mobilize on site within 2-hours for any after-hours emergency event.

OWNER OBLIGATIONS:

- A. OWNER shall have the right to inspect all OPERATOR records, reports and documents related to this service upon request.
- B. OWNER shall bear the costs of major repairs, rehabilitation, expansion or modification to the water system as a result of increased demand, replacement needs, or regulatory requirements imposed by State or Federal agencies.

INSURANCE:

- A. Upon execution of the agreement, the OPERATOR shall furnish to the OWNER a certificate of insurance evidencing the following coverage for comprehensive general liability, automotive liability and workman's compensation with limits as shown below. The OPERATOR will name the OWNER as additional insured on all insurance policies affording liability insurance. All insurance secured by the OPERATOR under the provisions of this section shall be issued by insurance companies acceptable to the OWNER. The insurance specified in this section may be in a policy or policies of insurance, primary or excess.
- B.
1. Workers' compensation insurance providing the statutory limits required by Mississippi law. In addition, it shall provide Coverage B, Employer's Liability Coverage, of not less than \$1,000,000 each accident, \$1,000,000 disease-policy limits. The required limit may be met by excess liability (umbrella) coverage.
 2. Commercial general liability insurance providing occurrence form contractual, personal injury, bodily injury, and a property damage liability coverage with limits of at least \$1,000,000 per occurrence, \$2,000,000 general aggregate, and \$2,000,000 aggregate products and completed operations. The required limit may include excess liability (umbrella) coverage. The policy shall name the OWNER and its representatives as an additional insured. If "occurrence form" insurance is not available, "claims made" insurance will be acceptable. The policy shall be maintained for three years after completion of this agreement.
 3. Automobile liability insurance covering all owned, non-owned, and hired automobiles, trucks, and trailers. The coverage shall be as broad as that found in the standard comprehensive automobile liability policy with limits of not less than \$1,000,000 combined single limit each occurrence. The required limit may include excess liability (umbrella) coverage.
 4. Professional liability insurance providing occurrence basis coverage for the claims that arise from the errors of the OPERATOR or its consultants, omissions of OPERATOR or its consultants, failure to render a service by the OPERATOR or its consultants, or the negligent rendering of the service by the OPERATOR or its consultants in the amount of \$1,000,000 each occurrence and \$1,000,000 annual aggregate. If occurrence form insurance is not available, claims made coverage shall be maintained for two years after final completion of the services. The OWNER does not represent that the above coverages and limits are adequate to protect the OPERATOR or its consultant's interest and assumes no responsibility therefor.

5. The OPERATOR will provide the OWNER with at least 30 days' written notice of an insurer's intent to cancel or not renew any of the insurance coverage. The OPERATOR agrees to hold the OWNER harmless from any liability, including additional premium due because of the OPERATOR's failure to maintain the coverage limits required.
6. The OWNER's approval or acceptance of certificates of insurance does not constitute the OWNER's assumption of responsibility for the validity of any insurance policies nor does the OWNER represent that the above coverages and limits are adequate to protect any individual/group/business, its consultants' or subcontractors' interests, and assumes no liability therefore.

MEASUREMENT AND PAYMENT:

A. COMPENSATION

1. Services will be measured per week for any week the OPERATOR provides personnel and/or equipment actively working to provide the services described herein under a written purchase order.
2. Payment will be based on the amounts submitted by the OPERATOR on the Bid Form.
3. Payment for work completed shall be invoiced on a monthly basis following each month of completed services which constitutes full payment for all services provided.
4. In the event less than one full week of services are provided, the OWNER will compensate the OPERATOR on a pro rata basis for the actual number of calendar days when services were provided.
5. OPERATOR shall not be responsible for costs associated with fire, flood, acts of God, or other similar extraordinary events outside of the OPERATOR's reasonable control.

B. EMERGENCY PURCHASING

1. Emergency expenditures may be made on an "emergency basis" by the OPERATOR if needed to protect the health and well-being of the public.
2. OPERATOR shall notify the OWNER for approval of such emergency expenditure circumstances prior to incurring if at all possible. If prior notice is not possible, the notice of purchase shall be given to the OWNER as early as possible thereafter and in all cases within twenty four hours.
3. Proper documentation of such emergency expenditures shall be provided in advance of the next regular Board of Aldermen meeting. An appropriate justification of emergency

expenses will be provided to the OWNER with receipts or paid invoices to document the cost.

4. OPERATOR shall cooperate and coordinate with OWNER in addressing the emergency expense item with itemized costs thereof, and justification to the Governing Authority of the OWNER as necessary to comply with State Purchasing Laws pertaining to emergency expenditures.
5. OWNER shall reimburse OPERATOR for approved emergency purchases at a rate of cost plus ten percent (10%) to cover the OPERATOR's labor expenses associated with the emergency purchase.
6. Reimbursements approved by the OWNER shall be due upon receipt of OPERATOR's invoice, and shall be payable within thirty (30) days, and delinquent thereafter, subject to and in accordance with Mississippi Law.

FAILURE TO PERFORM: In the event that the OPERATOR fails to perform services and obligations contained herein, the OWNER reserves the right to immediately terminate the OPERATOR's Purchase Order and issue subsequent Purchase Orders to an alternate bidder.

FORM F

TRAFFIC SIGNS, STREET SIGN POSTS, AND MISC MATERIALS SPECIFICATIONS

SECTION 1: All street sign faces, numbers, letters and related materials shall be in accordance with the latest edition of Manual of Uniform Traffic Control Devices, the Mississippi Standard Specifications for Road and Bridge Construction, Mississippi Department of Transportation (MDOT), MDOT Approved Products List and the City of Ridgeland, MS Department of Public Works, Transportation Section - Specifications for Reflective Sheeting (See attached Specification in Section 2 & 3). The Super-High Efficiency, Full Cube Prismatic Sheeting in this specification shall be in accordance with the ASTM D4956-04 – Type IX, Modified Type IX and Type XI (ASTM Proposed).

Prices include delivery to the City of Ridgeland's Street Maintenance Department.

The above will comply with the specifications included in the Notice to Dealers, with any and all exceptions noted in a separate document.

The above listed prices for each type of traffic sign shall be for any quantity or combination of the various types of signs. No discounts (or increases) shall be allowed for large (or small) quantities of individual traffic sign types.

The above will be delivered F.O.B., prepaid and allowed, Ridgeland, Mississippi, within days after receipt of your purchase order.

SECTION 2:

Note: The following specification contains warranty clauses directly related to product performance.

Scope. This specification covers flexible, white and colored, Super-High Efficiency Full Cube Diamond Grade retro-reflective sheeting, tape and related processing materials designed to enhance the day/night visibility of traffic control signs and objects.

2.0 Applicable Documents. The following documents, of the issue in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

2.1 ASTM Standards.

2.1.1 D4956 Standard Specification for Retro-reflective Sheeting for Traffic Control

2.1.2 B 209 Specification for Aluminum and Aluminum Alloy Sheet and Plate.

2.1.3 D 523 Standard Method for Test for Specular Gloss.

- 2.1.4 E 284 Standard Definition of Terms Relating to Appearance of Materials.
- 2.1.5 E 308 Computing the Colors of Objects by Using the CIE System.
- 2.1.6 E 810 Standard Test Method for Coefficient of Retro-reflection of Retro-reflective Sheeting.
- 2.1.7 E 1164 Standard Practice for Obtaining Spectrophotometric Data for Object-Color Evaluation.
- 3.0 Description. The retro-reflective sheeting shall have a smooth surface with a distinctive interlocking diamond seal pattern. The sheeting shall be pre-coated with a pressure sensitive adhesive backing protected by a removable liner. The Super-High Efficiency Full Cube Diamond Grade Prismatic Sheeting in this specification shall be in accordance with the ASTM D4956-04 – Type IX and XI (ASTM Proposed).
- 4.0 Test Methods.
 - 4.1 Test Conditions. Unless otherwise specified herein, all applied and unapplied test samples and specimens shall be conditioned at the standard conditions of 23 +/- 3 deg. C. (73 +/- 3 deg. F) and 50 +/- 5% relative humidity for 24 hours prior to testing.
 - 4.2 Test Panels. Unless otherwise specified herein, when tests are to be performed using test panels, the specimens of retro-reflective material shall be applied to smooth aluminum cut from ASTM B-209 Alloy 5052-H36, 5052-H38, 5154-H38 or 6061-T6 sheets in 0.05 cm. (0.020 in.), 0.10 cm (0.040 in.) or 0.16 cm (0.063 in.) thickness. The aluminum shall be degreased and lightly acid etched before the specimens are applied. The specimens shall be applied to the panels in accordance with the recommendations of the retro-reflective sheeting manufacturer.
- 5.0 Physical Requirements.
 - 5.1 Color Requirements.

Color shall be as specified and shall conform to the requirements of ASTM D 4956-05, Table 17. Luminance factors shall conform to ASTM D 4956-05, Tables 10 and 14.

 - 5.1.1 Color Test. Conformance to color requirements of Table I shall be determined by instrumental method in accordance with ASTM E 1164 on sheeting applied to aluminum test panels. The values shall be determined on a HunterLab Labscan 6000 0/45 Spectrocolorimeter with option CMR 559 {or approved equal 0/45 (45/0) instrument with circumferential viewing (illumination)}. Computations shall be done in accordance with ASTM E 308 for the 2 degree observer.
 - 4.2.1.1 Coefficient of Retro-reflection, Ra. The Coefficients of retro-reflection shall not be less than the minimum values specified in Table I. Testing shall be in accordance with ASTM E 810.
 - 5.2.1 Units. Coefficients of retroreflection Ra. shall be specified in units of candelas per lux per square meter (candelas per footcandle per square foot).
 - 5.2.2 The observation angles shall be 0.2, 0.5 and 1.0 degrees.

5.2.3 Values at 0 and 90 degrees orientation shall be averaged.

5.2.4 For screen printed transparent colored areas or transparent colored overlay films on white sheeting, the coefficients of retroreflection shall not be less than 70% of the values for corresponding color in Table I.

TABLE I
Minimum Coefficient of Retroreflection Ra
(Candelas per lux per square meter)

White	-4	30
0.2	570	215
0.5	400	150
1.0	120	45

Blue	-4	30
0.2	26	10
0.5	18	6.8
1.0	5.4	2.0

Yellow	-4	30
0.2	425	160
0.5	300	112
1.0	90	34

FYG	-4	30
0.2	455	170
0.5	320	120
1.0	96	36

Red	-4	30
0.2	114	43
0.5	80	30
1.0	24	9

FY	-4	30
0.2	340	130
0.5	240	90
1.0	72	27

Green	-4	30
0.2	57	21
0.5	40	15
1.0	12	4.5

FO	-4	30
0.2	170	64
0.5	120	45
1.0	36	14

5.3 Gloss. The retro-reflective sheeting shall have an 85 degree specular gloss of not less than 50 when tested in accordance with ASTM D-523.

5.4 Color Processing. The retro-reflective sheeting shall permit cutting and color processing with compatible transparent and opaque process colors in accordance with the sheeting manufacturer's recommendations at temperatures of 15 to 38 degrees C (59 to 100 degrees F) and relative humidity's of 20% to 80%. The sheeting shall be heat resistant

and permit force curing without staining of applied or unapplied sheeting at temperatures recommended by the sheeting manufacturer.

- 5.6 Adhesive. The protective liner attached to the adhesive shall be removed by peeling without soaking in water or other solutions, without breaking, tearing, or removing any adhesive from the backing. The protective liner shall be easily removed following accelerated storage for 4 hours at 70 degrees C (158 degrees F) under a weight of .175 Kg/sq.cm. (2.5 pounds per square inch). The adhesive backing of the retro-reflective sheeting shall produce a bond to support a .80 Kg (1.75 pound) weight for 5 minutes without the bond peeling for a distance of more than 5.0 cm (2.0 inches) when applied to a test panel prepared as in 4.2. Apply 10 cm (4 inches) of a 2.5 cm x 15 cm (1" x 6") specimen to a test panel. Condition and then position the panel face down horizontally, suspend the weight from the free end of the sample and allow it to hang free at an angle of 90 degrees to the panel surface for 5 minutes.
- 5.7 Impact Resistance. The retro-reflective sheeting shall comply with the impact resistance requirements contained in ASTM D 4956-05, section 6.10.
- 5.8 Resistance to Accelerated Outdoor Weathering. The retro-reflective surface of the sheeting shall be weather resistant and show no appreciable cracking, blistering, crazing, or dimensional change after 3 years unprotected outdoor exposure, facing the equator and inclined 45 degrees from the vertical. Following weather exposure, panels shall be washed in a 1% detergent solution for 45 seconds, rinsed thoroughly with clean water, blotted with a soft clean cloth and brought to equilibrium at standard conditions. After cleaning, the coefficient of retro-reflection shall not be less than 80% of the values in Table I and the colors shall conform to the requirements of ASTM D 4956, Table 17. The sample shall:
 - 5.8.1 Show no appreciable evidence of cracking, scaling, pitting, blistering, edge lifting or curling or more than 0.8 mm (1/32 inch) shrinkage or expansion.
 - 5.8.2 Be measured only at angles of: 0.2 degree observation, -4 degree entrance, 1.0 degree observation, -4 degree entrance. Where more than one panel of a color is measured, the coefficient of retro-reflection shall be the average of all determinations.
- 5.9 Resistance to Heat. The retro-reflective sheeting, applied to a test panel and conditioned as in 4.1, shall be measured at 0.2 degree observation and -4 degree entrance angles and exposed to 71 +/- 3 degrees C (160 +/- 5 degrees F) for 24 hours in an air circulating oven. After heat exposure and conditioning according to provision of Section 4.1, the sheeting shall retain between 85% and 115% of the values measured before exposure.
- 5.11 General Characteristics and Packaging. The retro-reflective sheeting as supplied shall be of good appearance, free from ragged edges, cracks and extraneous materials, and shall be furnished in either rolls or sheets. When furnished in continuous rolls, the average number of splices shall not be more than 3 per 50 meters (54.7 yd) of material with a maximum of 4 pieces in any 50 meter (45.7 yd) length. Splices shall be butted or overlapped and shall be suitable for continuous application as furnished. When furnished as cut sheets or sign faces, the sheeting shall be packaged flat in accordance with commercially accepted standards. The sheeting shall be packed snugly in corrugated fiberboard cartons, in accordance with commercially accepted standards. Each carton

shall clearly stipulate the brand, quantity, size, lot or run number and color. Stored under normal conditions the retro-reflective sheeting as furnished shall be suitable for use for a minimum period of one year.

6.0 Performance Requirements and Obligations.

6.1 Certification. The sheeting manufacturer shall, upon request, submit with each lot or shipment, a certification that states that the material supplied will meet all of the requirements listed herein.

6.2 Field Performance Requirements.

6.2.1 Retro-reflective sheeting, which is, used for vertically mounted traffic control and guidance signs, which are processed and applied to aluminum sign blank materials in accordance with the sheeting manufacturer's recommendations shall perform effectively for a minimum of 12 years from the date of fabrication (ordinary colors); 7 years (fluorescent yellow and fluorescent yellow-green); and 3 years (fluorescent orange). The retro-reflective sheeting will be considered unsatisfactory if it has deteriorated due to natural causes to the extent that: (1) the sign is ineffective for its intended purpose when viewed from a moving vehicle under normal day and night driving conditions by a driver with normal vision; or (2) the coefficient of retro-reflection, after cleaning, is less than the minimums specified for that sheeting during the period listed.

6.2.1.1 Ordinary colors:

80% of the values listed in Table I up to 7 years and
70% of the values listed in Table I up to 12 years

6.2.1.2 Fluorescent colors (fluorescent yellow and yellow-green):

80% of values listed in Table I up to 5 years and
70% of values listed in Table I up to 7 years

6.2.1.3 Fluorescent Orange

50 % of values listed in Table I for 3 years

6.2.2 All measurements shall be made after sign cleaning according to the sheeting manufacturer's recommendations.

6.2.3 Natural causes include effects of exposure to weather. Natural causes exclude (without limitation) damage from exposure to chemicals, abrasion and other mechanical damage from fasteners used to mount the sign, collisions or mishandling.

6.3 Sheeting Manufacturer's Replacement Obligation

6.3.1 Where it can be shown that the retro-reflective sheeting fails to conform to the performance requirements of Section 6.2, the sheeting manufacturer's sole responsibility and purchaser's and user's exclusive remedy shall be:

6.3.1.1 Ordinary colors: If the failure occurs within the first 7 years from the date of fabrication, the sheeting manufacturer shall, as its expense, restore the sign surface to its original effectiveness. Fluorescent colors (fluorescent yellow and fluorescent yellow-green only): If the failure occurs within the first 5 years from the date of fabrication, the sheeting

manufacturer shall, as its expense, restore the sign surface to its original effectiveness.

- 6.3.1.2 Ordinary colors: If the failure occurs within the 8th through 12th years from the date of fabrication, the sheeting manufacturer shall furnish the necessary amount of sheeting to restore the sign surface to its original effectiveness.

Fluorescent colors (fluorescent yellow and fluorescent yellow-green only): If the failure occurs within the 6th or 7th year from the date of fabrication, the sheeting manufacturer shall furnish the necessary amount of sheeting to restore the sign surface to its original effectiveness.

Fluorescent Orange: If the failure occurs within 3 years from date of fabrication, the sheeting manufacturer shall furnish the necessary amount of sheeting necessary to restore the sign surface to its original effectiveness.

- 6.3.1.3 Replacement sheeting shall carry the unexpired warranty of the sheeting it replaces.

- 6.4 Process Inks. The manufacturer of the sheeting shall manufacture and may offer at no additional or a nominal cost process inks, clears and thinners recommended for the sheeting to meet the performance requirements of this specification, and shall further be responsible for technical assistance in the use of these inks in accordance with section 7.

- 6.5 Slip Sheet. Slip Sheet paper, if recommended by the sheeting manufacturer for sheeting surface protection or for use in packing, storage or shipping finished signs, may furnish in rolls by the manufacturer at no additional charge or nominal charge in at least equal square footage and in the same widths as the sheeting supplied.

- 6.6 Washers. Washers, if recommended by the sheeting manufacturer to protect the sign surface from damage by bolts or other fasteners, may be furnished by the manufacturer at no additional charge or a nominal charge.

- 7.0 Technical Assistance Requirements.

- 7.1 Instruction and Training. The manufacturer supplying the sheeting requirements shall provide the services of a qualified technician for instruction and training at the primary sign manufacturing facility designated by the agency. This instruction shall be available on a quarterly basis at no additional cost, and shall include but not be limited to, training films, material application, equipment operation, silk screening techniques, packaging, storage and other proven sign shop practices as they apply to the reflective sheeting supplied by the manufacturer, and to assure that the resulting signs can comply with the applicable specifications.

- 7.2 Equipment. The manufacturer supplying the retro-reflective sheeting requirements shall provide service for sheeting application equipment of their manufacture, certify that trained personnel will be available on 72 hours notice to render such service, and shall

stock authorized parts for their sheeting application equipment. "Service" is understood to mean the capability of calibration and trouble shooting, as well as the training and retraining of personnel as required.

- 8.0 For the product 3910/3914 - Flexible Reflective Sheeting with Pressure Sensitive Adhesive for Reflectorizing Reboundable Plastic Substrate Work Zone Traffic Control Devices - 4" or 6". Colors: White and Orange."

This product must meet the specification as outlined in the Specification for Series 3910 for use on Reboundable Plastic Traffic Control Devices, 3M Document No.: 75-0300-7306-0, dated May 1999.

- 9.0 All transparent process colors to be compatible with the specified sheetings and shall be of the type and quality recommended as a Matched Component System (MCS), by the manufacturer of the reflective sheeting (No substitutes will be accepted).

Spec. No.: DG3 - 82006

FORM G

DECORATIVE STREET NAME SIGNS AND POSTS SPECIFICATIONS

The sign blank shall be a single piece of smooth cut aluminum from ASTM B-209 Alloy 5052-H36, 5052-H38, 5154-H38 or 6061-T6 sheets in 0.080 inch thickness. The aluminum shall be degreased and lightly acid etched before the sign sheeting is applied. The sign sheeting shall be applied to the panels in accordance with the recommendations of the Retroreflective sheeting manufacturer.

The decorative street name signs shall be finished on both sides. The colors of the decorative street name signs shall match the existing decorative street name signs. The decorative sign post shall be painted with series 10

Tnemec primer (rust) and series 23 Enduratone (black) or approved equal. The signs and posts shall be free from all defects for a period of twelve months from delivery to the City of Ridgeland. Street names will be provided with post and sign orders.

The Mast Arm Street Name Sign Mounting Brackets shall be Pelco Model No. AS-0144 or AS-0142 with a 144-inch cable length or approved equal prior to bid opening. Sign Mounting Clamps shall be "Mast-O-Bracket" Model No. RPBOHMCWCMZ8300 for 8-inch clamps and "Mast-O-Bracket" Model No. RPBOHMCWCMZ8301 for 16-inch clamps. The number of sign mounting clamps will be determined by the manufacturer's recommendation based on the length of the sign being installed. Gusset tube for overhead mast arm sign mounting shall be 1-1/2-inch diameter, no slot, Schedule 40 metal pipe.

The above will comply with the specifications included in the "Instructions to Bidders", with any and all exceptions noted in a separate document.

UPDATED AS OF
2/2018

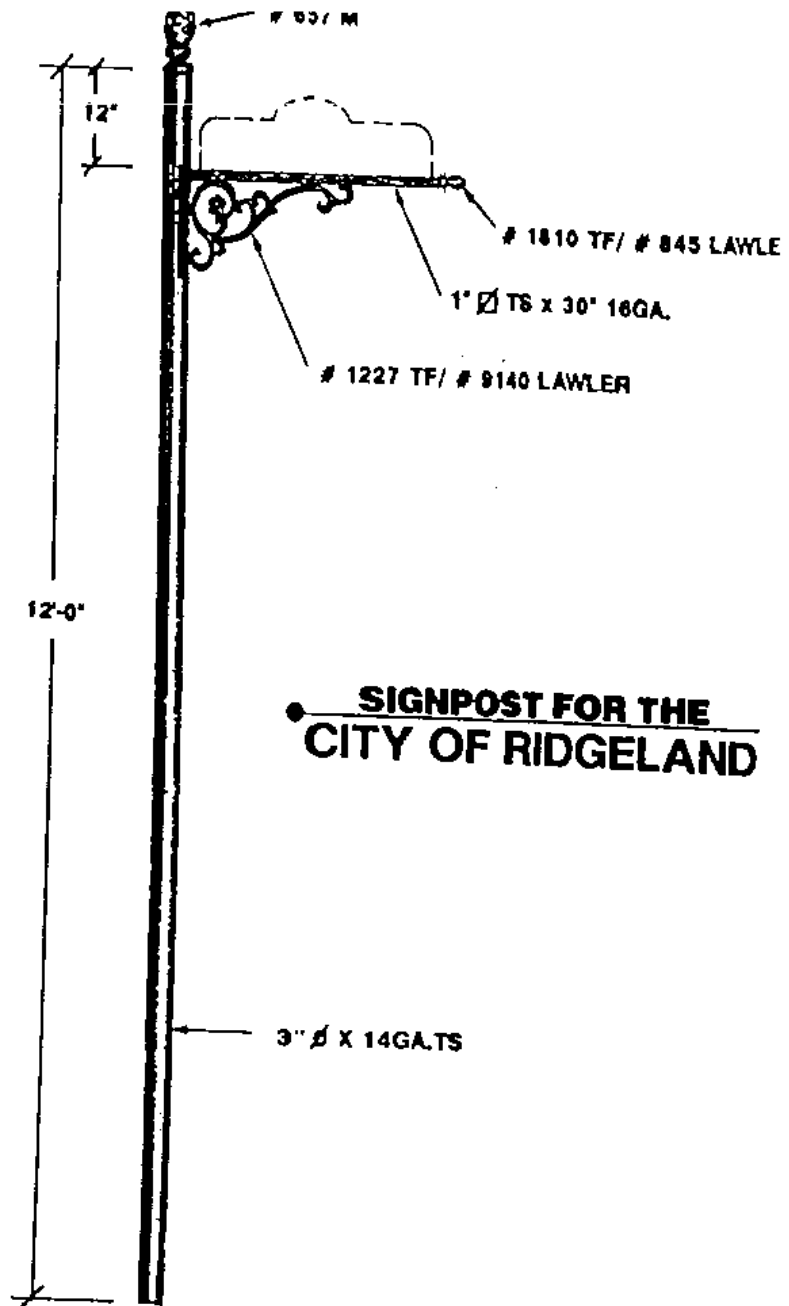
RIDGELAND Blank is the same size with .75" lip
Sheeted White DG3, .080 aluminum, 1.5" Radius, DF
Colors - Reverse "Ridgeland Green" (PMS 553C) and
"Ridgeland Gold" for the pinstripe (PMS 610C)

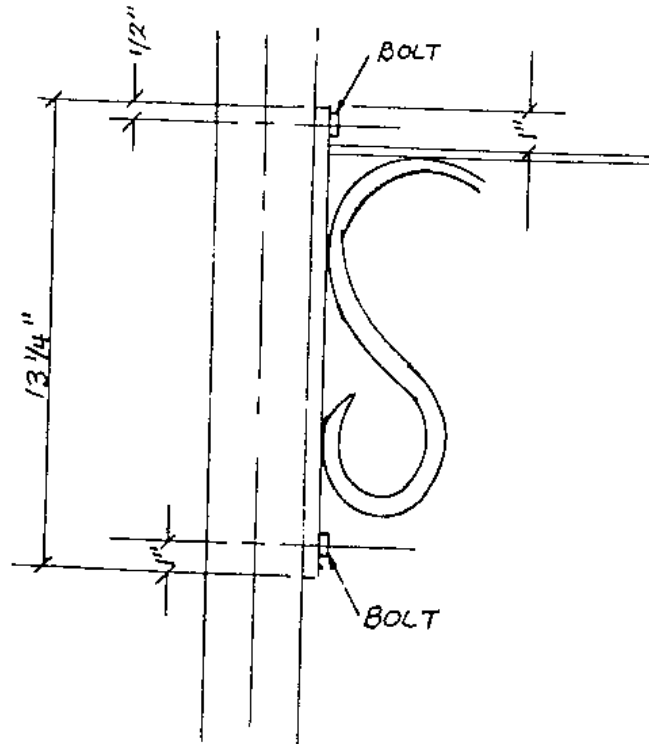
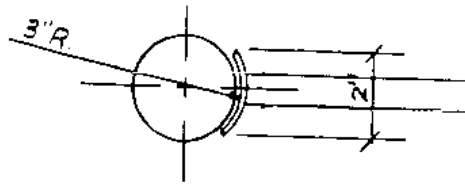
New RIDGELAND LOGO MEASURES 5" x 2.27"

LEGEND - 4" TIMES NEW ROMAN **BOLD** ALL CAPS - SUFFIX IS 2" ALL CAPS



46.96 in
MAXIMUM WIDTH OF THE LEGEND
On occasion some longer legends will have to be comprised to fit the space





CONNECTION PLATE
1/8" STEEL

City of Ridgeland Standard Mast-Arm Mounted Street Name Signs

2017 Ridgeland Metro - **30 x Various** REVERSE "2017 RIDGELAND GREEN" AND "2017 RIDGELAND GOLD" on White DG3 .080 aluminum, Single Face, Street name- **10"** Times New Roman BOLD Upper case and Suffix- **5"** Times New Roman BOLD Upper Case
White Edge Border measures 1.25" - Gold Pinstripe is .25" thick - Date of Manufacture at bottom right in .75" Arial Font

No Holes



FORM H

TRAFFIC SIGNAL & STREET LIGHT MAINTENANCE SERVICE SPECIFICATIONS

Description:

- A. This work shall consist of providing the labor, tools and equipment on an hourly basis to complete the installation of City of Ridgeland furnished traffic signal and street lighting parts and equipment.
- B. Equipment and operator rates shall include provision for all fuel, routine maintenance, repairs, insurance fees, overhead, licenses, taxes and other operating expenses for providing said service within the Owners operating jurisdiction.
- C. Electricians, laborers and foreman are to be fully equipped by the Contractor to accomplish the work; and, the listed rates shall include provision of items such as hand tools, power

tools, computer equipment and cables, overhead, insurance fees, taxes, and other incidentals.

- D. Equipment types listed on the proposal represent the desired class, quality, size and performance characteristics.
- E. The Owner's scope of work as defined in the issued Purchase Order shall be accomplished in accordance with the corresponding specifications and special provisions as set forth herein, and shall be inclusive of all minor incidental materials, work, system integration, and testing necessary to provide complete and operable equipment and systems in place and accepted.
- F. The Contractor is responsible for ensuring all work is done in a safe and responsible manner that will not damage existing utility infrastructure or adjacent property.
- G. The contractor shall mark all hazards or infrastructure to be protected within the project limits. Any damage done to either public or private property shall be the responsibility of the Contractor to repair prior to final payment.
- H. Any damage to private property, sidewalks, curbs, or streets shall be repaired at the expense of the contractor prior to requesting final payment. Contractor shall immediately notify the City of damages.

Materials:

- A. Equipment will be furnished by the City of Ridgeland to the Contractor for installation at the locations defined in the issued Purchase Order.
- B. Parts and equipment for which installation may be requested include, but are not limited to, the following
 - 1. Traffic Signal Cabinet Assembly, Type III, Eight Phase Base Mounted Cabinet
 - 2. UPS with Base Mounted Cabinet
 - 3. Cabinet Foundations
 - 4. Cabinet Monitoring Intersection Device with GPS-based Preemption
 - 5. Video Detection Cameras, Processors and associated cables
 - 6. PTZ Cameras and associated cables
 - 7. Traffic Signal Heads and LED Lens
 - 8. Street light fixtures, bulbs, and ballasts

9. Various power and communication cables inside conduits for serving traffic signal equipment and street lights
10. Mast arm mounted signs and brackets
11. Pedestrian Signal Poles with breakaway foundations
12. 1,000-watt, High-Mast luminaire bulbs, ballasts and fuses
13. 400-watt, Low-Mast luminaire bulbs, ballasts and fuses
14. 100-watt equivalent, Induction bulbs and drivers for acorn-style fixtures
15. 200-watt equivalent, Induction bulbs and drivers for acorn-style fixtures

Related Specifications:

- A. All work will be accomplished in accordance with the Mississippi Standard Specifications for Road & Bridge Construction by the Mississippi Department of Transportation, English 2017 Edition. The following sections intended for use with this work include, but are not limited to, the following :

	631	Traffic Signal Systems
	632	Traffic Signal Cabinet Assemblies
	633	Uninterruptable Power Supply
	635	Traffic Signal Heads
	636	Electrical Cable
	639	GPS-based, Traffic Signal Preemption & Remote Monitoring
Systems		(see attached supplement)
	643	Video Vehicle Detection Systems
	653	Traffic and Street Name Signs
	663	Networking Equipment
	665	Video Communication Equipment
	681	Roadway Lighting Systems
	682	Electrical Distribution Systems
	683	Lighting Assemblies
	684	Pole Assemblies
	686	Relocation of Existing Lighting Assemblies

Execution:

- A. The Contractor and a Public Works Department representative will inspect the scope of work in the field prior to issuance of a Purchase Order to identify any potential problems and estimate the number of hours needed to complete the work.
- B. The Contractor will not begin work on any requested task until a written Purchase Order has been issued by the City of Ridgeland.

- C. The Contractor shall be responsible for contacting Mississippi-811 to verify existing utilities. The Contractor will be responsible for damages to existing utilities.
- D. The cost for installation, maintenance and removal of traffic control devices shall be absorbed in the price bid for the pay items listed in the proposal. All traffic control devices on this project shall comply with the MUTCD (Latest Edition).
- E. Most installation work should be accomplished using a road shoulder closure, see the traffic control plan for typical signal installation.
- F. The Contractor shall not be permitted to close any lanes of traffic on Monday through Friday, between the hours of 7:30 a.m. – 8:30 a.m. or between the hours of 4:30 p.m. – 6:00 p.m.
- G. When removal of existing equipment is requested in the Purchase Order it shall include removal of all equipment and associated wiring that may be located in the controller cabinet, poles, mast arms and/or connecting conduits and pullboxes.
- H. All existing traffic signal equipment removed as part of this project shall be returned by the Contractor to the City of Ridgeland Public Works Department, 240 West School Street, Ridgeland, MS 39157.
- I. The contractor shall coordinate with MDOT and the City of Ridgeland to test and validate the communication path of the existing fiber optic lines between the field devices and the TMC in order to incorporate communication to all of the new equipment and software installed within this project.
- J. If communication testing identifies a pre-existing failure in the communication system, the City of Ridgeland will be responsible for establishing a viable connection.

Compensation:

A. Measurement

TRAFFIC SIGNAL & STREET LIGHT MAINTENANCE SERVICES will be measured per HOUR for any hour the Contractor provides equipment and/or personnel actively working on site to complete the defined scope of work.

1. The Contractor will be compensated for the ACTUAL number of hours used to complete the scope of work, and will not be bound to the estimated quantity presented on the Purchase Order.

2. The Contractor understands that the quantities included on the issued Purchase Order are approximate only and subject to either increase or decrease, and hereby agrees to perform ANY increased or decreased quantities of work at the Unit Price Bid.
3. No allowance shall be made for travel time to and from the site unless it relates to material disposal.
4. No allowance shall be made for unproductive days the Contractor has equipment on site not actively working such as rain days or days when progress is halted for any reason outside of the Owner's control.
5. The Contractor shall be responsible for documenting, reviewing and confirming equipment and personnel time records on a daily basis with the appointed representative of the City's Public Works Department.
6. The Contractor will vigorously pursue completion of the assigned work items. The Contractor may be terminated if it is the opinion of the Owner that the efficiency or quality of the work is substandard.
7. Time spent by the Contractor to correct error of omissions shall not be measured or paid for under these specifications.

B. Payment

Payment for TRAFFIC SIGNAL & STREET LIGHT MAINTENANCE SERVICES shall be made at the Contract unit price per hour bid which shall be full compensation for furnishing the equipment, operators, laborers, fuel, tools, maintenance, insurance fees, permit fees, disposal fees, overhead, licenses, taxes, profit and other operating expenses and incidentals to complete the Owner's scope of work as defined in the issued Purchase Order.

FORM I

VEHICLE LOOP ASSEMBLIES SPECIFICATIONS

PART 1 - DESCRIPTION

- 1-01 This work shall consist of furnishing all component materials required to form complete independent vehicle loop assemblies of the type(s) specified and assembling, constructing, erecting and installing same in conformity with these specifications to insure properly operating unit(s) in accordance with the design(s) and at the locations as directed.

1-02 MATERIAL REQUIREMENTS

- A.** Materials used on this construction on this construction shall conform to the following requirements:

Slot Sealer - The materials to be used to seal the saw cut shall be a one component sealant compound designed specifically for sealing detector loops in concrete or asphalt. It shall have satisfactory compressive strength to bridge the saw cut under traffic but remain

flexible to compensate for thermal contraction or expansion. The one component sealant shall be a polyurethane material of a composition that will cure only in the presence of moisture.

B. Physical Properties: The cured sealant shall have the following physical properties:

- | | | |
|-----|------------------------|----------------------------|
| (1) | Hardness (Indentation) | 60-80 (ASTM D-2240) |
| (2) | Tensile Strength | 600 PSI min. (ASTM D-412A) |
| (3) | Elongation | 250 % min. (ASTM D-412A) |

C. Performance Properties: The cured sealant shall have the following properties:

- | | | |
|-----|----------------------------|-----------------------------|
| (1) | Adhesion to Concrete | 10 PSI min. (ASTM D-903) |
| (2) | Compatibility with Asphalt | Gardner Color 10(ASTM-1544) |
| (3) | Porosity | Substantially free of voids |

D. Loop Wire - Loop wire and lead-in to the pull-box or aerial junction box shall be Number 14, American Wire Gauge (AWG) stranded meeting the requirements of IMSA Specification No. 51-3, per the requirements of City of Ridgeland Specifications for Traffic Signal and Electrical Cable.

E. Conduit - Conduit required for installation of the loop lead-ins shall be in accordance with City of Ridgeland Specifications for Lighting and Traffic Signal Conduit.

F. Probe Point Detection Units B When the loop assembly consists of probe point detection units, the probe units shall be capable of operating in a temperature range of -35EF to 165EF and in 100% humidity. The probe shall not be affected by water, snow, ice or pavement deterioration. The probe cable shall be polyurethane jacketed, polypropylene insulated less than 1/4 inch in diameter. Probes are to be located in a one-inch vertical hole approximately 18 inches below the roadway surface. Probe cable is to be installed in 1/4-inch cut slot made by a diamond or abrasive power saw.

1-03 CONSTRUCTION REQUIREMENTS

A. Loop Slots

Loop wire shall be installed in saw cuts in the roadway made by a diamond or abrasive power saw. In all cases, the slot shall be of sufficient depth to provide for a minimum one inch cover between the top of the loop wires and the roadway surface.

B. The saw cuts shall be overlapped so that the slot has full depth at all corners. All corners where loop wires turn shall be diagonally cut so that there are no jagged edges or protrusions which may damage the wire.

C. Prior to installation of the wire, the saw cuts shall be cleaned and dried. There shall be no cutting dust, grit, oil, moisture or other contaminants in the saw cut.

D. Wire Installation

The loop wire shall not have any cuts, nicks, abrasions or breaks in the insulation before or after installation in the slot. Any wire having defects in the insulation shall be replaced.

E. Loop wire and lead-in to the pull-box or loop detector shall be one continuous length of wire with no splices.

F. Loop lead-in from the curb or edge of pavement to the pull-box or conduit shall be installed in 3/4 inch conduit. The loop lead-in for each loop shall be run in separate saw cuts from the loop to the pull-box.

G. The two loop lead-in wires shall be twisted 2 to 5 turns per foot from the loop to the point of termination.

H. Loop lead-in wires or shielded cable terminating in the controller or detector cabinet shall be uniquely identified by an insulated, pre-printed sleeve slipped over the wire before attachment of a lug connector.

I. Lead-in as intended in this section is the two loop wires from the loop to the shielded cable.

J. Each loop shall have a shielded cable from the pull-box or conduit to the controller cabinet or detector equipment box, unless specified and/or directed by the Engineer. There shall be no splices in the shielded cable unless otherwise directed by the Engineer. Shielded cable shall be specified in City of Ridgeland Specifications for Traffic Signal and Electrical Cable.

K. The wire shall be placed in the bottom of the slot so that there are no kinks, curls, straining or stretching of the insulation. Subsequent turns of the loop shall be placed to assure vertical stacking of the wires.

L. Special care shall be taken in seating the wires so that the insulation will not be broken or abraded. No sharp tools such as screwdriver or metal object shall be used for this operation.

- M. Loop location shall be as directed by the Engineer.
- N. Sealing the Saw Cut
All saw cuts with the wire installed shall be inspected and approved by the Engineer before the sealer is installed.
- O. The Contractor shall install the sealer in strict adherence to the manufacturer's recommendations and these specifications.
- P. No sealer shall be installed during inclement weather or under any condition which might introduce moisture into the saw slots.
- Q. The viscosity of the sealer shall be such that it can be readily poured into the slot, completely surround the wires, displace all air and fill the slot so that the sealer is flush with the roadway surface. The finished sealed slot shall be waterproof and present a neat workmanlike appearance.
- R. The sealer shall be sufficiently hardened before allowing traffic on it.
- S. Testing
- T. After the loop and lead-in have been assembled in place and before sealing the saw cut, a continuity check and a resistance check on the loop to ground shall be made. Resistance to ground shall be not less than 10 megohms.
- U. This same test shall be made after the slot is sealed.
- V. An inductance test shall also be made to insure that the required inductance values are achieved.
- W. Test shall be conducted in the presence of the Engineer or his representative.

1-04 METHOD OF MEASUREMENT

Vehicle loop assemblies will be measured by the linear foot computed horizontally along the saw slot in which the loop wire is installed and will include the loop lead-in to the pull box.

1-05 BASIS OF PAYMENT

This work, complete and accepted, will be paid for at the contract unit price bid per linear foot of loop, which price shall be full compensation for furnishing all materials; for all sawing, installing, sealing, connecting lead-in, testing, and for all equipment, tools, labor and incidentals necessary to complete the work.

Payment will be made under:

Vehicle Loop Assemblies - per linear foot.

Probe Point Detection Units (paired)

FORM J

CRACK SEALANT SPECIFICATIONS

Specifications:

General: Crack sealant shall be a single component, hot-applied, elastically modified asphalt composition which is specifically produced for pavement maintenance sealing material for use in cracks and joints in asphalt or portland cement concrete pavements.

Specification Conformance:

Crack sealant when heated in accordance with ASTM D5078 to the safe heating temperature are as follows:

<u>Test</u>	<u>Specification.</u>
Cone Penetration (ASTM D5329)	20-40
Resilience (ASTM D5329)	40% minimum
Softening Point (ASTM D36)	210F (99C) min.
Ductility, 77F (25C) (ASTM D113)	30 cm min.
Flexibility (ASTM D3111 Modified)	Pass at 30F (-1C)
Flow 140F(60C) (ASTM D5329)	3 mm max
Brookfield Viscosity, 400F(204C) (ASTM D2669)	100 Poise max.
Asphalt Compatibility (ASTM D5329)	Pass
Bitumen Content (ASTM D4)	60% min
Tensile Adhesion (ASTM D5329)	400% min.
Safe Heating Temperature	400F (204C)
Recommended Pour Temperature	380F (193C)

Packaging:

Packaging shall consist of individual boxes of sealant which are palletized into shipping units. Boxes shall contain a non-adherent film which permits easy removal of the sealant. The weight of sealant in each box shall not exceed 40 lbs. (18kg) and pallet weights do not exceed 2,880 lbs.

(1310kg). Boxes shall use tape closure and shall not contain any staples. Boxes are labeled with the product name, part number, lot number, specification conformance, application temperatures and safety instructions.

Compatibility:

Crack sealants shall be compatible with the City of Ridgeland=s crack sealing machine; Crafcro SS-125 Joint and Crack Seal Machine

Warranty:

Crack sealants shall meet applicable ASTM, AASHTO, Federal or State specifications at time of shipment.

**FORM K
DECORATIVE STAMPED AND PAINTED CONCRETE PAVEMENT
SPECIFICATIONS**

Description:

- A. This work shall consist of furnishing all labor, materials, tools, tests, royalties, services and other incidentals as may be required for the completion of Decorative Stamped and Painted Concrete Pavement.
- B. The extent of the locations for decorative stamped and painted concrete pavement include but are not limited to street travel lines, roundabouts, sidewalks, multi-use paths, curb ramps and parking lots.
- C. Decorative Stamped and Painted Concrete Pavement shall be installed in accordance with the following Special Provision No .907-608-1 for Stamped and Colored Concrete Sidewalk and the latest edition of the Mississippi Standard Specifications for Road and Bridge Construction.
- D. Colors and Patterns for decorative stamped and painted concrete pavement shall be approved by the City Engineer prior to installation.

Execution:

- A. On any new concrete pavement installation, the City of Ridgeland shall be responsible for preparing and completing the subgrade prior to the Contractor mobilizing for form installation.
- B. For installations that require removal of existing pavement and replace with Decorative Stamped and Painted Concrete Pavement, the Contractor shall be responsible for furnishing saw-cutting existing pavement, removal and disposal of all existing and surplus materials, excess or unsuitable subgrade material, asphalt and any other material required to complete

the project.

- C. For installations that require removal of existing pavement and replace with decorative Stamped and Painted Concrete Pavement, the Contractor shall be responsible for furnishing all material, labor and equipment necessary to prepare the subgrade for new concrete pavement installation.
- D. The Contractor shall be responsible for furnishing all concrete, steel dowels and dummy joints.
- E. The cost for installation, maintenance and removal of traffic control devices shall be absorbed in the price bid for the pay items listed in the proposal. All traffic control devices on this project shall comply with the MUTCD (Latest Edition).

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-608-1

CODE: (SP)

DATE: 01/17/2017

SUBJECT: Stamped and Colored Concrete Sidewalk

Section 608, Concrete Sidewalks, of the 2017 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as hereby amended as follows.

907-608.01--Description. After the paragraph in Subsection 608.01 on page 414, add the following.

The work may also consists of furnishing all labor, materials, tools, tests, royalties, services and other incidentals as may be required for the good and proper completion of the Stamped and/or Colored Concrete Sidewalk operations.

The extent of colored and imprinted sidewalk locations are shown on the drawings. These locations are generally limited to all proposed concrete traffic islands and concrete median end noses.

The Contractor is responsible for notes on the drawings which call attention to particular requirements or conditions. The fact that these requirements or conditions are not called out in the specifications does not relieve the Contractor of responsibility for these requirements or conditions.

907.608.01.1--Quality Assurance. Installation shall be performed by an installer with at least one year experience in the placement of stamped and colored concrete sidewalk paving systems.

907-608.02--Materials. After the last paragraph of Subsection 608.02 on page 414, add the following.

Colored concrete materials and imprinting tool release agents shall meet the following requirements.

- A. Coloring Agents: Contractor may elect to color the concrete integrally with a mineral oxide color, or may apply dry-shake of a manufactured pre-blended mixture of mineral oxide pigment and Portland cement to the surface of the freshly poured concrete.

Colors for Colored and Imprinted Concrete shall be selected by the Engineer from Standard or Designer color charts.

- B. Curing and Finishing Material: Contractor a color-matched curing and finishing material. Curing materials or methods for uncolored concrete shall not be used with Colored and Imprinted Concrete.

- C. Release Agent: Contractor shall utilize a dry-shake powder to facilitate the release of the concrete imprinting tools. The color of the release agent shall match the selected main coloring agent chosen by the Engineer for the concrete.
- D. Imprinting Tools: Tools shall be of high quality and shall provide uniform control of joint depth.
- E. Imprint Tool Pattern: The imprint pattern to be used for all concrete imprinting shall be a 4" x 8" brick running bond pattern, with a 4" x 8" matching soldier course border used along the perimeter of all proposed concrete traffic islands and median end noses. Refer to the drawings for pattern layout and orientation of the imprint patterns.

Once the color, method of coloring, and the imprinting tools have received approval from the Engineer, the Contractor shall provide a 4-foot square panel, separate from proposed traffic island and median end nose areas, to be reviewed and approved by the Engineer. Engineer will evaluate color as compared to color chart and texture of broom finish.

Subsequent panels may be required, if finish, imprint quality, or color are unacceptable to the Engineer. The Contractor shall remove unaccepted panels immediately from site. Accepted panel shall remain until all colored concrete traffic islands and median end noses have been completed by the Contractor, at which time the Contractor shall remove the panel from the site.

907-608.03.4—Handling, Measuring, Proportioning, and Mixing Materials. After the paragraph in Subsection 608.03.4 on page 415, add the following.

Should an integral coloring method be selected by the Contractor, the Contractor shall mix coloring agent in strict accordance with the approved manufacturer's written instructions. Copies of the manufacturer's written instructions shall be furnished to the Engineer prior to manufacture and placement of colored concrete.

Should a dry-shake applied coloring method be selected by the Contractor, the Contractor shall measure and apply coloring agent in strict accordance with the approved manufacturer's written instructions. Copies of the manufacturer's written instructions shall be furnished to the Engineer prior to manufacture and placement of colored concrete.

907-608.03.7—Protection and Curing. After the last paragraph of Subsection 608.03.7 on page 416, add the following.

Protection and curing materials and methods of application for stamped and colored concrete sidewalk shall be in strict accordance with the approved manufacturer's written instructions. Copies of the manufacturer's written instructions shall be furnished to the Engineer prior to manufacture and placement of colored concrete.

907-608.04—Method of Measurement. After the last paragraph of Subsection 608.04 on page 416, add the following.

Colored Concrete Sidewalk, completed and accepted, will be measured by the square yard. Sample panels will not be measured for separate payment.

Stamped or Stamped and Colored Concrete Sidewalk, completed and accepted, will be measured by the square foot. Sample panels will not be measured for separate payment.

907-608.05—Basis of Payment. After the first paragraph of Subsection 608.05 on page 416, add the following.

Colored Concrete Sidewalk will be paid for at the contract unit price of square yard, which shall be full compensation for completing the work.

Stamped and/or Colored Concrete Sidewalk will be paid for at the contract unit price of square foot, which shall be full compensation for completing the work.

Add the following to the list of pay items on page 416.

907-608-D: * Concrete Sidewalk - per square foot

* Sidewalk may be colored, stamped, or stamped and colored

FORM L
ASPHALT PAVING SPECIFICATIONS

MULTI-USE PATH NOTES:

1. This work consists of overlaying a new asphalt surface onto an existing multi-use path or a prepared surface intended for a multi-use path at various locations within the City of Ridgeland. This work shall include furnishing, delivering and placement of hot mix asphalt pavement in one or more lifts, in reasonably close conformity with the lines, grades, thicknesses, and typical cross sections stated on the Purchase Order, and in strict accordance with the City of Ridgeland Subdivision Regulations. Asphalt paving equipment and haul trucks must be able to travel on and overlay multi-use path width's ranging from 8-ft to 12-ft in remote areas with difficult terrain and limited access. The maximum allowable load shall be 10-tons on any haul truck traveling on the multi-use path to deliver asphalt to the paver. No separate payment will be made to the Contractor for construction and removal of temporary access paths along City-owned property. No separate payment shall be made for removal and replacement of multi-use path bollards.

ASPHALT SPECIFICATIONS

The two specifications following are for Marshall HMA mixes SC-1 and BB-1, and for 9.5 and 19MM mixes, either of which will be acceptable for paving of local streets within the city of Ridgeland.

SECTION S-401 - PLANT MIX PAVEMENTS (HMA) - GENERAL

S-401.01--Description. These specifications include general requirements that are applicable to all types of HMA along with the specific requirements for each particular mixture when deviations from the general requirements are necessary.

This work consists of the construction of one or more lifts of HMA in accordance with these specifications and the specific requirements for the mixture to be produced and in reasonably close conformity with the lines, grades, thicknesses and typical sections shown on the plans or established by the Engineer.

S-401.01.1--Definitions.

Maximum Sieve Size - Maximum sieve size is the smallest sieve size at which 100 percent of the aggregate passes.

Nominal Maximum Sieve Size - The nominal maximum sieve size is one sieve size larger than the first sieve to retain more than 10 percent of the aggregate.

Maximum Density Line - The maximum density line is a straight line plot on the FHWA 0.45 power gradation chart which extends from the zero origin point of the chart through the plotted point of the combined aggregate gradation curve on the nominal maximum sieve size.

Mechanically Fractured Face - An angular, rough, or broken surface of an aggregate particle created by crushing as determined by ASTM Designation: D 5821.

S-401.02--Materials.**S-401.02.1--Component Materials.**

S-401.02.1.1--General. Component materials will be conditionally accepted at the plant subject to later rejection if incorporated in a mixture or in work which fails to meet contract requirements.

S-401.02.1.2--Aggregates. The source of aggregates shall meet the applicable requirements of S-703.

S-401.02.1.2.1--Coarse Aggregate Blend. Mechanically fractured faces by weight of the combined mineral aggregate coarser than the No. 4 sieve:

<u>Mixture</u>	<u>Percent Fractured Faces, minimum</u>
25 mm	70 (one face)
19 mm*	80 (one face)
12.5 mm	90 (two face)
9.5 mm	90 (two face)
4.75 mm	90 (two-face)

*When used on routes requiring polymer modified asphalt, the top intermediate lift (19 mm mixture), including travel lane and adjacent lane, shall have at least 90 percent two fractured faces minimum.

The maximum percentage by weight of flat and elongated particles, for all mixes other than 4.75 mm, maximum to minimum dimension greater than 5, shall not exceed 10% for all mixtures. This shall be determined in accordance with ASTM Designation: D 4791, Section 8.4, on the combined mineral aggregate retained on the 3/8" sieve.

S-401.02.1.2.2--Fine Aggregate Blend. Of all the material passing the No. 8 sieve and retained on the No. 200 sieve, not more than 60 percent shall pass the No. 30 sieve.

Uncrushed natural sand shall pass the 3/8" sieve and may be used, excluding the content in RAP, in the percentages of the total mineral aggregate by weight set out in the following table:

Mixture	Maximum Percentage of Natural Sand by Total Weight of Mineral Aggregate		
	HT	MT	ST
25 mm	10	10	20
19 mm	10	10	20
12.5 mm	10	10	20
9.5 mm	10	10	10
4.75 mm	25	30	35

S-401.02.1.2.3--Combined Aggregate Blend.**Design Master Range**

Mixture:	25 mm	19 mm	12.5 mm	9.5 mm	4.75 mm
Nominal Maximum Sieve Size:	1 inch	3/4 inch	1/2 inch	3/8 inch	1/4 inch
Sieve Size	Percent Passing				
1-1/2 inch	100				
1 inch	90-100	100			
3/4 inch	89 max.	90-100	100		
1/2 inch	-	89 max.	90-100	100	100
3/8 inch	-	-	89 max.	90-100	95-100
No. 4	-	-	-	89 max.	90-100
No. 8	16-50	18-55	20-60	22-70	-
No. 16	-	-	-	-	30-60
No. 200	4.0-9.0	4.0-9.0	4.0-9.0	4.0-9.0	6.0-12.0

For MT and HT mixtures, the combined aggregate gradation of the job mix formula, when plotted on FHWA 0.45 power chart paper, shall fall entirely below the Maximum Density Line on all sieve sizes smaller than the No. 4 sieve. However, MT and HT mixtures having a minimum fine aggregate angularity index of 44.0, per ASTM Designation: C1252, Method A, may be designed above the maximum density line.

The 9.5 mm mixtures shall have a minimum fine aggregate angularity of 44.0 for HT and MT mixtures and 40.0 for ST mixtures when tested on combined aggregate in accordance with ASTM Designation: C1252 Method A. The 4.75 mm mixtures shall have a minimum fine aggregate angularity of 45.0 for all design levels when tested on combined aggregate in accordance with ASTM Designation: C 1252, Method A.

The minus No. 40 fraction of the combined aggregate shall be non-plastic when tested according to AASHTO Designation: T 90. The clay content for the combined aggregate for underlying layers shall not exceed 1.0 percent, and for the top layer shall not exceed 0.5 percent by weight of the total mineral aggregate when tested according to AASHTO Designation: T 88.

S-401.02.1.3--Bituminous-Materials. Bituminous materials shall meet the applicable requirements of Section S-702 for the grade specified.

Tack coat shall be the same neat grade asphalt cement used in the mixture being placed or those materials specified for tack coat in Table 410-A. Emulsified asphalt shall not be diluted without approval of the Engineer.

S-401.02.1.4--Blank.

S-401.02.1.5--Hydrated Lime. Hydrated lime shall meet the requirements of S-714.03.2 for lime used in soil stabilization.

S-401.02.1.6--Asphalt Admixtures. Additives for liquid asphalt, when required or permitted, shall meet the requirements of S-702.08.

S-401.02.1.7--Polymers. Polymers for use in polymer modified HMA pavements shall meet the requirements of S-702.08.3.

S-401.02.2-- Blank.

S-401.02.3--Composition of Mixtures.

S-401.02.3.1--General. Unless otherwise specified or permitted, the HMA shall consist of a mixture of asphalt, aggregate, hydrated lime and, when required or necessary to obtain desired properties, antistripping agent and/or other materials.

The total amount of crushed limestone aggregate for mixtures, excluding 4.75 mm mixtures, when used in the top lift, shall not exceed 50 percent of the total combined aggregate by weight.

Hydrated lime shall be used in all HMA at the rate of one percent (1 %) by weight of the total dry aggregate including aggregate in RAP, if used. The aggregate, prior to the addition of the hydrated lime, shall contain sufficient surface moisture. If necessary, the Contractor shall add moisture to the aggregate according to the procedures set out in S-401.03.2.1.2.

The Contractor shall obtain a shipping ticket for each shipment of hydrated lime. The Contractor shall provide the Engineer and MDOT District Materials Engineer or other approved Testing Laboratory with a copy of each shipping ticket from the supplier, including the date, time and weight of hydrated lime shipped and used in hot mix asphalt production. An amount equal to twenty-five percent (25%) of the total value of HMA items performed during the initial estimate period in which the Contractor fails to submit the hydrated lime shipping tickets, as required, will be withheld from the Contractor's earned work. Non-conformance with this specification for successive estimate period(s) will result in the total value (100%) of HMA items performed during this period(s) being withheld from the Contractor's earned work. Monies withheld for this non-conformance will be released for payment on the next monthly estimate following the date the submittal of hydrated lime shipping tickets to the Engineer is brought back into compliance with this specification.

Mixtures will require the addition of an antistripping agent when the Tensile Strength Ratio (MT-63) and/or the Boiling Water Test (MT-59) fail to meet the following criteria.

Tensile Strength Ratio (TSR - MT-63)	
Wet Strength / Dry Strength	85 percent minimum
Interior Face Coating	95 percent minimum
Boiling Water Test (MT-59)	
Particle Coating	95 percent minimum

Reclaimed asphalt pavement (RAP) materials may be used in the production of HMA in the percentages of the total mix by weight set out in the following table:

HMA Mixture	Maximum percent RAP by total weight of mix
4.75 mm	0
9.5 mm	15
12.5 mm Top Lift	15
12.5 mm Underlying Lift	30
19 mm	30
25 mm	30

During HMA production, the RAP shall pass through a maximum 2-inch square sieve located in the HMA plant after the RAP cold feed bin and prior to the RAP weighing system.

Crushed reclaimed concrete pavement may be used as an aggregate component of all HMA pavements. When crushed reclaimed concrete pavement is used as an aggregate component, controls shall be implemented to prevent segregation. Crushed reclaimed concrete pavement aggregate shall be separated into coarse and fine aggregate stockpiles using the 3/8-in or 1/2-in sieve as a break-point unless otherwise approved by the Engineer in writing.

S-401.02.3.1.1--Mixture Properties.

ALL MIXTURES

Percent of Maximum Specific Gravity (Gmm)

N Design	96.0
N Initial	Less than 90.0
N Maximum	Less than 98.0

VMA CRITERIA

Minimum percent

Mixture	
25 mm	12.0
19 mm	13.0
12.5 mm	14.0
9.5 mm	15.0
4.75 mm	16.0

Mixtures with VMA more than two percent higher than the minimum may be susceptible to flushing and rutting; therefore, unless satisfactory experience with high VMA mixtures is available, mixtures with VMA greater than two percent above the minimum should be avoided.

The specified VFA range for 4.75 mm nominal maximum size mixtures for design traffic levels >3 million ESAL's (HT Mixtures) shall be 75 to 78 percent, for design traffic levels of 1.0 to 3 million ESAL's (MT mixtures) 65 to 78 percent, and for design traffic levels of <1.0 million ESAL's (ST mixtures) 65 to 78 percent.

DUST/BINDER RATIO for 4.75 mm mixtures

Percent Passing No.200 / Effective Binder Percent 0.9 to 2.0

DUST/BINDER RATIO for 9.5 mm, 12.5 mm, 19 mm & 25mm mixtures

Percent Passing No.200 / Effective Binder Percent 0.8 to 1.6

S-401.02.3.2--Job Mix Formula. The job mix formula shall be established in accordance with Mississippi Test Method: MT-78, where N represents the number of revolutions of the gyratory compactor.

Compaction Requirements:	N _{Initial}	N _{Design}	N _{maximum}
High Type (HT) Mixtures			
19 mm, 12.5 mm, 9.5 mm & 4.75 mm	7	85	130
Medium Type (MT) Mixtures			
19 mm, 12.5 mm, 9.5 mm & 4.75 mm	7	65	100
All Standard Type (ST) Mixtures;			
25 mm HT & MT Mixtures	6	50	75

At least 15 working days prior to the proposed use of each mixture, the Contractor shall submit in writing to the Engineer a proposed job-mix formula or request the transfer of a verified job-mix formula. The job-mix formula shall be signed by a Certified Mixture Design Technician (CMDT).

MDOT or State Aid approved laboratory will perform the tests necessary for review of a proposed job-mix formula or transfer for each required mixture at no charge to the Contractor; however, a charge will be made for additional job-mix formulas submitted by the Contractor for review.

Review of the proposed job-mix formula will be based on percent maximum specific gravity at N_{Initial}, N_{Design}, and N_{Maximum}, VMA @ N_{Design}, resistance to stripping, and other criteria specified for the mixture.

The mixture shall conform thereto within the range of tolerances specified for the particular mixture. No change in properties or proportion of any component of the job-mix formula shall be made without permission of the Engineer. The job-mix formula for each mixture shall be in effect until revised in writing by the Engineer.

A job-mix formula may be transferred to other contracts in accordance with conditions set forth by the Engineer.

The Contractor shall not place any HMA prior to receiving “tentative” approval from the Engineer.

When a change in source of materials, unsatisfactory results or changed conditions make it necessary, a new job-mix formula will be required. The conditions set out herein for the original job-mix formula are applicable to the new job-mix formula.

S-401.02.4--Substitution of Mixture. The substitution of a one (1) size finer mixture for an underlying lift shall require written permission of the Engineer, except no substitution of a 4.75 mm mixture will be allowed. A 9.5 mm mixture may be substituted for the 12.5 mm mixture designated on the plans as the top lift or pre-leveling. The 19 mm mixture may be substituted for the 25 mm mixture in trench widening work. Any substitution of mixtures shall be of the same type. No other substitutions will be allowed. The quantity of substituted mixture shall be measured and paid for at the contract unit price for the mixture designated on the plans. The substitution of any mixture will be contingent on meeting the required total structure thickness and maintaining the minimum and/or maximum laying thickness for the particular substituted mixture as set out in the following table.

Mixture	Single Lift Laying Thickness Inches	
	Minimum	Maximum
25 mm	3	4
19 mm	2 ¼	3
12.5 mm	1 ½	2
9.5 mm	1	1 ½
4.75 mm	½	¾

S-401.02.5--Contractor's Quality Management Program.

S-401.02.5.1--General. The Contractor shall have full responsibility for quality management and maintain a quality control system that will furnish reasonable assurance that the mixtures and all component materials incorporated in the work conform to contract requirements. The Contractor shall have responsibility for the initial determination and all subsequent adjustments in proportioning materials used to produce the specified mixture. Adjustments to plant operation and spreading and compaction procedures shall be made immediately when results indicate that they are necessary. Mixture produced by the Contractor without the required testing or personnel on the project shall be subject to removal and replacement by the Contractor at no additional cost to the Project.

S-401.02.5.2--Personnel Requirements. The Contractor shall provide at least one Certified Asphalt Technician-I (CAT-I) full-time at each plant site used to furnish material to the project. Sampling shall be conducted by a certified technician or by plant personnel under the direct observation of a certified technician. All testing, data analysis and data posting will be performed by the CAT-I or by an assistant under the direct supervision of the CAT-I. The Contractor shall have a Certified Asphalt Technician-II (CAT-II) available to make any necessary process adjustments. Technician certification shall be in accordance with MDOT SOP TMD-22-10-00-000, MDOT HMA Technician Certification Program. An organizational chart, including names, telephone numbers and current certification, of all those responsible for the quality control program shall be posted in the contractor's laboratory while the asphaltic paving work is in progress.

S-401.02.5.3--Testing Requirements. As a minimum, the Contractor's quality management program shall include the following.

- (a) Bituminous Material. Provide Engineer with samples in sealed one quart metal containers at the required frequency according to current State Aid Standard Operating Procedures (SOP).
- (b) Mechanically Fractured Face. Determine mechanically fractured face content of aggregates retained on the No. 4 sieve, at a minimum of one test per day of production.
- (c) Mixture Gradation. Conduct extraction tests for gradation determination on the mixture. Sample according to the frequency in paragraph (i) and test according to Mississippi Test Method MT-31.
- (d) Total Voids and VMA. Determine total voids and Voids in Mineral Aggregate (VMA) at N Design, from the results of bulk specific gravity tests on laboratory compacted specimens. Sample according to the sampling frequency in paragraph (i), and test according to the latest edition of MDOT's field Manual for HMA.
- (e) Asphalt Content. Sample according to the sampling frequency in paragraph (i). Determine the asphalt content using one of the following procedures.
 - (1) Nuclear gauge. (Mississippi Test Method MT-6)
 - (2) Incinerator oven per AASHTO Designation: T 308, Method A.

- (f) Stripping Tests. Conduct a minimum of one stripping test at the beginning of each job-mix production and thereafter, at least once per each two weeks of production according to Mississippi Test Method: MT-63 and one stripping test per day of production according to Mississippi Test Method: MT-59. Should either the TSR (MT-63) or the boiling water (MT-59) stripping tests fail, a new antistrip additive or rate shall be established or other changes made immediately that will result in a mixture which conforms to the specifications; otherwise, production shall be suspended until corrections are made.
- (g) Density Tests. For 25 mm, 19.5 mm, 12.5 mm & 9.5 mm mixtures, conduct density tests as necessary to control and maintain required compaction according to Mississippi Test Method: MT-16, Method C (nuclear gauge), or AASHTO Designation: T 166. Note - The nuclear gauge may be correlated, at the Contractor's option, with the average of a minimum of five pavement sample densities. For 4.75 mm mixtures, conduct density tests as necessary to control and maintain required compaction according to AASHTO Designation: T 166.
- (h) Quality Control Charts. Plot the individual test data, the average of the last four tests and the control limits for the following items as a minimum:

Mixture Gradation (Percent Passing) Sieves:
 1/2-in, 3/8-in, No. 8, No. 16, No. 30 and No. 200.
 Asphalt Content, Percent
 Maximum Specific Gravity, G_{mm}
 Total Voids @ N_{Design} , Percent
 VMA @ N_{Design} , Percent

NOTE: For 4.75 mm mixtures, Quality Control Charts for mixture gradation are not required on the No. 8 and No. 30 sieves. For 4.75 mm mixtures, as a minimum, Quality Control Charts for mixture gradation shall be kept on the 3/8-in, No. 16 and No. 200 sieves. For all mixtures other than 4.75 mm, Quality Control Charts for mixture gradation are not required on the No. 16 sieve.

Keep charts up-to-date and posted in a readily observable location. Charts may be kept on a computer, however, the charts shall be printed out a minimum of once each production day and displayed in the laboratory. Note any process changes or adjustments on the Air Voids chart.

- (i) **Sampling Frequency.** Conduct those tests as required above at the following frequency for each mixture produced based on the estimated plant tonnage at the beginning of the day.

<u>Total Estimated Production, tons</u>	<u>Number of Tests</u>
50-800	1
801-1700	2
1701-2700	3
2701+	4

NOTE: Material placed in a storage silo from a previous day's production shall be randomly sampled and tested when removed for placement on the roadway. Such sample(s) shall be independent of the day's production sampling frequency and shall be used in calculating the four (4) sample running average.

- (j) **Sample Requirements.** Obtain the asphalt mixture samples from trucks at the plant. Obtain aggregate samples from cold feed bins or aggregate stockpile. Save a split portion of all mixture samples at the laboratory site in a dry and protected location for 14 calendar days. At the completion of the project, the remaining samples may be disposed of with the approval of the Engineer.

The above testing frequencies are for the estimated plant production for the day. If production is discontinued or interrupted, the tests will be conducted at the previously established sample tonnage points for the materials that are actually produced. If the production exceeds the estimated tonnage, sampling and testing will continue at the testing increments previously established for the day. A testing increment is defined as the estimated daily tonnage divided by the required number of tests from the table in S-401.02.5.3 paragraph (i).

In addition to the above program, the following tests shall be conducted on the first day of production and once for every eight production samples thereafter, with a minimum of one test per production week.

Aggregate Stockpile Gradations per AASHTO Designations: T-11 and T-27.

Reclaimed Asphalt Pavement (RAP) Gradation per Mississippi Test Method MT-31.

Fine Aggregate Angularity for all 4.75 mm and 9.5 mm mixtures and all MT and HT mixtures designed above the maximum density line per ASTM Designation: C 1252, Method A.

Testing of the aggregate and RAP stockpiles during production will be waived provided the Contractor provides the Engineer with gradation test results for the materials in the stockpile determined during the building of the stockpiles. The test results provided shall represent a minimum frequency of one per one thousand tons of material in the stockpile. If the Contractor continues to add materials to the stockpile during HMA production, the requirements for gradation testing during production are not waived.

S-401.02.5.4--Documentation. The Contractor shall document all observations, records of inspection, adjustments to the mixture, and test results on a daily basis. All tests conducted by the Contractor in accordance with S-401.02.5.3(h) shall be included in the running average calculations. If single tests are performed as a check on individual HMA properties, between regular samples, without performing all tests required in S-401.02.5.3(h), the results of those individual tests shall not be included in the running average calculations for the particular property. The Contractor shall record the results of observations and records of inspection as they occur in a permanent field record. The Contractor shall record all process adjustments and job mix formula (JMF) changes on the air void charts. The Contractor shall provide copies of all test data sheets and the daily summary reports on the appropriate forms to the Engineer on a daily basis. The Contractor shall provide a written description of any process change, including blend proportions, to the Engineer as they occur. Information provided to the Engineer must be received in the Engineer's office by no later than 9:00 AM the day after the HMA is produced. Fourteen days after the completion of the placement of the HMA, the Contractor shall provide the Engineer with the original testing records and control charts in a neat and orderly manner.

S-401.02.5.5--Control Limits. The following control limits for the job mix formula (JMF) and warning limits are based on a running average of the last four data points.

Item	JMF Limits	Warning Limits
Sieve-% passing		
1/2-in	± 5.5	± 4.0
3/8-in	± 5.5	± 4.0
No. 8	± 5.0	± 4.0
No. 16, for 4.75 mm mixtures ONLY	± 4.0	± 3.0
No. 30	± 4.0	± 3.0
No. 200	± 1.5	± 1.0
Asphalt Content %	- 0.3 to + 0.5	- 0.2 to + 0.4
Total Voids @ N Design %	± 1.3	± 1.0
VMA @ N Design, %	- 1.5	- 1.0

S-401.02.5.6--Warning Bands. Warning bands are defined as the area between the JMF limits and the warning limits.

S-401.02.5.7--Job Mix Formula Adjustments. A request for a JMF adjustment signed by a CAT-II may be made to the Engineer by the Contractor. Submit sufficient testing data with the request to justify the change. The requested change will be reviewed by the Engineer. If current production values meet the mixture design requirements, a revised JMF will be issued. Adjustments to the JMF shall conform to the latest edition of MDOT's Field Manual for HMA. Adjustments to JMF limits to conform to actual production shall not exceed the tolerance specified for the JMF limits. Regardless of such tolerances, any adjusted JMF gradation shall be within the design master range for the mixture specified. The JMF asphalt content may only be reduced if the production VMA meets or exceeds the minimum design VMA requirements for the mixture being produced.

S-401.02.5.8--Action and Adjustments. Based on the process control test results for any property in question, the following actions shall be taken or adjustments made when appropriate:

- (a) When the running average trends toward the warning limits, the Contractor shall consider taking corrective action. The corrective action, if any, shall be documented. All tests shall be part of the contract files and shall be included in the running average calculations.
- (b) The Contractor shall notify the Engineer whenever the running average exceeds the warning limits.
- (c) If two consecutive running averages exceed the warning limit, the Contractor shall stop production and make adjustments. Production shall only be restarted after notifying the Engineer of the adjustments made.
- (d) If the adjustments made under (c) improve the process such that the running average after four additional tests is within the warning limits, the Contractor may continue production with no reduction in payment.
- (e) If the adjustment made under (c) does not improve the process and the running average after four additional tests stays in the warning band, the mixture will be considered unsatisfactory. Reduced payment for unsatisfactory mixtures will be applied starting from the stop point to the point when the running average is back within the warning limits in accordance with S-401.02.6.3.

- (f) Failure to stop production and make adjustments when required shall subject all mixture produced from the stop point to the point when the running average is back within the warning limits to be considered unsatisfactory. Reduced payment for unsatisfactory mixtures will be applied in accordance with S-401.02.6.3.
- (g) If the running average exceeds the JMF limits, the Contractor shall stop production and make adjustments. Production shall only be restarted after notifying the Engineer of the adjustments made.
- (h) All materials for which the running average exceeds the JMF limits will be considered unacceptable and shall be removed and replaced by the Contractor at no additional cost to the Project. The Engineer will determine the quantity of material to be replaced based on a review of the individual testing data which make up the running average in question and an inspection of the completed pavement. If the Engineer decides to leave the mixture in place because of special circumstances, the quantity of mixture, as defined above, will be paid for in accordance with S-401.02.6.3.
- (i) Single test results shall be compared to twice the warning and JMF limits. If the test results verified by a State Aid approved Laboratory or MDOT (within allowable differences in S-401.02.6.2) exceed these limits, the pay factor provided in S-401.02.6.3 will apply for the quantity of material represented by the test(s). Single test limits will be used for the acceptance of projects when insufficient tonnage is produced to require four (4) Contractor's tests.
- (j) The above corrective action will also apply for a mixture when the Contractor's testing data has been proven incorrect. The Contractor's data will be considered incorrect when; 1) the Contractor's tests and the Engineer's tests do not agree within the allowable differences given in S-401.02.6.2 and the difference can not be resolved, or 2) the Engineer's tests indicates that production is outside the JMF limits and the results have been verified by MDOT or other State Aid approved Laboratory. The Engineer's data will be used in place of the Contractor's data to determine the appropriate pay factor.

S-401.02.6--Standards of Acceptance.

S-401.02.6.1--General. Acceptance for mixture quality (VMA and total voids at N Design, gradation, and asphalt content) will be based on random samples tested in accordance with the latest edition of MDOT's Field Manual for HMA. Pavement densities and smoothness will be accepted by lots as set out in S-401.02.6.4 and S-401.02.6.5.

S-401.02.6.2--Test for Mixture Quality. The rounding of test results will be in accordance with S-700.04.

The Engineer will conduct tests on split samples taken by the Contractor or samples may be chosen by the Engineer anytime during production. The frequency will be equal to or greater than the latest SOP for State Aid Road Construction. All testing and data analysis shall be performed by a Certified Asphalt Technician-I (CAT-I) or by an assistant under the direct supervision of the CAT-I.

The Engineer shall be allowed to inspect measuring and testing devices to confirm calibration and condition. The Contractor shall calibrate and correlate all testing equipment in accordance with the latest version of the MDOT Test Methods.

Difference between the Contractor's and Engineer's split sample test results will be considered acceptable if within the following limits:

Item	Allowable Differences
Sieve - % Passing	
3/8-in and above	6.0
No. 4	5.0
No. 8	4.0
No. 16, for 4.75 mm mixtures ONLY	3.5
No. 30	3.5
No. 200	2.0
AC Content	0.4
Specimen Bulk SG (Gmb) @ N Design	0.030
Maximum SG (Gmm)	0.020

In the event comparison test results are outside the above allowable differences, the Engineer will investigate the reason immediately. The Engineer's investigation may include testing of the remaining split samples, review and observation of the Contractor's testing procedures and equipment and a comparison of split sample test results by the contractor quality control laboratory, State Aid approved laboratory or MDOT Materials Division. In the event reasons for the differences cannot be determined, the Engineer's results will be used for the quality control data and the appropriate payment for the mixture and asphalt will be based on the procedures specified in S-401.02.5.8.

The Engineer may witness the sampling and testing being performed by the contractor. The Engineer, both verbally and in writing, will promptly notify the Contractor of any observed deficiencies. When differences exist between the contractor and the Engineer which cannot be resolved, a decision will be made by the State Aid Engineer, acting as the referee, and will in writing promptly notify the Contractor. If the deficiencies are not corrected, the Engineer will stop production until corrective action is taken.

S-401.02.6.3--Acceptance Procedure for Mixture Quality. All obviously defective material or mixture will be subject to rejection by the Engineer. Such defective material or mixture shall not be incorporated into the finished work. If the defective material has already been placed in the work, the material shall be removed and replaced at no additional cost to the Project.

The Engineer will base final acceptance of the asphalt mixture production on the results of the Contractor's testing for total voids and VMA @ N_{Design} , gradation, and asphalt content as verified by the Engineer in the manner hereinbefore described and the uniformity and condition of the completed pavement. Areas of pavement that exhibit non-uniformity or failures, materials or construction related, such as but not limited to segregation, bleeding, shoving, rutting over 1/8", raveling, slippage, or cracking will not be accepted. Such areas will be removed and replaced at no additional cost to the Project.

Bituminous mixture placed prior to correction for deficiencies in VMA and total voids @ N_{Design} , gradation, or asphalt content, as required in S-401.02.5.8 and determined by the Engineer satisfactory to remain in place will be paid for in accordance with the following pay factors times the contract unit price per ton.

Pay Factor for Mixture Quality *

Item	Produced in Warning Bands	Produced Outside JMF Limits, Allowed to Remain in Place
Gradation	0.90	0.75
Asphalt Content	0.85	0.75
Total Voids @ N_{Design}	0.70	0.50
VMA @ N_{Design}	0.90	0.75

*The minimum single payment will apply.

S-401.02.6.4--Acceptance Procedure for Density. Each completed lift will be accepted with respect to compaction on a lot basis from density tests performed by the Engineer. For normal production days, divide the production into approximately equal lots as shown in the following table. When cores are being used for the compaction evaluation, randomly obtain one core from each lot. When the nuclear density gauge is being used for compaction evaluation, obtain two random readings from each lot and average the results. Additional tests may be required by the Engineer to determine acceptance of work appearing deficient. The Contractor shall furnish and maintain traffic control for all compaction evaluations, including coring, required in satisfying specified density requirements.

Lot Determination

<u>Daily Production - Tons</u>	<u>Number of Lots</u>
0-300	1
301-600	2
601-1000	3
1001-1500	4
1501-2100	5
2101-2800	6
2801+	7

S-401.02.6.4.1--Roadway Density. The density requirement for each completed lift on a lot to lot basis from density tests performed by the Engineer shall be as follows:

1. For all single lift overlays, with or without leveling and/or milling, the required lot density shall be 92.0 percent of maximum density.
2. For all multiple lift overlays of two (2) or more lifts excluding leveling lifts, the required lot density of the bottom lift shall be 92.0 percent of maximum density. The required lot density for all subsequent lifts shall be 93.0 percent of maximum density.
3. For all pavements on new construction, the required lot density for all lifts shall be 93.0 percent of maximum density.

When it is determined that the density for a lot is below the required density (93.0 percent or 92.0 percent) but not lower than 91.0 or 90.0 percent of maximum density, respectively, the Contractor will have the right to remove and replace the lot(s) not meeting the specified density requirements in lieu of accepting reduced payment for the lot(s).

When it is determined that the density for a lot is above 96.0 percent, the Engineer shall notify the Contractor who will make plant adjustments to resolve the problem.

When it is determined that the density for a lot is below 91.0 or 90.0 percent, respectively, the lot(s), or portions thereof shall be removed and replaced in accordance with Chapter 7 of the latest edition of MDOT's Field Manual for HMA at no additional cost to the Project. A corrected lot will be retested for approval. No resampling will be performed when pavement samples are used for determining density.

At any time the average daily compaction (the total of the percent compaction for the lots produced in one day divided by the total number of lots for the day) does not meet the required percent compaction or more for two consecutive days, the Contractor shall notify the Engineer of proposed changes to the compactive effort. If the average daily compaction does not meet the required percent compaction or more for a third consecutive day, the Contractor shall stop production until compaction procedures are established to meet the specified density requirements.

Each lot of work found not to meet the density requirement of 92.0% or 93% of maximum density, respectively, may remain in place with a reduction in payment as set out in the following tables:

**PAYMENT SCHEDULE FOR COMPACTION
OF 92.0 PERCENT OF MAXIMUM DENSITY**

<u>Pay Factor</u>	<u>Lot Density ** % of Maximum Density</u>
1.00	92.0 and above
0.90	91.0 - 91.9
0.70	90.0 - 90.9

** Any lot or portion thereof with a density of less than 90.0 percent of maximum density shall be removed and replaced at no additional cost to the Project.

**PAYMENT SCHEDULE FOR COMPACTION
OF 93.0 PERCENT OF MAXIMUM DENSITY**

<u>Pay Factor</u>	<u>Lot Density *** % of Maximum Density</u>
1.00	93.0 and above
0.90	92.0 - 92.9
0.70	91.0 - 91.9

*** Any lot or portion thereof with a density of less than 91.0 percent of maximum density shall be removed and replaced at no additional cost to the Project.

The compaction pay factors and mixture quality pay factor, as described in S- 401.02.6.3, will each apply separately. However, the combined pay factor shall not be less than 0.50 for any mixture allowed to remain in place.

S-401.02.6.4.2--Trench Widening Density. The density for trench widening on a lot to lot basis shall be determined from density tests performed by the Engineer using pavement samples (cores).

When it is determined that the density for a trench widening lot is below 89.0 percent but not lower than 88.0 percent of maximum density, the Contractor will have the right to remove and replace the lot(s) not meeting the specified density requirements in lieu of accepting reduced payment for the lot(s).

When it is determined that the density for a trench widening lot is above 95.0 percent, the Engineer shall notify the Contractor who will make plant adjustments to resolve the problem.

When it is determined that the density for a trench widening lot is below 88.0 percent, the lot(s), or portions thereof shall be removed and replaced in accordance with Chapter 7 of the latest edition of MDOT's Field Manual for HMA at no additional cost to the Project. A corrected lot will be retested for approval. No resampling will be performed when pavement samples are used for determining density.

At any time the daily compaction (the total of the percent compaction for the lots produced in one day divided by the total number of lots for the day) does not meet 89.0 percent compaction or more for two consecutive days, the Contractor shall notify the Engineer of proposed changes to the compactive effort. If the average daily compaction does not meet 89.0 percent compaction or more for a third consecutive day, the Contractor shall stop production until compaction procedures are established to meet the specified density requirement.

Each lot of trench widening work found not to meet the density requirement of 89.0 percent of maximum density may remain in place with a reduction in payment as set out in the following table:

**PAYMENT SCHEDULE FOR COMPACTION
TRENCH WIDENING WORK**

<u>Pay Factor</u>	<u>Lot Density *** % of Maximum Density</u>
1.00	89.0 and above
0.50	88.0 - 88.9

*** Any lot or portion thereof with a density of less than 88.0 percent of maximum density shall be removed and replaced at no additional cost to the Project.

The compaction pay factors and mixture quality pay factor, as described in S- 401.02.6.3, will each apply separately. However, the combined pay factor shall not be less than 0.50 for any mixture allowed to remain in place.

S-401.02.6.5--Acceptance Procedure for Pavement Smoothness. When compaction is completed, the lift shall have a uniform surface and be in reasonably close conformity with the line, grade and cross section shown on the plans.

When required by the Engineer, and approved by the State Aid Engineer, the smoothness of each applicable lift will be determined by using a California profilograph to produce a profilogram (profile trace) at each designated location. The surface shall be tested and corrected to a smoothness index as described in MDOT Specifications.

S-401.02.6.7--Surface Correction. Corrective work to bumps shall consist of diamond grinding in accordance with these specifications or methods approved by the Engineer. All surface areas corrected by grinding shall be sealed with a sealant approved by the Engineer.

S-401.02.6.7.1--Diamond Grinding. Grinding of asphalt surfaces shall consist of diamond grinding the existing asphalt pavement surface to remove surface distortions to achieve the specified surface smoothness requirements.

S-401.02.6.7.2--Equipment. The grinding equipment shall be a power driven, self-propelled machine that is specifically designed to smooth and texture pavement surfaces with diamond blades. The effective wheel base of the machine shall not be less than 12.0 feet. It shall have a set of pivoting tandem bogey wheels at the front of the machine and the rear wheels shall be arranged to travel in the track of the fresh cut pavement. The center of the grinding head shall be no further than 3.0 feet forward from the center of the back wheels.

The equipment shall be of a size that will cut or plane at least 2.0 feet wide. It shall also be of a shape and dimension that does not encroach on traffic movement outside of the work area. The equipment shall be capable of grinding the surface without causing spalls at joints, or other locations.

S-401.02.6.7.3--Construction. The construction operation shall be scheduled and proceed in a manner that produces a uniform finish surface. Grinding will be accomplished in a manner to provide positive lateral drainage by maintaining a constant cross-slope between grinding extremities in each lane.

The operation shall result in pavement that conforms to the typical cross-section and the requirements specified in S-401.02.6.7.4. It is the intent of this specification that the surface smoothness characteristics be within the limits specified.

The Contractor shall establish positive means for removal of grinding residue. Solid residue shall be removed from pavement surfaces before it is blown by traffic action or wind. Residue shall not be permitted to flow across lanes used by public traffic or into gutters or drainage facilities, but may be allowed to flow into adjacent ditches.

S-401.02.6.7.4--Finished Pavement Surface. The grinding process shall produce a pavement surface that is smooth and uniform in appearance with a longitudinal line type texture. The line type texture shall contain parallel longitudinal corrugations that present a narrow ridge corduroy type appearance. The peaks of the ridges shall not be more than 1/16 inch higher than the bottoms of the grooves.

The finished pavement surface will be measured for riding quality. The grinding shall produce a riding surface which does not exceed either the specified profile index or the specified bump and dip limit.

S-401.02.7--Nuclear Gauges.

S-401.02.7.1--Nuclear Moisture-Density Gauge. The nuclear gauge unit used to monitor density shall contain a full data processor which holds all calibration constants necessary to compute and directly display wet density, moisture, and dry density in pounds per cubic foot. The data processor shall compute and display the percent moisture and percent density based on dry weight.

S-401.02.7.2--Nuclear Asphalt Content Gauge. The Contractor shall furnish and calibrate, unless designated otherwise in the contract, a Troxler Nuclear Asphalt Content Gauge (Model 3241 or updated model) or a Campbell Nuclear Asphalt Content Gauge (Model AC-2) or an approved equal.

S-401.03--Construction Requirements. State Aid has adopted the AASHTO “Hot-Mix Asphalt Paving Handbook” as the guideline for acceptable HMA construction practices.

S-401.03.1--Specific Requirements.

S-401.03.1.1--Weather Limitations. The mixture shall not be placed when weather conditions prevent the proper handling and finishing or the surface on which it is to be placed is wet or frozen. At the time of placement, the air and pavement surface temperature limitations shall be equal to or exceed that specified in the following table.

TEMPERATURE LIMITATIONS

Compacted Thickness	Temperature
Less than 1 1/2 inches	55°F
1 1/2 inches to 2 inches	50°F
2 1/4 inches to 3 inches	45°F
Greater than 3 inches	40°F

When paving operations are discontinued because of rain, the mixture in transit shall be protected until the rain ceases. The surface on which the mixture is to be placed shall be swept to remove as much moisture as possible and the mixture may then be placed subject to removal and replacement at no additional cost to the Project if contract requirements are not met.

S-401.03.1.2--Tack Coat. Tack coat shall be applied to previously placed primed subbase/base, road surface and between layers, unless otherwise directed by the Engineer. The tack coat shall be applied as a spray coating, fog coating, or “spider webbing”. Construction requirements shall be in accordance with S-407.

S-401.03.1.3--Blank.

S-401.03.1.4--Density. The lot density for all dense graded pavement lifts, except as provided below for preleveling, wedging {less than fifty percent (50%) of width greater than minimum lift thickness}, ramp pads, irregular shoulder areas, median crossovers, turnouts, or other areas where the established rolling pattern cannot be performed, shall not be less than 92.0 percent of the maximum density based on AASHTO Designation: T209 for the day's production. If a job-mix formula adjustment is made during the day which affects the maximum specific gravity, calculate a new average maximum density for the lot(s) placed after the change.

Pavement core samples obtained for determining density which have a thickness less than two times the maximum size aggregate permitted by the job-mix formula will not be used as a representative sample.

Preleveling, wedging {less than fifty percent (50%) of width greater than minimum lift thickness}, ramp pads, irregular shoulder areas, median crossovers, turnouts, and other areas where an established rolling pattern cannot be obtained shall be compacted to refusal densification.

S-401.03.2--Bituminous Mixing Plants.**S-401.03.2.1--Plant Requirements.**

S-401.03.2.1.1--Cold Aggregate Storage. The cold storage for hydrate lime shall be a separate bulk storage bin with a vane feeder or other approved feeder system which can readily be calibrated. The system shall provide a means for easy sampling of the hydrated lime additive and verifying the quantity of lime dispensed. The feeder system shall require a totalizer.

The hydrated lime additive equipment shall be interlocked and synchronized with the cold feed controls to operate concurrently with the cold feed operation which will automatically adjust the hydrated lime feed to variations in the cold aggregate feed. A positive signal system shall be installed which will automatically shut the plant down when malfunctions cause an improper supply of hydrated lime or water.

The plant shall not operate unless the entire hydrated lime system is functioning properly.

S-401.03.2.1.2--Cold Aggregate Feed. The hydrated lime shall be dispensed dry or as a slurry (1 part hydrated lime to 3 parts water) directly onto the composite aggregate between the cold feed and the dryer.

When hydrated lime is introduced dry, a spray bar or other approved system capable of spraying all aggregate with water shall be installed in order to maintain all aggregate at the moisture condition set out in S-401.02.3.1 prior to addition of the hydrated lime. An alternate system for spraying the coarse aggregate stockpiles may be allowed when approved by the Engineer. The approved equipment and methods shall consistently maintain the aggregate in a uniform, surface wet condition. The moisture content of the aggregate-hydrated lime mixture, following spraying and mixing, shall be introduced into the automatic moisture controls of the plant.

The aggregate-hydrated lime mixture shall be uniformly blended by some mechanical means such as a motorized “on the belt” mixer or pug mill located between the cold feed and the dryer. Other mixing devices may be used subject to approval by the Engineer.

A maximum of forty five (45) percent of the total aggregate blend may be fed through any single cold feed bin. If the JMF calls for more than forty five (45) percent of a specific aggregate, that aggregate must be fed through two (2) or more separate cold feed

S-401.03.2.1.3--Dryer. The efficiency of drying aggregates shall be such that the moisture content of the top HMA mixture shall not exceed 0.50 percent by weight of the total mixture, and the moisture content of all the underlying mixtures shall not exceed 0.75 percent by weight of the total mixture being produced.

S-401-03.2.1.4--Blank.

S-401.03.2.1.5--Control of Bituminous Material and Antistripping Agent. Specified bituminous materials from different manufacturers or from different refineries of a single manufacturer shall not be mixed in the plant’s asphalt cement supply system storage tank and used in the work without prior written approval of the Engineer. Approval is contingent upon the Engineer’s receipt of three copies of the manufacturer’s certified test report(s) from the Contractor showing that the bituminous material blend conforms to the specifications.

A satisfactory method of weighing or metering shall be provided to ensure the specified quantity of bituminous material. Provisions shall be provided for checking the quantity or rate of flow. Weighing or metering devices shall be accurate within plus or minus one-half percent.

The antistripping agent shall be injected into the bituminous material immediately prior to the mixing operation with an approved in-line injector system capable of being calibrated so as to ensure the prescribed dosage.

An in-line spigot for sampling of asphalt shall be located between the asphalt storage tank and the antistripping agent in-line injector.

S-401.03.2.1.6--Thermometric Equipment. An armored thermometer of adequate range and calibrated in 5°F increments shall be fixed at a suitable location in the bituminous line near the charging valve of the mixer unit.

The plant shall be equipped with an approved dial-scale, mercury-actuated thermometer, pyrometer or other approved thermometric instrument placed at the discharge chute of the dryer to measure the temperature of the material.

When the temperature control is unsatisfactory, the Engineer may require an approved temperature-recording apparatus for better regulation of the temperature.

S-401.03.2.1.7--Screens. A scalping screen shall be used.

S-401.03.2.1.8--Dust Collector. The plant shall be equipped with a dust collector constructed to waste or return collected material. When collected material is returned, it shall be returned through a controlling device which will provide a uniform flow of material into the aggregate mixture.

S-401.03.2.1.9--Safety Requirements. A platform or other suitable device shall be provided so the Engineer will have access to the truck bodies for sampling and mixture temperature data.

S-401.03.2.1.10--Blank.

S-401.03.2.1.11--Truck Scales. The specifications, tolerances and regulations for commercial weighing and measuring devices as recommended by the National Bureau of Standards {National Institute of Standards and Technology (NIST) handbook 44} shall govern truck scales used in the State of Mississippi, except weighing devices with a capacity of ten thousand (10,000) pounds or more used to weigh road construction materials (i.e. sand, gravel, asphalt, fill dirt, topsoil and concrete) shall have a tolerance of one-half of one percent (1/2 of 1%) in lieu of the requirements of Handbook 44 and shall be regulated by the Mississippi Department of Transportation.

Scales shall be checked and certified by a scale company certified in heavy truck weights by the Mississippi Department of Agriculture and Commerce. In the case of scales used for measurement of materials on Department of Transportation projects or State Aid projects, certification shall be performed in the presence of an authorized representative of MDOT or a copy of the certification may be furnished for scales that have been checked and certified within the last six months for use on other Department of Transportation or State Aid projects and are still in the position where previously tested. Scales that have not been checked and certified under NIST Handbook 44 guidelines, except for the herein modified tolerances allowed, shall be so checked and certified prior to use for measurement of materials on Department of Transportation or State Aid projects. Tests shall be continued on six month intervals with the test conducted in the presence of an authorized representative of MDOT.

Truck scales shall be accurate to one-half percent of the applied load, shall be sensitive to 20 pounds, and shall have a graduation of not more than 20 pounds.

The Contractor may use an electronic weighing system approved by the Engineer in lieu of truck scales. The system shall be equipped with an automatic print out system which will print a ticket for each load with the following information:

State Aid, Contractor's name, project number, county, ticket number, load number, pay item number, item description of the material delivered, date, time of day, haul vehicle number, gross weight, tare weight, net weight and total daily net weight.

When approved by the Engineer, and materials are measured directly from a storage bin equipped with load cells, exceptions may be made to the gross and tare weight requirement.

The ticket shall also have a place for recording the temperature of HMA mixtures, if applicable, and the signatures of the Engineer's plant and roadway inspectors. The load numbers for each project shall begin with load number one (1) for the first load of the day and shall be numbered consecutively without a break until the last load of the day. The Contractor shall provide the Engineer with an original and one copy of each ticket. When the ticket information provided by the Contractor proves to be unsatisfactory, the Engineer will use imprinter(s) and imprinter tickets to record load information. All recorded weights shall be in pounds and shall be accurate to within one-half of one percent of the true weight, and the system shall be sensitive to 20 pounds. The Engineer will require random loads to be checked on certified platform scales at no cost to the project.

When an electronic weighing system utilizes the plant scales of a batch plant, the system may be used only in conjunction with a fully automatic batching and control system.

S-401.03.2.2--Additional Requirements for Batching Plants.

S-401.03.2.2.1--Plant Scales. The plant batch scale weight shall not exceed the platform scale weight by more than one percent (1%).

S-401.03.2.3--Additional Requirements for Drum Mixing Plants.

S-401.03.2.3.1--Plant Controls. The plant shall be operated with all the automatic controls as designed and provided by the plant manufacturer. If the automatic controls malfunction, brief periods of manual operations to complete the day's work or to protect the work already placed may be conducted with the approval of the Engineer. During manual operation, the Contractor must continue to produce a uniform mixture meeting all contract requirements.

S-401.03.2.3.2--Aggregate Handling and Proportioning. A screening unit shall be placed between the bins and the mixer to remove oversized aggregate, roots, clayballs, etc.

S-401.03.2.4--Surge or Storage Bins. Surge and/or storage systems may be used at the option of the Contractor provided each system is approved by the Engineer prior to use. Surge bins shall be emptied at the end of each day's operation. Storage silos may be used to store mixtures as follows:

19 mm & 25 mm mixtures	24 hours
9.5 mm & 12.5 mm mixtures	36 hours

The storage silos must be well sealed, completely heated and very well insulated. The mixture when removed from the storage silo shall be tested to ensure that it meets all the same specifications and requirements as the mixture delivered directly to the paving site. See S-401.02.5.3, subparagraph (i) for sampling and testing requirements.

S-401.03.3--Hauling Equipment. The inside of each vehicle bed shall be coated with a light application of water and thin oil, soap solution, lime water solution or other approved material to prevent the mixture from sticking. Diesel fuel or gasoline shall not be used to lubricate vehicle beds. Truck beds shall be raised to drain excessive lubricants before placing mixture in the bed. An excess of lubricant will not be permitted.

S-401.03.4--Bituminous Pavers. The screed or stroke-off assembly shall be capable of vibrating and heating the full width of the mixture being placed and shall lay the lift with an automatic control device to the specified slope and grade without tearing, pulling or gouging the mixture surface.

S-401.03.5--Rollers. All rollers shall be self-propelled units capable of maintaining a smooth and uniform forward and reverse speed as required for proper compaction. They shall be equipped with adjustable scrapers, water tanks, mats and a device for wetting the wheels or tires to prevent the mixture from sticking. Adhesion of the mixture to the rollers will not be permitted. The use of diesel fuel or gasoline for cleaning roller wheels or tires or to aid in preventing the mixture from sticking to the wheels or tires is prohibited.

All rollers shall be in good mechanical condition, free from leaking fuels and lubricants, loose link motion, faulty steering mechanism, worn king bolts and bearing. They shall be operational at slow speeds to avoid displacement of the mixture and capable of reversing direction smoothly and without backlash.

S-401.03.6--Preparation of Grade. The foundation upon which HMA pavement is to be placed shall be prepared in accordance with plans and specifications.

Unless otherwise directed, tack coat shall be applied to the underlying surface on which the mixture is to be placed. Emulsions, if used, must be allowed to “break” prior to placement of the bituminous mixture.

Bituminous mixture shall not be placed against the edge of pavements, curbs, gutters, manholes and other structures until sprayed with a thin uniform tack coating. The tack coat shall be protected until the mixture has been placed.

Existing pavements that require preliminary leveling or patching in advance of placing the bituminous mixture shall be sprayed with a tack coat material and then brought as nearly as practicable to uniform grade and cross section. The material shall be placed by hand or machine in one or more compacted layers approximately two (2) inches or less in compacted thickness.

S-401.03.7--Blank.

S-401.03.8--Preparation of Mixture. The temperature of the mixture, when discharged from the mixer, shall not exceed 340°F.

S-401.03.9--Material Transfer Equipment. Except for the areas mentioned below, when placing the top intermediate lift and/or the top lift of HMA pavements, the material transferred from the hauling unit shall be remixed prior to being placed in the paver hopper or insert by using an approved Materials Transfer Device. Information on approved devices can be obtained from the MDOT State Construction Engineer. Areas excluded from this requirement include: temporary work of short duration, detours, bridge replacement projects having less than 1,000 feet of pavement on each side of the structure, acceleration and deceleration lanes less than 1,000 feet in length, tapered sections, transition sections for width, shoulders less than 10 feet in width, crossovers, ramps, side street returns and other areas designated by the Engineer.

S-401.03.10--Spreading and Finishing. Grade control for HMA pavements shall be established by string line at least 500 feet ahead of spreading, unless placement is adjacent to curb and gutter, concrete pavement, or other allowed grade control.

The mixture shall be spread to the depth and width that will provide the specified compacted thickness, line, grade and cross section. Placing of the mixture shall be as continuous as possible. On areas where mechanical spreading and finishing is impracticable, the mixture may be spread, raked and luted by hand tools.

Immediately after screeding and prior to compaction, the surface shall be checked by the Contractor and irregularities adjusted. When the edge is feathered as in a wedge lift, it may be sealed by rolling. Irregularities in alignment and grade along the edges shall be corrected before the edges are rolled.

Hauling, spreading and finishing equipment shall be furnished that is capable of and operated in such a manner that the rolling operation will satisfactorily correct any surface blemishes.

The longitudinal joint in the subsequent lift shall offset that in the underlying lift by approximately six (6) inches. However, the joint in the top lift shall be at the centerline or lane line.

S-401.03.11--Compaction. After the mixture has been spread and surface irregularities corrected, it shall be thoroughly and uniformly compacted to the required line, grade, cross section and density.

S-401.03.12--Joints. Joints between previously placed pavement and pavement being placed shall be so formed as to insure thorough and continuous bond.

Transverse construction joints shall be formed by cutting the previously placed mixture to expose the full depth of the lift.

The contact surface of transverse joints and longitudinal joints, except hot joints, shall be sprayed with a thin uniform tack coating before additional mixture is placed against the previously placed material.

Longitudinal joints shall be formed by overlapping the screed on the previously placed material for a width of at least one (1) inch and depositing the quantity of mixture to form a smooth, tight joint.

S-401.03.13--Pavement Samples. The Contractor shall cut samples from each lift of HMA at the time and locations designated by the Engineer. The samples shall be taken for the full depth of each lift and shall be of a size approved by the Engineer but not to exceed 120 square inches. Tools used for cutting or coring of samples shall be of the revolving blade type such as saw or core drill. Cores shall be taken using a 4.0 to 6.0-inch inside diameter coring bit. The sample hole shall be filled, compacted and finished by the Contractor to conform with the surrounding area. No additional compensation will be allowed for furnishing samples and repairing the areas with new pavement.

Section S-402 - Blank.

S-403.01--Description: This work consists of constructing one or more lifts of HMA pavement meeting the requirements of S-401 on a prepared surface in accordance with the requirements of this section and in reasonably close conformity with the lines, grades, thicknesses, and typical cross sections shown on the plans or established by the Engineer.

S-403.02--Material Requirements: Materials and their use shall conform to the applicable requirements of S-401.02.

S-403.03--Construction Requirements.

S-403.03.1--General. Construction requirements shall be as specified in S-401.03 except as otherwise indicated in this section or applicable special provisions.

S-403.03.2--Smoothness Tolerances. Except as noted herein, the finished smoothness of each lift shall conform to the designated grade and cross section within the following tolerances from grade stakes or other grade reference points set at 25 foot intervals:

	Lower * & Leveling Lifts	Lower * Intermediate Lifts	Top Intermediate Lift	Surface Lift
Max. deviation from grade and cross section at any point.....	1/2"	3/8"	1/4"	1/4"
Max. deviation from a 10 foot straight edge...	3/8"	1/4"	1/8"	1/8"

* When tested longitudinally from a string line located equidistant above points 50 feet apart, the distance from the string line to the surface at any two points located 12 ½ feet apart shall not vary one from the other more than the maximum deviation allowed above from a 10 foot straight edge.

Grade stakes or other grade reference points set at 25-foot intervals and maximum deviation from grade and cross section will not be required provided an approved profile averaging device is furnished and properly used for the five conditions set forth herein; however, all other surface requirements are applicable.

- (a) Overlays with one overall lift.
- (b) Overlays with two or more overall lifts -- for each lift above the first overall lift provided each underlying overall lift is within the allowable tolerances.
- (c) Surface lift of new construction provided the underlying lift is within the allowable tolerances.
- (d) Full-depth asphalt construction for lifts above the lower lift provided the lower lift is within the specified tolerances for the lower intermediate lift.
- (e) Base lifts.

Acceptance and payment of HMA will be determined on a lot to lot basis by cores taken from the completed pavement as outlined in S-403.03.3.

Approved contacting type profile averaging devices are those devices capable of working in conjunction with a taut string or wire set to grade, or ski-type device with extreme contact points with the surface at least 30 feet apart. Approved non-contacting type profile averaging devices are laser type ski devices with at least four referencing mobile stations at a minimum length of 24 feet, or an approved equal.

When approved by the Engineer, a short ski or shoe may be substituted for a long ski on the second paving operation working in tandem.

During the finishing and compacting of base and pavement lifts, it shall be the responsibility of the Contractor to check the surface and joints for progress toward conformance to surface requirements set forth herein. Variations from surface requirements exceeding the allowable tolerances shall be corrected at the Contractor's expense.

S-403.03.3--Thickness Requirements. Hot mix asphalt overlay lifts shall be constructed as nearly in accordance with the thickness shown on the plans as the underlying pavement and foundation will permit. Periodic and cumulative yield tests will be made to determine practicable conformity to the thickness of each lift. The Engineer may order modifications in placement thicknesses to prevent unwarranted variations in plan quantities.

When the paver is operating off an established grade line, no thickness determination will be required for the various lifts of base and pavement. It is understood that the tolerances from design grade will control the thickness requirements.

When grade stakes are eliminated as outlined in S-403.03.2, acceptance and pavement will be determined on a lot to lot basis by cores taken from the completed pavement. Lots will be coincidental with acceptance lots for the surface lift as provided in S-401.02.6.4, except that only lots resulting from the placement of mainline surface lift will be used for thickness assessment. One core will be obtained at random for each lot. Irregular areas will not be cored.

When the average thickness of all the cores from the lots representing a day's production (excluding any discarded by the Engineer for justifiable reason) is within $\frac{3}{8}$ of an inch of the total pavement thickness shown on the plans, excluding lift(s) placed using an established grade line, corrective action will not be required and a price adjustment will not be made for non-conformity to specified thickness.

When the average thickness of all the cores from the lots representing a day's production is deficient in thickness by more than $\frac{3}{8}$ of an inch of the total pavement thickness shown on the plans, excluding lift(s) placed using an established grade line, the deficiency shall be corrected by overlaying the entire length of the day's production. The thickness of the overlay shall be equal to the thickness deficiency but no less than the minimum single lift laying thickness for the specified mixture.

When the thickness of all the cores from the lots representing a day's production is more than $\frac{3}{8}$ of an inch thicker than the total thickness shown on the plans, excluding lift(s) placed using an established grade line, a price adjustment will be made in accordance with S-403.05.1.

The cores shall be cut and removed by the Contractor in the presence of the Engineer's representative and turned over to the Engineer's representative for further handling. The Contractor shall fill each core hole with HMA and compact to the satisfaction of the Engineer within 24 hours after coring.

S-403.03.4--Lift Corrections. Pavement exceeding the allowable surface tolerances shall be corrected at the Contractor's expense by the following methods:

Lower, Leveling and Lower Intermediate Lifts:

- (a) Removal or addition of mixture by skin patching, feather edging, wedge lift construction of full depth patching where appropriate and can be completed in a satisfactory manner.
- (b) Superimposing an additional layer which shall be an approved grade raise for the full width and length of the area to be corrected.

Top Intermediate Lift

- (a) Removal and the addition of sufficient mixture to provide the specified thickness. Corrections by this method shall be square or rectangular in shape and shall completely cover the area to be corrected.
- (b) Superimposing an additional layer (minimum lift thickness for mixture being used) which shall be an approved grade raise for full lane width of the area to be corrected. Transverse joints shall be perpendicular to the centerline of the pavement.

Surface Lift:

- (a) Removal and the addition of sufficient mixture to provide new material of at least minimum single lift laying thickness for full lane width of the area to be corrected. Transverse joints shall be perpendicular to the centerline of the lane.
- (b) Superimposing an additional layer (minimum lift thickness for mixture being used) which shall be an approved grade raise for full lane width of the area to be corrected. Transverse joints shall be perpendicular to the centerline of the pavement.

All mixtures used in the correction of unacceptable pavement shall be approved by the Engineer prior to use.

S-403.03.5-- Overlays or Widening and Overlays.

S-403.03.5.1--General. In addition to the requirements of S-403.03.1 through S-403.03.4 the following requirements will be applicable when an existing pavement is to be overlaid or widened and overlaid.

S-403.03.5.2--Sequence of Operations. In order to expedite the safe movement of traffic and to protect each phase of the work as it is performed, a firm sequence of operations is essential. Unless otherwise provided in the traffic control plan and/or the contract, the following appropriate items of work shall be begun and continually prosecuted in the order listed:

- (a) In sections designated by the Engineer, trim the shoulders along the pavement edges to provide drainage from the pavement.
- (b) Perform selective undercutting and patching as directed (S-403.03.5.4).

- (c) Clean and seal joints. (If required)
- (d) Complete preparation on one side of roadway to be widened and place widening materials.
- (e) Reconstruct shoulders to elevation necessary to assure traffic safety.
- (f) Open the widened section to traffic.
- (g) Complete above work for other side of roadway.
- (h) Perform preliminary leveling as directed.
- (i) Apply interlayer (If required).
- (j) Place the first overall leveling lift. (If required)
- (k) After the first overall leveling lift, reconstruct shoulders as necessary to eliminate vertical differentials which may be hazardous to traffic.
- (l) Place first intermediate lift. (If required)
- (m) Construct shoulders to the contiguous elevation as required.
- (n) Place remaining intermediate lift (if required)
- (o) Place surface lift.
- (p) Complete construction of shoulders.
- (q) Apply permanent traffic marking.
- (r) Final cleanup.

The above operations shall be performed in such a manner that traffic will be maintained on a paved surface at all times. Two-lane highways should not be restricted to a single lane in excess of a 3,000 foot section.

S-403.03.5.3--Widening of Base or Pavement. The foundation for widening shall be formed by trenching or excavating to the required depth and constructing a smooth, firm and compacted foundation. It shall have sufficient density and stability to withstand the placement and compaction of subsequent lifts. Soft, yielding and other unsuitable material which the Engineer determines will not compact readily shall be removed and backfilled with granular material or hot mix asphalt as directed.

Except as provided herein, excavation for widening, undercutting or other required excavation shall be spread along the edge of the shoulders, foreslopes or other adjacent areas as directed and will be an absorbed item. When the quantity is in excess of what may be used satisfactorily on adjacent areas, the Engineer may direct that the material be loaded, hauled and spread uniformly on other designated areas. In this case, compensation for handling surplus material will be in accordance with the appropriate pay items as provided in the contract or as extra work.

If the plans require widening of the shoulders or embankment with contractor furnished material, all suitable material obtained from widening excavation may be used and will be measured and paid for as Contractor furnished materials. No measurement for payment of haul will be made.

Removal and disposal of old stakes, forms and other debris encountered in excavating shall be in accordance with S-201 and shall be considered as incidental to and included in the unit prices bid for other items. No separate measurement will be made therefor. Pavement edges and surfaces shall be cleaned prior to final shaping and compaction of adjacent trenching or undercut areas.

Granular material for widening shall be placed on a previously prepared, smooth, firm and unyielding foundation in accordance with the typical section. Density of the granular material shall be that specified for subbase.

Hot mix asphalt for widening, including trench widening, shall meet the applicable requirements of this section and S-401 and shall be placed in one or more layers as shown on the plans or as directed. The surface of the mixture shall be finished as a continuation of the adjacent pavement slope.

Trench rollers or other compaction equipment shall be used to compact the foundation, granular material and bituminous mixtures for widening when standard width rolling equipment cannot be used.

S-403.03.5.4--Patching. Existing pavement which has failed or unsatisfactorily stabilized shall be removed as directed. Removal of pavement will be measured and paid for under the appropriate pay items as provided in the contract.

Backfill shall consist of hot mix asphalt or a combination of compacted layers of granular material and hot mix asphalt. Unless otherwise specified, the Engineer will make this determination based on depth and field conditions.

Hot mix asphalt used for backfilling will be measured and paid for at the contract unit price for the mixture designated on the plans as the lowest lift. Granular material will be measured and paid for under the appropriate pay item as provided in the contract or as extra work.

S-403.03.5.5--Preliminary Leveling. All irregularities of the existing base or pavement that result in a thickness greater than approximately two and one-half inches for the first overall leveling lift shall be corrected by skin patching, feather edging or a wedge lift and shall be approved by the Engineer in advance of placing the first overall lift.

S-403.03.5.6--Placement of Lifts. The leveling lift shall be placed in a layer (or layers) not exceeding approximately two and one-half inches compacted thickness.

When single lane construction is required, placement of a lift on the adjacent lane may be performed by an approved profile averaging device provided the lane previously placed is within the allowable tolerances for all surface requirements. When any of the tolerances are exceeded, the contractor shall reestablish the control string line for laying the adjacent lane should he elect to perform this work prior to correcting the deficiencies of the lane previously placed. In no case shall a "matching shoe" be used to control the grade of an adjacent lane.

In instances where there are only minor deviations from the allowable tolerances in the first overall lift, the Engineer may permit the Contractor to place the next higher lift by graded string line in lieu of making the corrections.

Single lane placement of leveling, intermediate and surface lifts shall be limited to the distance covered in one and one-half days in advance of that placed in the adjacent lane.

S-403.03.5.7--Protection of Pavement. The base and pavement shall be protected and properly maintained until it has been compacted and cooled sufficiently for use by traffic.

S-403.04--Method of Measurement. HMA pavement, complete in place and accepted, will be measured by the ton. The weight of the composite mixture shall be determined in accordance with the provisions of S-401.03.2.1.11.

Unless shown as a separate pay item, the furnishing and application of the tack coat will not be measured for payment. When payment is provided, tack coat will be measured as set out in S-407.06.

The quantity of bituminous mixture required to correct the work, when made at the expense of the Contractor, will not be measured for payment.

Any trenching required for widening will not be measured for payment; the cost thereof shall be included in other items of work.

Undercut required by the Engineer will be measured for payment under the appropriate excavation item as provided in the contract or as extra work. Pavement removal and any required trenching will not be included in the measurement for undercut.

S-403.05--Basis of Payment. Subject to the adjustments set out in S-401.02.6.3, S-401.02.6.4 & S-403.03.2, hot mix asphalt pavement, complete-in-place, accepted, and measured as prescribed above, will be paid for at the contract unit price per ton for each lift of pavement specified in the bid schedule and shall be full compensation for completing the work.

S-403.05.1--Price Adjustment for Thickness Requirement. When grade stakes are eliminated as provided in S-403.03.3 and the average thickness of all cores from lots representing a day's production is more than 3/8 inch thicker than the total specified thickness of the pavement, excluding lift(s) placed using an established grade line, a lump sum reduction in payment for the surface lift of lots representing a day's production will be made as follows:

$$\begin{array}{lcl} \text{(Individual Day's} & & \text{(Monetary Value of the Day's} \\ \text{L.S. Reduction)} & = & \text{Surface Lift Production)} \times \frac{(D - 3/8)}{ST} \end{array}$$

Where:

D = The day's average deviation from total pavement thickness shown on the plans excluding lift(s) placed using an established grade line.

ST = Specified thickness for lift.

The total L.S. reduction for the project is the summation of the individual day's reductions in payment.

S-403.05.2--Pay Items

Payment will be made under:

S-403-A: Hot Mix Asphalt, $\frac{(1)}{\text{Type}}$ $\frac{(2)}{\text{Mixture}}$ - per ton

S-403-B: Hot Mix Asphalt, $\frac{(1)}{\text{Type}}$ $\frac{(3)}{\text{Mixture}}$, Leveling - per ton

S-403-C: Hot Mix Asphalt, $\frac{(1)}{\text{Type}}$ $\frac{(4)}{\text{Mixture}}$, Trench Widening - per ton

S-403-D: Hot Mix Asphalt, HT $\frac{(3)}{\text{Mixture}}$, Polymer Modified - per ton

S-403-E: Hot Mix Asphalt, HT $\frac{(3)}{\text{Mixture}}$, Polymer Modified, Leveling - per ton

- (1) ST, MT or HT
- (2) 4.75 mm mixture, 9.5 mm mixture, 12.5-mm mixture, 19-mm mixture or 25-mm mixture
- (3) 4.75 mm mixture, 9.5 mm mixture, 12.5-mm mixture, or 19-mm mixture
- (4) 19-mm mixture or 25-mm mixture

Sections S-404 and S-405 - Blank.

Special Provision
901-S-401-2
Plant Mix Pavements (HMA)--General
Marshall Design Mixtures
Project No. _____
_____ County

OFFICE OF STATE AID ROAD CONSTRUCTION
MISSISSIPPI DEPARTMENT OF TRANSPORTATION

DATE: February 5, 2008

SUBJECT: Hot Mix Asphalt (HMA) Pavements – Marshall Mixtures

The MISSISSIPPI STANDARD SPECIFICATIONS FOR STATE AID ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION is hereby supplemented as follows:

Section S-401 – Plant Mix Pavements (HMA) – General, of the Mississippi Standard Specifications for State Aid Road and Bridge Construction, 2004 Edition, is hereby amended as follows and is applicable for HMA mixtures designed using the Marshall Method.

SECTION 901-S-401 –HOT MIX ASPHALT (HMA) Marshall Mixtures

Delete Subsection S-401.01 and replace with the following:

901-S-401.01--Description. This work consists of the construction of one or more lifts of hot mix asphalt (HMA) designed and controlled using the Marshall Method in accordance with these specifications and the specific requirements for the mixture to be produced and in reasonably close conformity with the lines, grades, thicknesses and typical sections shown on the plans or established by the Engineer.

It is the intent of this special provision to only revise those sections of S-401 which would not be applicable for mixtures designed by the Marshall Method. Those sections in the Mississippi Standard Specifications for State Aid Road and Bridge Construction, 2004 Edition, not addressed or revised herein or otherwise applicable to Marshall Method designed mixtures shall remain in force as written or shall not be considered applicable to this special provision. Where conflicts exist between this special provision and the standard specifications, this special provision shall govern for mixtures designed and placed by the Marshall Method.

Delete Subsection S-401.02.1.2 -- Aggregates in toto and replace with the following:

901-S-401.02.1.2--Aggregates. The source of the aggregates shall meet the applicable requirements of S-703, Subsections 901-S-401.02.1.2.1, 901-S-401.02.1.2.2 and 901-S-401.02.1.2.3 below, and as specified herein.

The several aggregate components, including mineral filler and other materials when required, shall be sized, uniformly graded, and combined in such proportions that the resulting mixture meets the gradation requirements of the specific type mixture under contract. Pre-mixing of aggregate fractions by controlled methods may be permitted to produce a more workable component which contributes to the gradation requirements of the job-mix formula. Bituminous material within the percentage limits designated for the specific type mixture shall be combined with the other components of the mixture.

The HMA mixture shall conform to the types set forth in 901-S-401.02.1.2.3.2, Table A. The type of mixture is the Contractor's option except when a specific type or types are designated in the contract.

The overall limits set out in 901-S-401.02.1.2.3.2, Table B, encompass the extreme limits for material or combinations of materials from all possible sources, and closer controls appropriate to the job materials shall be established for each specific mixture required under any contract in accordance with a job-mix formula established as set out in 901-S-401.02.3.2 below.

901-S-401.02.1.2.1--Coarse Aggregate (Material Retained on No. 8 Sieve).

Bituminous Base (BB-1)

Coarse aggregate shall be crushed stone, slag or granite; shell; expanded clay; expanded shale; crushed gravel (or combination of crushed and uncrushed) or combination thereof as set forth in Table A of 901-S-401.02.1.2.3.2. Crushed reclaimed concrete pavement shall also be allowed as a coarse aggregate provided it meets the quality requirements below and the final product produced therefrom meets all other specification requirements.

Individual sources of coarse aggregate shall conform to the following quality requirements:

1. Percentage of wear shall not exceed 45 when tested in accordance with AASHTO Designation: T 96.
2. Except for expanded clay and shale, the coarse aggregate shall have a minimum dry rodded unit weight of 70 pounds per cubic foot when tested in accordance with AASHTO Designation: T 19.
3. The coarse aggregate shall be free of any injurious coating which will prohibit the adherence of asphalt to the aggregate particles.

Coarse aggregate when combined with other aggregate fractions in the proper proportions shall conform to the requirements of 901-S-401.02.1.2.3.1 and the job-mix formula.

Leveling, Binder, and Surface Courses

Coarse aggregate shall be crushed gravel (or combination of crushed and uncrushed gravel), slag, stone or granite; shell; expanded clay; expanded shale or combination thereof as set forth in TABLE A of 901-S-401.02.1.2.3.2. Crushed reclaimed concrete pavement shall also be allowed as a coarse aggregate provided it meets the quality requirements below and the final product produced therefrom meets all other specification requirements.

With written permission of the Engineer, the specified surface course may be substituted for an underlying course. In this case, any crushed coarse aggregate or blend of crushed coarse aggregates without regard to a particular type of mix may be used. Provided, however, that the

aggregates and the resulting mixture meet all other requirements for specified surface course including crushing and fractured face requirements. Surfaces mixtures (SC-2) shall not be allowed in lower courses with the exception of thin leveling sections.

The percentage of wear shall not exceed 45 when tested in accordance with AASHTO Designation: T 96.

When tested in accordance with AASHTO Designation: T 19, the dry rodded unit weight of all aggregates except expanded clay and shale shall not be less than 70 pounds per cubic foot, and crushed slag used in the surface course shall have a dry rodded unit weight of not more than 90 pounds per cubic foot except the maximum unit weight is waived for chromium slag.

The coarse aggregate shall be free of any injurious coating which will prohibit the adherence of asphalt to the aggregate particles.

For surface course, the percent of thin or elongated pieces shall not exceed 15 by weight when tested in accordance with S-703.01, and the percentage of loss shall not exceed 20 when tested for soundness using magnesium sulfate in accordance with AASHTO Designation: T 104.

Crushed gravel, Class III, shall be the product resulting from crushing gravel aggregate of which no less than 98 percent is retained on the 3/8-inch sieve prior to crushing, and after crushing 100 percent passes the 3/8-inch sieve and no less than 65 percent passes the No. 4 sieve.

Shell shall consist of durable, washed particles of dead clam or dead reef oyster shell, or combination thereof. The shell shall be free of objectionable matter such as sticks, mud, clay lumps, cannery or live shell, or other deleterious matter. Not more than five percent by weight of the dredged material shall pass the No. 200 sieve; any such material shall be dispersed throughout the mass.

901-S-401.02.1.2.2--Fine Aggregate (Material Passing the No. 8 Sieve).

Bituminous Base (BB-1)

Fine aggregate shall consist of hard, durable particles of naturally disintegrated rock, or material obtained by crushing stone, slag, gravel, reclaimed concrete pavement or combinations thereof. Fine aggregate, when manufactured, shall be manufactured from material meeting the quality requirements for coarse aggregate, and it shall be free of lumps of clay and friable particles, loam, organic or foreign matter.

Individual sources of fine aggregate shall be non-plastic when tested in accordance with AASHTO Designation: T 90.

Natural deposits of fine aggregate shall contain no more than 10 percent by weight passing the No. 200 sieve when tested in accordance with AASHTO Designation: T 11.

When the fine aggregate is combined with other aggregate fractions in the proper proportion, the resultant mixture shall meet the requirements of 901-S-401.02.1.2.3.3 and the job-mix formula.

Fly ash, when used as a portion of the fine aggregate, shall be from an approved source.

Leveling, Binder, and Surface Courses

Fine aggregate shall consist of hard, durable particles of naturally disintegrated rock; material obtained by crushing stone, slag or gravel; stone or slag screenings; reclaimed concrete pavement; or combinations thereof. The amount of uncrushed fine aggregate permitted in the combined aggregate blend shall conform to the limitations in 901-S-401.02.1.2.3. Fine aggregate shall be free of lumps of clay and friable particles, loam, organic or foreign matter.

Fine aggregate produced by crushing stone, slag or gravel shall be manufactured from aggregate meeting the quality requirements of coarse aggregate.

Individual sources of fine aggregate shall be non-plastic when tested in accordance with AASHTO Designation: T 90.

Natural deposits of fine aggregate shall contain no more than 10 percent by weight passing the No. 200 sieve when tested in accordance with AASHTO Designation: T 11.

Individual fine aggregate components shall be of such consistency and dryness that a uniform and even flow from the cold feed will be provided.

Fine aggregate when combined with other aggregate fractions in the proper proportions shall meet the requirements of 901-S-401.02.1.2.3 and the job-mix formula.

Fly ash, when used as a portion of the fine aggregate to obtain desired properties of the mixture, shall be from an approved source.

901-S-401.02.1.2.3--Combined Aggregate Blend.

901-S-401.02.1.2.3.1--General. The several aggregate fractions for the mixture shall be sized, graded and combined in such proportions that the resultant composite blend will meet the gradation requirements of 901-S-401.02.1.2.3.2, TABLE B.

The minus No. 40 fraction of the combined aggregate shall be non-plastic when tested according to AASHTO Designation: T 90. The clay content for bituminous base, leveling and binder courses shall not exceed 1.0 percent, and for the surface course shall not exceed 0.5 percent by weight of the total mineral aggregate when tested according to AASHTO Designation: T 88.

Mineral filler and/or fly ash, when used to obtain desired properties of the mixture shall not exceed 3.0 percent by weight of the total aggregate blend.

The ratio, by weight, of dust (material passing No. 200 sieve) to asphalt binder shall be not less than 0.8 nor more than 1.6.

Of all the material passing the No. 8 sieve and retained on the No. 200 sieve, not more than 60 percent shall pass the No. 30 sieve.

At least 70 percent by weight of the combined mineral aggregate retained on the No. 4 sieve shall have one or more mechanically fractured faces for bituminous base courses.

At least 80 percent by weight of the combined mineral aggregate retained on the No. 4 sieve shall have one or more mechanically fractured faces for bituminous leveling and binder courses.

At least 90 percent, by weight, of the combined mineral aggregate retained on the No. 4 sieve shall have two or more mechanically fractured faces for bituminous SC-1 Surface Mixtures.

Uncrushed natural sand shall pass the 3/8-inch sieve and the content shall not exceed 20 percent by weight of the total mineral aggregate except for RAP.

901-S-401.02.1.2.3.2--Tables.

TABLE A specifies the types and coarse aggregate combinations for bituminous base and pavements.

TABLE B specifies the gradations of the combined aggregates for bituminous bases and pavements. The job-mix formula, excluding allowable tolerances in TABLE C, shall be within the limits of TABLE B. Unless otherwise designated on the plans or in the contract documents, the gradation number shall be as follows:

Bituminous Base: Number BB-1

Leveling and Binder Course: Number BC-1

Surface Course and Leveling: Number SC-1 and SC-2

TABLE C lists the maximum tolerances allowed for any one test of gradation and asphalt content from the job-mix formula.

TABLE D lists the minimum percent Voids in Mineral Aggregate (VMA) allowed for design and plant produced mixtures.

TABLE A
OPTIONAL AGGREGATE TYPES

Type Construction	Bituminous Base Course	Leveling and Binder Courses	Surface Course
Coarse Aggregate:	Mixture Type Number		
Crushed Limestone	1	1	
Crushed Slag	2	2	
Crushed Granite	3	3	
Shell	4	4	
Expanded Clay or Expanded Shale	5	5	
Crushed Gravel or combination of crushed and uncrushed gravel combined with any coarse aggregate (Note 1)	6	6	
Crushed Gravel or combination of crushed and uncrushed gravel combined with Limestone or Slag (Notes 1 & 2)	7	7	
Crushed Gravel combined with Limestone or Slag (SC-1) (Note 3)			8
or			
Crushed Gravel (Class III) combined with Limestone or Slag (SC-2) (Note 3)			8
Crushed Gravel (Class III) (SC-2) (Note 4)			9

Note 1: At least 70% for bituminous base courses and 80% for bituminous leveling and binder courses by weight of the combined mineral aggregate retained on the No. 4 sieve shall have one or more mechanically fractured faces.

Note 2: At least 20% of the total combined aggregate by weight shall be limestone or slag.

Note 3: 20 to 50% of the total combined aggregate by weight shall be limestone or slag of

which 20 to 45% shall pass the No. 8 sieve. Used for SC-1 or SC-2 Mixes.

Note 4: Type 9 may be used only when designated or specified as an optional type in the contract. Used for SC-2 only.

TABLE B

**DESIGN MATER RANGE
Percent by Weight Passing Sieves**

Number	BB-1	BC-1	SC-1	SC-2
Sieve Size:				
1 ½ inch	100			
1 inch	83-100			
¾ inch		100		
½ inch	56-95	82-100	100	
3/8 inch		71-91	87-100	100
No. 4	29-70	40-73	54-80	69-100
No. 8	19-54	26-58	32-63	47-95
No. 16				30-76
No. 30	8-30	9-30	12-33	18-58
No. 50	4-20	6-20	6-20	9-42
No. 200	2-10	2-10	2-10	4-10
Min. % A.C. by Wt. of Mix.*	4.0	4.0	4.0	4.0

* The actual percent of asphalt will be designated in the job-mix formula.

TABLE C

**TOLERANCES FROM JOB-MIX FORMULA
(Maximum for Any One Test)**

Sieve Sizes	Tolerances Percent (±)
Passing 3/8 inch and larger sieves	6
Passing Nos. 4, 8, and 16 sieves	5
Passing Nos. 30 and 50 sieves	4
Passing No. 200 sieve	1.5
Percent Asphalt Cement	0.4
Voids in Mineral Aggregate (VMA)	1.0

TABLE D

MINIMUM VOIDS IN MINERAL AGGREGATE (VMA)

Nominal Maximum Size*	VMA Minimum Percent
No. 4	17.0
3/8 Inch	15.0
½ Inch	14.0
¾ Inch	13.0
1 Inch	12.0

Delete Subsection S-401.02.1.4 and replace with the following:

901-S-401-02.1.4--Miller Filler. Mineral filler shall meet the requirements of S-703.16.

Delete Subsection S-401.02.1.6--Asphalt Admixtures in toto and replace with the following:

901-S-401-02.1.6--Asphalt Admixtures. Additives for liquid asphalt, when required or permitted, shall meet the requirements of S-702.08, except that the minimum Tensile Strength Ratio (TSR) when tested in accordance with Mississippi Test Method MT-63 shall be 85.

901-S-401-02.3.1--Replace table for RAP percentages allowed with the following:

HMA Mixture	Maximum percent RAP By total weight of mix
BB-1	30
BC-1	30
Leveling	30
SC-1	15

Delete Subsection S-401.02.3.1.1--Mixture Properties in toto and replace with the following:

901-S-401-02.3.1.1--Mixture Properties. Marshall Stability of proposed HMA mixtures, when tested in accordance with Mississippi Test Method: MT-34, Marshall Stability Values of Compacted Bituminous Mixtures, shall be 1500 pounds for base, leveling, and binder mixtures and 1800 pounds for surface mixtures when subjected to seventy-five (75) blows of a Standard Marshall Hammer on each end of the specimen and tested at a temperature of 140°F.

The total percent air voids in the completed mixture shall be within the range of 3-5.

The ratio, by weight, of dust (material passing the No. 200 sieve) to asphalt binder shall not be less than 0.8 nor more than 1.6 for all mixtures.

Delete Subsection S-401.02.3.2--Job Mix Formula in toto and replace with the following:

901-S-401.02.3.2--Job Mix Formula. The job mix formula shall be established in accordance with Mississippi Test Method MT-35.

The job-mix formula for each mixture shall establish a single definite percentage of aggregate, including mineral filler, hydrated lime, and other materials when required, passing each required sieve size, and a single definite percentage of bitumen to be added to the aggregate and a single definite temperature at which the mixture is to be discharged from the mixer.

At least fifteen (15) days prior to the proposed use of each mixture to be supplied and placed under the contract, the Contractor shall submit in writing to the Engineer for his approval, a single (one) proposed job-mix formula or request the transfer of a verified job-mix formula for each mixture. The job-mix formula shall be signed by a Certified Mixture Design Technician (CMDT).

Prior to the use of each such mixture, the Contractor shall make available materials, conforming to the material specifications and proposed for use in the mixture, for sampling and testing by a State Aid approved laboratory, as the Engineer may consider necessary to determine approval or disapproval of the Contractor's job-mix formula, or the establishment of a proposed job-mix formula by the Engineer in lieu thereof. The following information shall be forwarded for each mix submitted.

- (1) The specific project for which the mixture will be used.
- (2) The source and description of each material component (virgin & reclaimed) to be used in the mixture.
- (3) A sample of each component (including anti-stripping agent) proposed in the mixture.
- (4) The gradation and proportions of the materials to be combined in the mixture.
- (5) A percentage of the combined aggregates passing each specified sieve and a graphical plot of the combined aggregate gradation on a 0.45 power chart shall be attached. A percentage of asphalt by weight of the total mix intended to be incorporated in the completed mixture.
- (6) A proposed temperature at which the mixture is intended to be discharged from the plant.
- (7) A copy of the current temperature viscosity curve for the asphalt binder used in the mix.
- (8) The name of the Contractor's representative responsible for the quality control of the mixture during production.
- (9) Accompanying design curves and other laboratory test data to show that the completed mixture will conform to the requirements for stability, flow, workability, density, and all other criteria specified in the contract.

A State Aid approved laboratory will perform the tests necessary for verification of a proposed job-mix formula or transfer for each required mixture at no charge to the Contractor; however, a charge will be made for additional job-mix formulas submitted by the Contractor for review. The Contractor will be charged for the tests conducted on submitted materials that will not blend into an approvable job-mix formula and the materials submitted for additional job-mix formulas. Likewise, the Contractor will be charged for any additional transfers of approved mixes after

tentative approval of a mix for a particular course has been given. Where the Contractor requests more than one job-mix for any course, only the job-mix used on the project will be furnished at no charge to the contractor.

In the case of a small quantity, under 200 tons, for a single pay item of bituminous mixture, as indicated in the proposal, is produced and supplied by an established plant, the approval of a job-mix formula shall be at the discretion of the Engineer, based on known satisfactory production of similar mixes made from materials previously tested and approved for other work; or, at the discretion of the Engineer, tested and approved for the work for which the job-mix formula is under consideration. Acceptance of the job-mix formula shall, also, be contingent upon proper placement qualities at the time the mixture is used in the work.

In the event the Contractor fails to submit a proposed job-mix formula sufficiently in advance of its proposed use for the Engineer to determine approval or non-approval, a job-mix formula will be established by the Engineer at the earliest practical time.

In all cases, determination of the job-mix formula to be used will be made by the Engineer and will be based on resistance to stripping, stability, flow, VMA, total voids, workability, density, skid resistance, and any other criteria specified for the mixture complete in place; it will be based also on the materials submitted but if the specified or desirable properties cannot be obtained, other materials shall be submitted by the Contractor. It shall be fully understood that the amount of bitumen approved or established for the job-mix formula shall be determined by the Engineer as being that most compatible with the desired characteristics of the mixture and in consideration of the percentage of materials passing the No. 200 sieve. The ranges of the components of the HMA mixture set out in 901-S-401.02.1.2.3.2-Table "B" shall have no bearing upon the determination of the percentage established for the job-mix formula, except that no job-mix formula will be approved or established having permissible ranges outside of the master range for the particular mixture.

The job-mix temperature shall be the lowest temperature that is considered to be satisfactory to obtain the desired mixture.

No mixture will be accepted for use, nor shall any mixture be placed until the Engineer has established or approved a "tentative" job-mix formula for the particular mixture.

The job-mix formula thus approved or proposed from the laboratory test results shall be considered as "tentative" until a sufficient amount of the mixture has been actually processed through the plant, spread and compacted to determine by tests the necessity and effectiveness of corrections and adjustments to the plant operation, and to spreading and compaction procedures.

When a change in source of materials, unsatisfactory results or changed conditions make it necessary, a new job-mix formula will be required. The conditions set out herein for the original job-mix formula are applicable to the new job-mix formula.

The tentative job-mix formula, with its adjustments to plant operation and spreading and compaction procedure when required, will be considered as conditionally approved until it is rejected, or its approval is confirmed by the Engineer.

After approval of the tentative job-mix formula is confirmed by the Engineer, the mixture furnished for the project shall conform thereto within the range of tolerances specified for the particular mixture. No change in properties or proportions of any ingredient of the mix shall be made without permission of the Engineer. The job-mix formula for each mixture shall be in effect until revised in writing by the Engineer.

The approved job-mix formula may be transferred for use on other contracts under the conditions set out in the Office of State Aid Road Construction's S.O.Ps.

Delete Subsection S-401.02.4--Substitution of Mixture in toto and replace with the following:

901-S-401.02.4--Substitution of Mixture. Except as otherwise specified in the contract, any HMA mixture specified in the contract for a course required above the course being placed may be substituted in lieu of the mixture specified for the course being placed, provided the course constructed with the substituted mixture meets the composition and physical requirements, complete-in-place and accepted, for the mixture being used or for the mixture for which the substitution is being made, and will be measured and paid for as provided for the course being placed. Density requirements will be as specified for the course for which the substitution is made. Any substitution of mixtures shall be of the same type. No other substitutions will be allowed. The quantity of substituted mixture shall be measured and paid for at the contract unit price for the mixture designated on the plans. The substitution of any mixture will be contingent on meeting the required total structure thickness and maintaining the laying thickness for the particular substituted mixture. Unless designated otherwise in the contract, the minimum laying thickness of any HMA course shall be not less than twice the nominal maximum sieve size for the aggregate used.

Change the title for Subsection S-401.02.5--Contractor's Quality Management Program as follows:

901-S-401.02.5--Contractor's Quality Control.

Delete Subsection S-401.02.5.1--General in toto and replace with the following:

901-S-401.02.5.1--General. The Contractor shall have full responsibility for quality control. The Contractor shall provide and maintain a quality control system that will furnish reasonable assurance that the HMA mixtures as well as all component materials incorporated in the work conform to the contract requirements whether manufactured or produced by the Contractor or procured from suppliers of subcontractors. The Contractor shall have responsibility for the initial determination and all subsequent adjustments in proportioning materials to produce the specified job-mix and other physical characteristics. When quality control testing indicates a trend toward borderline values, the Contractor shall initiate immediate action to reverse the

trend. When quality control testing confirms non-conformance to specified values, the Contractor shall take immediate corrective action or cease operations.

The Contractor's quality control shall include the following:

1. Determination of fractured face content of aggregates retained on the No. 4 sieve for base, binder, leveling and SC-1 surface mixtures at a minimum of one test per day of production.
2. Moisture tests on aggregate stockpiles at a minimum of one test per half day of production.
3. Extraction tests for gradation determination at a minimum of one test per half day of production. Gradation tests of combined aggregates may be sampled from conveyor belt or other approved sampling methods.
4. Determination of stability, total voids, Voids in Mineral Aggregate (VMA) and bulk specific gravity on laboratory compacted Marshall Specimens at a minimum of one test per half day of production.
5. Asphalt content using nuclear gauge or ignition oven at a minimum of three tests per day of production.
6. Stripping tests at a minimum of one stripping test at the beginning of each job-mix production and thereafter, at least once per each two weeks of production according to Mississippi Test Method: MT-63 and one stripping test per day of production according to Mississippi Test Method: MT-59. Should either the TSR (MT-63) or the boiling water (MT-59) stripping tests fail, a new anti-strip additive or rate shall be established or other changes made immediately that will result in a mixture which conforms to the specifications; otherwise, production shall be suspended until corrections are made.
7. Density tests as necessary to verify compaction (minimum of 3 per day).
8. Quality control charts, up-to-date and posted in a readily observable location.

At the beginning of placement for each course, except for temporary work of short duration and bridge replacement projects having 500 linear feet or less of pavement on each side of a structure, the Contractor shall construct a test strip of a maximum four hours duration for the purpose of evaluating the properties of the HMA mixture and determining maximum compaction of the mixture. When there are multiple bridge sites on a bridge replacement project, each site will be considered separately. At least one density growth curve shall be established within the test strip. If the test results are satisfactory, as approved by the Engineer, operations may resume. If unsatisfactory, appropriate adjustments shall be made, or a new job-mix formula obtained, and another test strip shall be constructed.

The rolling pattern established during construction of the test strip is to be used by the Contractor as a guide. When conditions change, variation from the rolling pattern may be necessary to maintain specification requirements, in which case a new rolling pattern shall be established.

Delete Subsection S-401.02.5.3--Testing Requirements in toto.

Delete Subsection S-401.02.5.4--Documentation in toto.

Delete Subsection S-401.02.5.5--Control Limits in toto.

Delete Subsection S-401.02.5.6--Warning Limits in toto.

Delete Subsection S-401.02.5.8--Action and Adjustments in toto.

Delete Subsection S-401.02.6.1--General in toto and replace with the following:

901-S-401.02.6.1--General. Acceptance for mixture quality (VMA, total voids, asphalt content and stability) will be based on random samples tested in accordance with Subsection 901-S-401.02.6.2 and 901-S-401.02.6.3 below. Pavement densities and smoothness will be accepted by lots as set out in S-401.02.6.4, S-401.02.6.5 and S-403.03.2.

Delete Subsection S-401.02.6.2—Test for Mixture Quality in toto and replace with the following:

901-S-401.02.6.2--Test for Mixture Quality. The rounding of test results will be in accordance with S-700.04.

The mixture will be accepted at the plant with respect to VMA, total voids, asphalt content and stability based on tests of HMA mixture samples obtained from trucks and run by state certified technicians or State Aid approved laboratory. At least one sample will be obtained at random for each three hours' production or fraction thereof with a maximum of three samples for a full day's production. When a test fails to meet the specified requirements, the Contractor will be notified immediately and a verification test will be performed. If the verification test confirms the failure, the Contractor shall make the necessary corrections or adjustments to meet the specifications. If the next regularly scheduled random acceptance sample indicates that the failure has not been corrected, operations will be suspended until corrections or adjustments are made. Nonconforming mixture placed on the roadway prior to correcting will be accepted or rejected by the Engineer in accordance with S-105.03, and payment will be made as set out below in Subsection 901-S-401.02.6.3. The Engineer may increase the testing frequency as necessary to assure conformity to the specifications.

The Engineer will determine acceptability of the combined aggregate blend based on testing personnel extraction tests of bituminous mixture samples obtained from trucks. At least one sample will be obtained at random for each day of production. When characteristics of the mixture indicate a change in gradation, additional tests will be performed as necessary to insure conformance to gradation requirements. When gradation is out of tolerance, the Contractor shall make necessary corrections or adjustments to meet the job-mix formula. Gradation must be in tolerance within a maximum production time of three hours as evidenced by an additional test or operations shall be suspended.

The Engineer will determine conformance to the specifications for Class III crushed gravel for surface mixture (SC-2) prior to incorporation in the work. At least one test will be performed at random during each week's production. One test will include an analysis of the gradation prior to and after crushing. Such aggregate not meeting the crushing requirements of the specifications will not be permitted in the work.

The Engineer will determine conformance to the specification requirements for crushed aggregate in base, leveling, binder and SC-1 surface mixtures prior to approval of a job-mix formula, at beginning of production and thereafter, at least one random test during each week's

production. A failing test will be reported immediately, and the Contractor shall make necessary corrections. If the corrections are not made within a maximum production time of three hours, as evidenced by results of another test, production shall be suspended until corrections are made.

Delete Subsection S-401.02.6.3--Acceptance Procedure for Mixture Quality in toto and replace with the following:

901-S-401.02.6.3--Acceptance Procedure for Mixture Quality. All obviously defective material or mixture will be subject to rejection by the Engineer. Such defective material or mixture shall not be incorporated into the finished work.

Each course will be accepted by lots. Material produced and placed during test strip(s), for each course will be designated as separate lots. Otherwise, the size of a lot will be designated as a day's run unless terminated by the Engineer. When less than a day's production and one or more tests have been made for VMA, total voids, asphalt content and stability, the work will be considered a lot. When less than a day's production and no tests have been made for VMA, total voids asphalt content and stability, the work will be included in the previous lot.

The bituminous mixture will be tested in accordance with the following procedures:

1. Voids in Mineral Aggregate (VMA) will be calculated in accordance with Mississippi Test Method: MT-35 using the bulk specific gravity of the compacted specimen prior to testing for stability and the bulk gravities of the aggregate components shown on the mix design.
2. Total air voids in the compacted mixture will be determined in accordance with Mississippi Test Method MT-35 using the bulk specific gravity of the compacted specimen prior to testing for stability and the maximum specific gravity of the uncompacted mixture determined from field laboratory tests.
3. Stability--Mississippi Test Method: MT-34, Marshall Stability Values of Compacted Bituminous Mixtures.
4. Asphalt Content--Mississippi Test Method MT-6, Nuclear Determination of Bitumen Content of paving Mixtures, or Incinerator oven per AASHTO Designation: T 308, Method A.
5. Mixture Gradation--Mississippi Test Method MT-31.

6. Density—AASHTO Designation: T 166, Bulk Specific Gravity of Compacted Bituminous Materials, or Mississippi Test Method MT-16 (Method C), Nuclear Method for Field In-Place Density Determination, except leveling courses and temporary work of short duration will be determined only by AASHTO T 166. When test strip(s) are not required on bridge replacement projects, either AASHTO Designation: T 166 or Mississippi Test Method: MT-16 (Method C) will be used for density determination. (Note - The nuclear gauge shall be correlated with the average of five pavement sample densities.)
7. Extractions shall be run to determine acceptability of the combined aggregate blend of samples of the bituminous mixture obtained from trucks. At least one sample will be obtained at random for each day of production.

Bituminous mixture placed prior to correction for deficiencies in VMA, total voids, stability, or asphalt content, as required above, and determined by the Engineer in accordance with S-105.03 to be satisfactory to remain in place, will be paid for at 90% of the contract unit price.

Delete Subsection S-401.02.6.4--Acceptance Procedure for Density in toto and replace with the following:

901-S-401.02.6.4--Acceptance Procedure for Density. Each completed lift will be accepted with respect to compaction on a lot basis from density tests performed by the Engineer. Material produced and placed during test strip(s) for each course will be designated as separate lots. Otherwise, the lot will be designated as a day's production unless terminated by the Engineer. When less than a day's production and one or more tests have been made for each of the characteristics of VMA, total voids, asphalt content and stability, the work will be considered as a lot.

When less than a day's production and no tests have been made for each of the characteristics of VMA, total voids, asphalt content and stability, the work will be included in the previous lot. Each lot will be divided into five approximately equal sublots. One density test will be taken at a random location in each of the sublots in accordance with State Aid SOP. When a nuclear density test of a subplot does not meet specified density requirements, two additional tests will be taken within a one-square-yard area of the first test. The average of the three tests shall be the density of the subplot, except when removal of the subplot or a portion thereof is required as set out below. The average of the five subplot density tests will be the test value for the lot. Additional tests may be required by the Engineer to determine acceptance of work appearing deficient.

When determined that a lot density is below 92.0 percent but not lower than 90.0 percent of maximum density, the Contractor shall make the necessary correction to plant and/or mixture to conform to the specified density requirements. If the next lot or portion thereof, shows that corrections have not been made, the Contractor's operation will be suspended until such corrections are made. After a suspension of operations a new test strip will be required during which the Contractor shall develop a new rolling pattern for compaction to specification requirements. Payment for the mixture placed prior to making correction will be made as set out below.

When determined that the density of a subplot is below 90.0 percent of maximum density, the subplot or portion thereof with a density outside these limits shall be removed and replaced at no

additional cost to the project. The density will be verified from a pavement sample taken within a one-square yard area of the original nuclear gauge test and tested in accordance with AASHTO Designation: T 166 prior to requiring removal and replacement.

The limits of removal will be established from pavement sample densities. Any required removal shall be full lane width and not less than 50 feet in length. A corrected subplot will be tested for approval and determination of the average test value for the lot in accordance with State Aid SOP. No resampling will be performed when pavement samples are used for determining density.

When test strip(s) are not required on bridge replacement projects, either AASHTO Designation: T 166 of Mississippi Test Method: MT-16 will be used for density determination. (Note - The Nuclear gauge shall be correlated with the average of five pavement sample densities.)

When determined that a lot density is below 92.0 percent but not lower than 90.0 percent of maximum density, the Contractor will have the right to remove and replace the subplot or sublots not meeting specified density requirements in lieu of accepting reduced payment for the lot as determined in accordance with the provisions set out in the following paragraph.

Each lot of work found not to be in conformity with the density requirement of not less than 92.0 percent (92.0%) may remain in place with a reduction in payment as set out in the following table:

PAYMENT SCHEDULE FOR COMPACTION

<u>Pay Factor</u>	Lot Density*	<u>% of Maximum Density</u>
**		above 97.0
1.00		above 92.0
0.90		91.0 – 91.9
0.75		90.0 – 90.9

*Any lot, subplot or portion thereof with a density of less than 90.0 percent (90.0%) of maximum density shall be removed and replaced at no additional cost to the Project.

** Field density greater than 97 percent - Plant corrections and/or mixture corrections shall be made by the Contractor or operations will be suspended until corrections are made as provided in Subsections 901-S-401.02.6.1, 901-S-401.02.6.2, and 901-S-401.02.6.3. Mixtures placed prior to corrections or suspension will receive 100 percent pay.

Delete Subsection S-401.03.9 in toto.

After Subsection S-401.03.13--Pavement Samples add the following subsections:

901-S-401.03.14--Method of Measurement. Marshall Design Hot Mix Asphalt (HMA), complete-in-place and accepted, will be measured by the ton. The weight of the composite mixture shall be determined in accordance with the provisions of S-401.03.2.1.11.

Unless shown as a separate pay item, the furnishing and application of the tack coat will not be measured for payment. When payment is provided, tack coat will be measured as set out in S-407.06.

The quantity of HMA mixture required to correct the work, when made at the expense of the Contractor, will not be measured for payment.

Any excavation required for widening will not be measured for payment; the cost thereof shall be included in other items of work.

Undercut required by the Engineer will be measured for payment under the appropriate excavation item as provided in the contract or as extra work. Pavement removal and any required trenching will not be included in the measurement for undercut.

901-S-401.15--Basis of Payment. Subject to the adjustments set out in 901-S-401.02.6.3 and 901-S-401.02.6.4, Marshall Design Hot Mix Asphalt (HMA), complete-in-place, accepted, and measured as prescribed above, will be paid for at the contract unit price per ton for each lift of pavement specified in the bid schedule and shall be full compensation for completing the work.

901-S-401.03.15.1--Price Adjustment for Thickness Requirement. When grade stakes are eliminated as provided in S-403.03.3 and the average thickness of all cores from lots representing a day's production is more than 3/8 inch thicker than the total specified thickness of the pavement, excluding lift(s) placed using an established grade line, a lump sum reduction in payment for the surface lift of lots representing a day's production will be made as follows:

$$\begin{array}{l} \text{(Individual Day's} \\ \text{L.S. Reduction)} \end{array} = \begin{array}{l} \text{(Monetary Value of the Day's} \\ \text{Surface Lift Production)} \end{array} \times \frac{(D - 3/8)}{ST}$$

Where:

D = The day's average deviation from total pavement thickness shown on the plans excluding lift(s) placed using an established grade line.

ST = Specified thickness for lift

The total L.S. reduction for the project is the summation of the individual day's reductions in payment.

901-S-401.03.15.2--Pay Items.

Payment will be made under:

901-S-401-A: Hot Mix Asphalt Base Course, (BB-____) -- per ton

901-S-401-A (W): Hot Mix Asphalt Base Course, (Trench Widening), (BB-____), -- per ton

901-S-401-B: Hot Bituminous Pavement Leveling Course, (BC-____), (Type____) -- per ton

901-S-403-C: Hot Bituminous Pavement Binder Course, (BC-____), (Type____) -- per ton

901-S-403-D: Hot Bituminous Pavement Surface Course, (SC____), (Type____) -- per ton

Section 14-01002

Long Bid Forms

Section 14-01002 PAGE NO.	FORM NO.	DESCRIPTION
2	1	Water System Components, Materials Only
5	2	Sewer System Components, Materials Only
6	3	Drainage System Components, Materials Only
7	7	Traffic Signs, Street Sign Posts and Miscellaneous Materials
11	10	Water, Sewer, and Drainage System Labor (Schedule A)
37	11	Water, Sewer, and Drainage Equipment and Labor Rental Per Hour (Schedule B)
38	13	Sewer Rehabilitation Labor and Materials
41	20	Traffic Striping Thermoplastic Pavement Markings (Labor and Materials)

WATER SYSTEM COMPONENTS – MATERIALS ONLY

Item No.	Description	Qty	Unit	Unit Price	Total Price
D-01	3/4" BLUE CTS PE SERVICE TUBING, SDR-9, 250 PSI	500	LF		\$ -
D-02	1" BLUE CTS PE SERVICE TUBING, SDR-9, 250 PSI	500	LF		\$ -
D-03	2" BLUE CTS PE SERVICE TUBING, SDR-9, 250 PSI	500	LF		\$ -
D-04	3" WATER MAIN (C-54)	100	LF		\$ -
D-06	4" WATER MAIN (C-900 DR18)	500	LF		\$ -
D-07	4" WATER MAIN (DIP, PRESSURE CLASS 350)	100	LF		\$ -
D-09	6" WATER MAIN (C-900 DR18)	500	LF		\$ -
D-10	6" WATER MAIN (DIP, PRESSURE CLASS 350)	100	LF		\$ -
D-12	8" WATER MAIN (C-900 DR18)	1000	LF		\$ -
D-15	8" WATER MAIN (DIP, PRESSURE CLASS 350)	100	LF		\$ -
D-16	10" WATER MAIN (C-900 DR18)	200	LF		\$ -
D-19	10" WATER MAIN (DIP, PRESSURE CLASS 350)	100	LF		\$ -
D-20	12" WATER MAIN (C-900 DR18)	500	LF		\$ -
D-23	12" WATER MAIN (DIP, PRESSURE CLASS 350)	100	LF		\$ -
D-24	14" WATER MAIN (C-900 DR18)	100	LF		\$ -
D-27	14" WATER MAIN (DIP, PRESSURE CLASS 250)	100	LF		\$ -
D-28	14" WATER MAIN (DIP, PRESSURE CLASS 300)	100	LF		\$ -
D-29	14" WATER MAIN (DIP, PRESSURE CLASS 350)	100	LF		\$ -
D-30	16" WATER MAIN (C-900 DR18)	200	LF		\$ -
D-33	16" WATER MAIN (DIP, PRESSURE CLASS 250)	100	LF		\$ -
D-34	16" WATER MAIN (DIP, PRESSURE CLASS 300)	100	LF		\$ -
D-35	16" WATER MAIN (DIP, PRESSURE CLASS 350)	100	LF		\$ -
D-36	DUCTILE IRON FITTINGS	2000	LB		\$ -
D-37	2" GATE VALVE THREADED W/ BOX, AWWA	1	EA		\$ -
D-38	4" GATE VALVE MJ W/ BOX, AWWA M&H	1	EA		\$ -
D-39	6" GATE VALVE MJ W/ BOX, AWWA M&H	1	EA		\$ -
D-40	8" GATE VALVE MJ W/ BOX, AWWA M&H	1	EA		\$ -
D-41	10" GATE VALVE MJ W/ BOX, AWWA M&H	1	EA		\$ -
D-42	12" GATE VALVE MJ W/ BOX, AWWA M&H	1	EA		\$ -
D-43	14" GATE VALVE MJ W/ BOX, AWWA M&H	1	EA		\$ -
D-44	16" GATE VALVE MJ W/ BOX, AWWA M&H	1	EA		\$ -
D-45	4" PLAIN RESILIENT HINGED CHECK VALVE (M&H KEN FLEX STYLE 506 OR APPROVED EQUAL)	1	EA		\$ -
D-46	6" PLAIN RESILIENT HINGED CHECK VALVE (M&H KEN FLEX STYLE 506 OR APPROVED EQUAL)	1	EA		\$ -
D-47	8" PLAIN RESILIENT HINGED CHECK VALVE (M&H KEN FLEX STYLE 506 OR APPROVED EQUAL)	1	EA		\$ -
D-48	10" PLAIN RESILIENT HINGED CHECK VALVE (M&H KEN FLEX STYLE 506 OR APPROVED EQUAL)	1	EA		\$ -
D-49	12" PLAIN RESILIENT HINGED CHECK VALVE (M&H KEN FLEX STYLE 506 OR APPROVED EQUAL)	1	EA		\$ -
D-50	4" X 4" SS TAPPING SLEEVE W/ 4" VALVE & BOX	1	EA		\$ -
D-51	6" X 4" SS TAPPING SLEEVE W/ 4" VALVE & BOX	1	EA		\$ -
D-52	6" X 6" SS TAPPING SLEEVE W/ 6" VALVE & BOX	1	EA		\$ -
D-53	8" X 4" SS TAPPING SLEEVE W/ 4" VALVE & BOX	1	EA		\$ -
D-54	8" X 6" SS TAPPING SLEEVE W/ 6" VALVE & BOX	1	EA		\$ -
D-55	8" X 8" SS TAPPING SLEEVE W/ 8" VALVE & BOX	1	EA		\$ -
D-56	10" X 4" SS TAPPING SLEEVE W/ 4" VALVE & BOX	1	EA		\$ -
D-57	10" X 6" SS TAPPING SLEEVE W/ 6" VALVE & BOX	1	EA		\$ -
D-58	10" X 8" SS TAPPING SLEEVE W/ 8" VALVE & BOX	1	EA		\$ -
D-59	10" X 10" SS TAPPING SLEEVE W/ 10" VALVE & BOX	1	EA		\$ -
D-60	12" X 4" SS TAPPING SLEEVE W/ 4" VALVE & BOX	1	EA		\$ -
D-61	12" X 6" SS TAPPING SLEEVE W/ 6" VALVE & BOX	1	EA		\$ -
D-62	12" X 8" SS TAPPING SLEEVE W/ 8" VALVE & BOX	1	EA		\$ -
D-63	12" X 10" SS TAPPING SLEEVE W/ 10" VALVE & BOX	1	EA		\$ -
D-64	12" X 12" SS TAPPING SLEEVE W/ 12" VALVE & BOX	1	EA		\$ -
D-65	14" X 6" SS TAPPING SLEEVE W/ 6" VALVE & BOX	1	EA		\$ -
D-66	14" X 8" SS TAPPING SLEEVE W/ 8" VALVE & BOX	1	EA		\$ -
D-67	14" X 10" SS TAPPING SLEEVE W/ 10" VALVE & BOX	1	EA		\$ -
D-68	14" X 12" SS TAPPING SLEEVE W/ 12" VALVE & BOX	1	EA		\$ -
D-69	16" X 6" SS TAPPING SLEEVE W/ 6" VALVE & BOX	1	EA		\$ -
D-70	16" X 8" SS TAPPING SLEEVE W/ 8" VALVE & BOX	1	EA		\$ -
D-71	16" X 10" SS TAPPING SLEEVE W/ 10" VALVE & BOX	1	EA		\$ -
D-72	16" X 12" SS TAPPING SLEEVE W/ 12" VALVE & BOX	1	EA		\$ -
D-73	6", 3-WAY FIRE HYDRANT, AWWA, 3'-6" BURY M&H 5 1/4" NST "RED"	1	EA		\$ -
D-74	4" IPS FULL CIRCLE WRAP AROUND, 12.5' LENGTH	10	EA		\$ -

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Item No.	Description	Qty	Unit	Unit Price	Total Price
D-75	6" IPS FULL CIRCLE WRAP AROUND, 12.5" LENGTH	10	EA		\$ -
D-76	8" IPS FULL CIRCLE WRAP AROUND, 12.5" LENGTH	10	EA		\$ -
D-77	10" IPS FULL CIRCLE WRAP AROUND, 12.5" LENGTH	10	EA		\$ -
D-78	12" IPS FULL CIRCLE WRAP AROUND, 12.5" LENGTH	10	EA		\$ -
D-79	4" DIPS FULL CIRCLE WRAP AROUND, 12.5" LENGTH	10	EA		\$ -
D-80	6" DIPS FULL CIRCLE WRAP AROUND, 12.5" LENGTH	10	EA		\$ -
D-81	8" DIPS FULL CIRCLE WRAP AROUND, 12.5" LENGTH	10	EA		\$ -
D-82	10" DIPS FULL CIRCLE WRAP AROUND, 12.5" LENGTH	10	EA		\$ -
D-83	12" DIPS FULL CIRCLE WRAP AROUND, 12.5" LENGTH	10	EA		\$ -
D-84	4" PVC JOINT RESTRAINT	10	EA		\$ -
D-85	6" PVC JOINT RESTRAINT	10	EA		\$ -
D-86	8" PVC JOINT RESTRAINT	10	EA		\$ -
D-87	10" PVC JOINT RESTRAINT	10	EA		\$ -
D-88	12" PVC JOINT RESTRAINT	10	EA		\$ -
D-89	14" PVC JOINT RESTRAINT	10	EA		\$ -
D-90	16" PVC JOINT RESTRAINT	10	EA		\$ -
D-91	4" DI JOINT RESTRAINT	10	EA		\$ -
D-92	6" DI JOINT RESTRAINT	10	EA		\$ -
D-93	8" DI JOINT RESTRAINT	10	EA		\$ -
D-94	10" DI JOINT RESTRAINT	10	EA		\$ -
D-95	12" DI JOINT RESTRAINT	10	EA		\$ -
D-96	14" DI JOINT RESTRAINT	10	EA		\$ -
D-97	16" DI JOINT RESTRAINT	10	EA		\$ -
D-98	STANDARD CAST IRON METER BOX FOR 3/4" METER	10	EA		\$ -
D-99	STANDARD CAST IRON METER BOX FOR 2" METER	10	EA		\$ -
D-100	CAST IRON ADJUSTABLE VALVE BOX, 3 PIECE 18" - 24"	10	EA		\$ -
D-101	4" MJ SOLID SLEEVE, 12" LENGTH, W/ DUCTILE IRON ACCESSORIES	10	EA		\$ -
D-102	6" MJ SOLID SLEEVE, 12" LENGTH, W/ DUCTILE IRON ACCESSORIES	10	EA		\$ -
D-103	8" MJ SOLID SLEEVE, 12" LENGTH, W/ DUCTILE IRON ACCESSORIES	10	EA		\$ -
D-104	10" MJ SOLID SLEEVE, 12" LENGTH, W/ DUCTILE IRON ACCESSORIES	10	EA		\$ -
D-105	12" MJ SOLID SLEEVE, 12" LENGTH, W/ DUCTILE IRON ACCESSORIES	10	EA		\$ -
202B DOUBLE STRAP BRASS SERVICE SADDLES					\$ -
D-106	4"X 3/4" CC THREADS DBL STRAP	10	EA		\$ -
D-107	4"X 1" CC THREADS DBL STRAP	10	EA		\$ -
D-108	4"X 1" CC THREADS DBL STRAP	10	EA		\$ -
D-109	4"X 3/4" CC THREADS DBL STRAP	10	EA		\$ -
D-110	4"X 2" IP THREADS DBL STRAP	10	EA		\$ -
D-111	8"X 3/4" CC THREADS DBL STRAP	10	EA		\$ -
D-112	8"X 1" CC THREADS DBL STRAP	10	EA		\$ -
D-113	8"X 2" IP THREADS DBL STRAP	10	EA		\$ -
D-114	10"X 3/4" CC THREADS DBL STRAP	10	EA		\$ -
D-115	10"X 1" CC THREADS DBL STRAP	10	EA		\$ -
D-116	10"X 2" IP THREADS DBL STRAP	10	EA		\$ -
D-117	12"X 3/4" CC THREADS DBL STRAP	10	EA		\$ -
D-118	12"X 1" CC THREADS DBL STRAP	10	EA		\$ -
D-119	12"X 2" IP THREADS DBL STRAP	10	EA		\$ -
D-120	3/4" CURB STOP, IP TO IP B11	10	EA		\$ -
D-121	1" CURB STOP, IP TO IP B11	10	EA		\$ -
D-122	2" CURB STOP, IP TO IP B11	10	EA		\$ -
D-123	3/4" METER CONNECTOR	10	EA		\$ -
D-124	1" METER CONNECTOR	10	EA		\$ -
D-125	2" METER CONNECTOR	10	EA		\$ -
D-126	3/4" COMP TO 3/4" METER CURB STOP B43	10	EA		\$ -
D-127	1" COMP TO 1" METER CURB STOP B43	10	EA		\$ -
D-128	2" COMP TO 2" METER CURB STOP BF43	10	EA		\$ -
D-129	3/4" FMIP TO 3/4" METER CURB STOP B13	10	EA		\$ -
D-130	1" FMIP TO 3/4" METER CURB STOP B13	10	EA		\$ -
D-132	3/4" CORPORATION STOP F1000	10	EA		\$ -
D-133	1" CORPORATION STOP F1000	10	EA		\$ -
D-134	2" CORPORATION STOP FB1100	10	EA		\$ -
D-135	3/4" MALE IP TO 3/4" COMPRESSION C84	10	EA		\$ -
D-136	1" MALE IP TO 1" COMPRESSION C84	10	EA		\$ -
D-137	2" MALE IP TO 2" COMPRESSION C84	10	EA		\$ -
D-138	3/4" FMIP TO 3/4" COMPRESSION C14	10	EA		\$ -

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Item No.	Description	Qty	Unit	Unit Price	Total Price
D-139	1" FMIP TO 1" COMPRESSION C14	10	EA		\$ -
D-140	2" FMIP TO 2" COMPRESSION C14	10	EA		\$ -
D-141	3/4" COMPRESSION TO 3/4" COMPRESSION C44	10	EA		\$ -
D-142	1" COMPRESSION TO 1" COMPRESSION C44	10	EA		\$ -
D-143	2" COMPRESSION TO 2" COMPRESSION C44	10	EA		\$ -
D-144	3/4" COMPRESSION TEE T444	10	EA		\$ -
D-145	1" COMPRESSION TEE T444	10	EA		\$ -
D-146	2" COMPRESSION TEE T444	10	EA		\$ -
D-150	2" BRASS CLOSE NIPPLE	10	EA		\$ -
D-153	3/4" AWWA BRASS CHECK VALVE HHS31	10	EA		\$ -
D-154	1" AWWA BRASS CHECK VALVE HHS31	10	WAT		\$ -
D-155	2" AWWA BRASS CHECK VALVE HHS11	10	EA		\$ -
D-156	2" FLANGED STRAIGHT CHECK VALVE(FORD PART NO. HFS31-777-NL OR APPROVED EQUAL)	10	EA		\$ -
D-157	3/4" GALV. DRESSER COUPLING	10	EA		\$ -
D-158	1" GALV. DRESSER COUPLING	10	EA		\$ -
D-159	1-1/2" GALV. DRESSER COUPLING	10	EA		\$ -
D-160	2" GALV. DRESSER COUPLING	10	EA		\$ -
D-162	3/4" BRASS NIPPLES, 6" LENGTH	10	EA		\$ -
D-163	1" BRASS NIPPLES, 6" LENGTH	10	EA		\$ -
D-164	2" BRASS NIPPLES, 6" LENGTH	10	EA		\$ -
D-165	2" BRASS GATE VALVE W/ IP THREADS	10	EA		\$ -
TOTAL BID \$					-

SEWER SYSTEM COMPONENTS – MATERIALS ONLY					
Item No.	Description	Qty	Unit	Unit Price	Total Price
FORCE MAIN – SDR-26 PVC					
1	2" FORCE MAIN, SDR-26 CLASS 160#	100	L.F.		\$ -
2	3" FORCE MAIN, SDR-26 CLASS 160#	100	L.F.		\$ -
3	4" FORCE MAIN, SDR-26 CLASS 160#	100	L.F.		\$ -
4	6" FORCE MAIN, SDR-26 CLASS 160#	100	L.F.		\$ -
SANITARY SEWER PIPE – PVC DR 35					
5	4" SANITARY SEWER PIPE, PVC SDR 35	100	L.F.		\$ -
6	6" SANITARY SEWER PIPE, PVC SDR 35	100	L.F.		\$ -
7	8" SANITARY SEWER PIPE, PVC SDR 35	100	L.F.		\$ -
8	10" SANITARY SEWER PIPE, PVC SDR 35	100	L.F.		\$ -
9	12" SANITARY SEWER PIPE, PVC SDR 35	100	L.F.		\$ -
10	15" SANITARY SEWER PIPE, PVC SDR 35	100	L.F.		\$ -
SANITARY SEWER PIPE – PVC SDR 26					
11	4" SANITARY SEWER PIPE, PVC SDR 26	100	L.F.		\$ -
12	6" SANITARY SEWER PIPE, PVC SDR-26	300	L.F.		\$ -
13	8" SANITARY SEWER PIPE, PVC SDR-26	300	L.F.		\$ -
14	10" SANITARY SEWER PIPE, PVC SDR 26	100	L.F.		\$ -
15	12" SANITARY SEWER PIPE, PVC SDR 26	100	L.F.		\$ -
16	15" SANITARY SEWER PIPE, PVC SDR 26	100	L.F.		\$ -
SANITARY SEWER PIPE – C-50 DUCTILE IRON, LINED & WRAPPED					
17	6" SANITARY SEWER PIPE, PRESSURE CLASS 350 DUCTILE IRON, P401 LINED	100	L.F.		\$ -
18	8" SANITARY SEWER PIPE, PRESSURE CLASS 350 DUCTILE IRON, P401 LINED	100	L.F.		\$ -
19	10" SANITARY SEWER PIPE, PRESSURE CLASS 350 DUCTILE IRON, P401 LINED	100	L.F.		\$ -
20	12" SANITARY SEWER PIPE, PRESSURE CLASS 350 DUCTILE IRON, P401 LINED	100	L.F.		\$ -
21	15" SANITARY SEWER PIPE, PRESSURE CLASS 350 DUCTILE IRON, P401 LINED	100	L.F.		\$ -
22	18" SANITARY SEWER PIPE, PRESSURE CLASS 350 DUCTILE IRON, P401 LINED	100	L.F.		\$ -
23	20" SANITARY SEWER PIPE, PRESSURE CLASS 350 DUCTILE IRON, P401 LINED	100	L.F.		\$ -
SANITARY SEWER PIPE – PVC ASTM F 679, TYPE 1					
24	18" SANITARY SEWER PIPE, PVC ASTM F 679, (T-1) SDR26/PS115	100	L.F.		\$ -
25	21" SANITARY SEWER PIPE, PVC ASTM F 679, (T-1) SDR26/PS115	100	L.F.		\$ -
TOTAL BID					\$ -

DRAINAGE SYSTEM MATERIALS

ITEM NUMBER	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
REINFORCED CONCRETE PIPE					
1	15" DIAMETER	160	LF		\$ -
2	15" DIAMETER FES	1	EA		\$ -
3	18" DIAMETER	160	LF		\$ -
4	18" DIAMETER FES	1	EA		\$ -
5	24" DIAMETER	160	LF		\$ -
6	24" DIAMETER FES	1	EA		\$ -
7	30" DIAMETER	8	LF		\$ -
8	30" DIAMETER FES	1	EA		\$ -
9	36" DIAMETER	8	LF		\$ -
10	36" DIAMETER FES	1	EA		\$ -
11	42" DIAMETER	8	LF		\$ -
12	42" DIAMETER FES	1	EA		\$ -
13	48" DIAMETER	8	LF		\$ -
14	48" DIAMETER FES	1	EA		\$ -
15	18" X 11" RCAP	8	LF		\$ -
16	18" X 11" FES	1	EA		\$ -
	29" X 18" RCAP	8	LF		\$ -
17	29" X 18" FES	1	EA		\$ -
18	36" X 23" RCAP	8	LF		\$ -
19	36" X 23"FES	1	EA		\$ -
20	44" X 27" RCAP	8	LF		\$ -
21	44" X 27"FES	1	EA		\$ -
22	51" X 31" RCAP	8	LF		\$ -
23	51" X 31"FES	1	EA		\$ -
24	58" X 36" RCAP	8	LF		\$ -
25	58" X 36"FES	1	EA		\$ -
	TOTAL CONCRETE ITEMS				\$ -
HIGH PERFORMANCE POLYPROPYLENE (PP) PIPE					
26	12" DIAMETER	100	LF		\$ -
27	15" DIAMETER	100	LF		\$ -
28	18" DIAMETER	100	LF		\$ -
29	24" DIAMETER	100	LF		\$ -
30	30" DIAMETER	100	LF		\$ -
31	36" DIAMETER	100	LF		\$ -
32	42" DIAMETER	100	LF		\$ -
33	48" DIAMETER	100	LF		\$ -
34	60" DIAMETER	100	LF		\$ -
	TOTAL PLASTIC ITEMS				\$ -

TRAFFIC SIGN UNIT PRICE BID SCHEDULE

Item Number	MUTCD Reference	Description	Size	Quantity	Unit	Unit Price	Extended Price
1	R1-1	Stop	24" x 24"	1	EA	\$	-
2	R1-1	Stop	30" x 30"	1	EA	\$	-
3	R1-1	Stop	36" x 36"	1	EA	\$	-
4	R1-1	Stop	48" x 48"	1	EA	\$	-
5	R1-3(3)	3-Way	12" x 6"	1	EA	\$	-
6	R1-3(4)	4-Way	12" x 6"	1	EA	\$	-
7	R1-4	All Way	18" x 6"	1	EA	\$	-
8	R1-2	Yield	30" x 30"	1	EA	\$	-
9	R1-2	Yield	36" x 36"	1	EA	\$	-
10	R2-1	Speed Limit (Speed Given)	24" x 30"	1	EA	\$	-
11	R2-5A	Reduced Speed Ahead	24" x 30"	1	EA	\$	-
12	R2-5C	Speed Zone Ahead	24" x 30"	1	EA	\$	-
13	R3-1	No Right Turn (Symbol)	24" x 24"	1	EA	\$	-
14	R3-2	No Left Turn (Symbol)	24" x 24"	1	EA	\$	-
15	R3-3	No Turns	24" x 24"	1	EA	\$	-
16	R3-4	No U-Turn (Symbol)	24" x 24"	1	EA	\$	-
17	R3-5L	Left Turn Only	30" x 36"	1	EA	\$	-
18	R3-5R	Right Turn Only	30" x 36"	1	EA	\$	-
19	R3-5A	Straight Only	30" x 36"	1	EA	\$	-
20	R3-6L	Combination Left/Through	30" x 36"	1	EA	\$	-
21	R3-6R	Combination Right/Through	30" x 36"	1	EA	\$	-
22	R3-7L	Left Lane Must Turn Left	30" x 30"	1	EA	\$	-
23	R3-7R	Right Lane Must Turn Right	30" x 30"	1	EA	\$	-
24	R3-8L	Double Turn Left	30" x 30"	1	EA	\$	-
25	R3-8R	Double Turn Right	30" x 30"	1	EA	\$	-
26	R3-9B	Two-Way Left Turn Lane	24" x 36"	1	EA	\$	-
27	R4-7	Keep Right	24" x 30"	1	EA	\$	-
28	R4-7	Keep Right	30" x 36"	1	EA	\$	-
29	R4-7A	Keep Right (90)	24" x 30"	1	EA	\$	-
30	R4-7B	Keep Right (45)	24" x 30"	1	EA	\$	-
31	R4-8	Keep Left	24" x 30"	1	EA	\$	-
32	R5-1	Do Not Enter	30" x 30"	1	EA	\$	-
33	R5-1A	Wrong Way	36" x 24"	1	EA	\$	-
34	R5-2	No Trucks Symbol	24" x 24"	1	EA	\$	-
35	R5-3	No Motor Vehicles	24" x 24"	1	EA	\$	-
36	R5-6	No Bikes (Symbol)	24" x 24"	1	EA	\$	-
37	R6-1L	One Way Left	36" x 12"	1	EA	\$	-
38	R6-1R	One Way Right	36" x 12"	1	EA	\$	-
39	R6-2L	One Way Left	18" x 24"	1	EA	\$	-
40	R6-2R	One Way Right	18" x 24"	1	EA	\$	-
41	R6-3	Divided Highway	24" x 18"	1	EA	\$	-
42	R6-3A	Divided Highway	24" x 18"	1	EA	\$	-
43	R7-1	No Parking Anytime	12" x 18"	1	EA	\$	-
44	R8-3A	No Parking Anytime	24" x 24"	1	EA	\$	-
45	R7-8	Reserved Accessible Parking (Symbol)	12" x 18"	1	EA	\$	-
46	R7-201A	Tow-Away Symbol	12" x 6"	1	EA	\$	-
47	R10-3BL	Push Button for Walk Left	9" x 12"	1	EA	\$	-
48	R10-3BR	Push Button for Walk Right	9" x 12"	1	EA	\$	-
49	R10-6	Stop Here on Red	24" x 36"	1	EA	\$	-
50	R10-7	Do Not Block Intersection	24" x 30"	1	EA	\$	-
51	R10-12	Left Turn Yield	24" x 30"	1	EA	\$	-
52	R11-2	Road Closed	48" x 30"	1	EA	\$	-
53	R11-4	Road Closed to Thru Traffic	60" x 30"	1	EA	\$	-
54	W1-1L	Left Turn	30" x 30"	1	EA	\$	-
55	W1-1L	Left Turn	36" x 36"	1	EA	\$	-
56	W1-1R	Right Turn	30" x 30"	1	EA	\$	-
57	W1-1R	Right Turn	36" x 36"	1	EA	\$	-
58	W1-2L	Left Curve	30" x 30"	1	EA	\$	-
59	W1-2L	Left Curve	36" x 36"	1	EA	\$	-
60	W1-2R	Right Curve	30" x 30"	1	EA	\$	-
61	W1-2R	Right Curve	36" x 36"	1	EA	\$	-
62	W1-3L	Reverse Turn Left	30" x 30"	1	EA	\$	-
63	W1-3L	Reverse Turn Left	36" x 36"	1	EA	\$	-
64	W1-3R	Reverse Turn Right	30" x 30"	1	EA	\$	-
65	W1-3R	Reverse Turn Right	36" x 36"	1	EA	\$	-
66	W1-4L	Reverse Curve Left	30" x 30"	1	EA	\$	-
67	W1-4L	Reverse Curve Left	36" x 36"	1	EA	\$	-
68	W1-4R	Reverse Curve Right	30" x 30"	1	EA	\$	-
69	W1-4R	Reverse Curve Right	36" x 36"	1	EA	\$	-

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Item Number	MUTCD Reference	Description	Size	Quantity	Unit	Unit Price	Extended Price
70	W1-5L	Winding Road Left	30" x 30"	1	EA	\$	-
71	W1-5R	Winding Road Right	30" x 3"	1	EA	\$	-
72	W1-6	Single Arrow	48" x 4"	1	EA	\$	-
73	W1-7	Double Arrow	48" x 24"	1	EA	\$	-
74	W1-8	Chevron	18" x 24"	1	EA	\$	-
75	W1-8	Chevron	24" x 30"	1	EA	\$	-
76	W1-9R	Combination Horizontal Alignment / Advisory Speed Sign	30" x 30"	1	EA	\$	-
77	W1-9L	Combination Horizontal Alignment / Advisory Speed Sign	30" x 30"	1	EA	\$	-
78	W2-1	Cross Road	30" x 30"	1	EA	\$	-
79	W2-2	Side Road	30" x 30"	1	EA	\$	-
80	W2-4	T Intersection	30" x 30"	1	EA	\$	-
81	W2-6	Circle Intersection	30" x 30"	1	EA	\$	-
82	W3-1A	Stop Ahead (Symbol)	30" x 30"	1	EA	\$	-
83	W3-1A	Stop Ahead (Symbol)	36" x 36"	1	EA	\$	-
84	W3-2A	Yield Ahead (Symbol)	30" x 30"	1	EA	\$	-
85	W3-2A	Yield Ahead (Symbol)	36" x 36"	1	EA	\$	-
86	W3-3	Signal Ahead (Symbol)	36" x 36"	1	EA	\$	-
87	W4-1	Merge Sign	36" x 36"	1	EA	\$	-
88	W4-2L	Left Lane Ends	30" x 30"	1	EA	\$	-
89	W4-2L	Left Lane Ends	36" x 36"	1	EA	\$	-
90	W4-2R	Right Lane Ends	30" x 30"	1	EA	\$	-
91	W4-2R	Right Lane Ends	36" x 36"	1	EA	\$	-
92	W4-3	Added Lane	36" x 36"	1	EA	\$	-
93	W4-4P	Cross Traffic Does Not Stop	36" x 36"	1	EA	\$	-
94	W6-1	Divided Highway Ahead	30" x 30"	1	EA	\$	-
95	W6-1	Divided Highway Ahead	36" x 36"	1	EA	\$	-
96	W6-2	Divided Highway	30" x 30"	1	EA	\$	-
97	W6-2	Divided Highway Ends	36" x 36"	1	EA	\$	-
98	W6-3	Two Way Traffic	30" x 30"	1	EA	\$	-
99	W6-3	Two Way Traffic	36" x 36"	1	EA	\$	-
100	W9-1L	Left Lane Ends	30" x 30"	1	EA	\$	-
101	W9-1L	Left Lane Ends	36" x 36"	1	EA	\$	-
102	W9-1R	Right Lane Ends	30" x 30"	1	EA	\$	-
103	W9-1R	Right Lane Ends	36" x 36"	1	EA	\$	-
104	W9-2L	Merge Left	30" x 30"	1	EA	\$	-
105	W9-2L	Merge Left	36" x 36"	1	EA	\$	-
106	W9-2R	Merge Right	30" x 30"	1	EA	\$	-
107	W9-2R	Merge Right	36" x 36"	1	EA	\$	-
108	W10-1	Railroad Symbol	36" Dia.	1	EA	\$	-
109	W10-2	Cross Road Railroad	30" x 30"	1	EA	\$	-
110	W10-2	Cross Road Railroad	36" x 36"	1	EA	\$	-
111	W10-3	Side Road Railroad	30" x 30"	1	EA	\$	-
112	W10-3	Side Road Railroad	36" x 36"	1	EA	\$	-
113	W10-4	T-Intersection RR	30" x 30"	1	EA	\$	-
114	W10-4	T-Intersection RR	36" x 36"	1	EA	\$	-
115	W11-1	Bicycle Crossing	36" x 36"	1	EA	\$	-
116	W11-2	Pedestrian Symbol	30" x 30"	1	EA	\$	-
117	W11-2	Pedestrian Symbol	36" x 36"	1	EA	\$	-
118	W11A-2	Pedestrian Symbol	30" x 30"	1	EA	\$	-
119	W11A-2	Pedestrian Symbol	36" x 36"	1	EA	\$	-
120	W11-3	Deer Crossing	36" x 36"	1	EA	\$	-
121	W11-8	Fire Truck Crossing	36" x 36"	1	EA	\$	-
122	W12-2	Bridge Height	30" x 30"	1	EA	\$	-
123	W14-1	Dead End	30" x 30"	1	EA	\$	-
124	W14-2	No Outlet	30" x 30"	1	EA	\$	-
125	W15-1	Playground	30" x 30"	1	EA	\$	-
126	W16-1	Share The Road	24" x 30"	1	EA	\$	-
127	W16-5P	Crossing Straight Arrow	6" x 12"	1	EA	\$	-
128	W16-6P	Crossing Turn Arrow	6" x 12"	1	EA	\$	-
129	W16-7P	Crossing Down Arrow	6" x 12"	1	EA	\$	-
130	W17-1	Speed Hump	30" x 30"	1	EA	\$	-
131	S1-1	School Advance	30" x 30"	1	EA	\$	-
132	S1-1	School Advance	36" x 36"	1	EA	\$	-
133	S2-1	School Crosswalk	30" x 30"	1	EA	\$	-
134	S2-1	School Crosswalk	36" x 36"	1	EA	\$	-
135	S5-1	School Speed Limit Assembly	24" x 48"	1	EA	\$	-
136	M1-1	Interstate (Route Given)	24" x 24"	1	EA	\$	-
137	M1-1	Interstate (Route Given)	30" x 24"	1	EA	\$	-
138	M2-1	Junction Plate	21" x 15"	1	EA	\$	-
139	M4-5	To Plate	24" x 12"	1	EA	\$	-

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Item Number	MUTCD Reference	Description	Size	Quantity	Unit	Unit Price	Extended Price
140	M5-1L	Advance Turn Arrow Left	21" x 15"	1	EA	\$	-
141	M5-1R	Advance Turn Arrow Right	21" x 15"	1	EA	\$	-
142	M6-1	Arrow Plate	21" x 15"	1	EA	\$	-
143	M6-3	Straight Arrow Plate	21" x 15"	1	EA	\$	-
144	D4-1	Parking Area	12" x 18"	1	EA	\$	-
145	R1-1	Stop	18" x 18"	1	EA	\$	-
146	R1-2	Yield	24" x 24"	1	EA	\$	-
147	R3-16	Bicycle Lane	24" x 30"	1	EA	\$	-
148	R3-16A	Bicycle Lane	24" x 30"	1	EA	\$	-
149	R3-17	Bicycle Lane	24" x 30"	1	EA	\$	-
150	R3-17A	Bicycle Lane	24" x 30"	1	EA	\$	-
151	R4-1	Movement Restriction	12" x 18"	1	EA	\$	-
152	R4-2	Movement Restriction	12" x 18"	1	EA	\$	-
153	R4-3	Movement Restriction	12" x 18"	1	EA	\$	-
154	R4-7	Movement Restriction	12" x 18"	1	EA	\$	-
155	R4-4	Begin Right Turn Lane Yield to Bikes	36" x 30"	1	EA	\$	-
156	R5-3	No Motor Vehicles	24" x 24"	1	EA	\$	-
157	R5-6	Bicycle Prohibition	24" x 24"	1	EA	\$	-
158	R7-9	No Parking Bike Lane	12" x 18"	1	EA	\$	-
159	R7-9A	No Parking Bike Lane	12" x 18"	1	EA	\$	-
160	R9-3A	Pedestrians Prohibited	18" x 18"	1	EA	\$	-
161	R9-5	Bicycle Regulatory	12" x 18"	1	EA	\$	-
162	R9-6	Bicycle Regulatory	12" x 18"	1	EA	\$	-
163	R9-7	Shared-Use Path Restriction	12" x 18"	1	EA	\$	-
164	R15-1	Railroad Crossbuck	24" x 4.5"	1	EA	\$	-
165	W1-1	Turn & Curve Warning	18" x 18"	1	EA	\$	-
166	W1-2	Turn & Curve Warning	18" x 18"	1	EA	\$	-
167	W1-3	Turn & Curve Warning	18" x 18"	1	EA	\$	-
168	W1-4	Turn & Curve Warning	18" x 18"	1	EA	\$	-
169	W1-5	Turn & Curve Warning	18" x 18"	1	EA	\$	-
170	W1-6	Arrow Warning	24" x 12"	1	EA	\$	-
171	W1-7	Arrow Warning	24" x 12"	1	EA	\$	-
172	W2-1	Intersection Warning	18" x 18"	1	EA	\$	-
173	W2-2	Intersection Warning	18" x 18"	1	EA	\$	-
174	W2-3	Intersection Warning	18" x 18"	1	EA	\$	-
175	W2-4	Intersection Warning	18" x 18"	1	EA	\$	-
176	W2-5	Intersection Warning	18" x 18"	1	EA	\$	-
177	W3-1A	Stop, Yield, Signal	18" x 18"	1	EA	\$	-
178	W3-2A	Stop, Yield, Signal	18" x 18"	1	EA	\$	-
179	W3-3	Stop, Yield, Signal	18" x 18"	1	EA	\$	-
180	W5-2A	Road Narrows	18" x 18"	1	EA	\$	-
181	W5-4	Bikeway Narrows	18" x 18"	1	EA	\$	-
182	W7-5	Hill Sign	18" x 18"	1	EA	\$	-
183	W8-1	Bump	18" x 18"	1	EA	\$	-
184	W8-2	Dip	18" x 18"	1	EA	\$	-
185	W8-10	Bicycle Surface Condition	18" x 18"	1	EA	\$	-
186	W10-1	Advance Grade Crossing	18" Dia.	1	EA	\$	-
187	W11-1	Bicycle Crossing	18" x 18"	1	EA	\$	-
188	W12-2	Low Clearance	18" x 18"	1	EA	\$	-
189	W16-1	Share the Road Plaque	24" x 30"	1	EA	\$	-
190	D1-1	Supplemental Bike Route Plaque	24" x 6"	1	EA	\$	-
191	D4-3	Bicycle Parking	12" x 18"	1	EA	\$	-
192	D11-1	Bike Route	24" x 18"	1	EA	\$	-
193	M1-8	Bicycle Route Marker	12" x 18"	1	EA	\$	-
194	M1-9	Bicycle Route Marker	18" x 24"	1	EA	\$	-
195	M4-11	Supplemental Bicycle Route Guide	12" x 4"	1	EA	\$	-
196	M4-12	Supplemental Bicycle Route Guide	12" x 4"	1	EA	\$	-
197	M4-13	Supplemental Bicycle Route Guide	12" x 4"	1	EA	\$	-
198	M7-1	Route Marker Supplemental Plaque	12" x 9"	1	EA	\$	-
199	M7-2	Route Marker Supplemental Plaque	12" x 9"	1	EA	\$	-
200	M7-3	Route Marker Supplemental Plaque	12" x 9"	1	EA	\$	-
201	M7-4	Route Marker Supplemental Plaque	12" x 9"	1	EA	\$	-
202	M7-5	Route Marker Supplemental Plaque	12" x 9"	1	EA	\$	-
203	M7-6	Route Marker Supplemental Plaque	12" x 9"	1	EA	\$	-
204	M7-7	Route Marker Supplemental Plaque	12" x 9"	1	EA	\$	-

Section 14-01002

Item Number	MUTCD Reference	Description	Size	Quantity	Unit	Unit Price	Extended Price
POSTS							
205		7' Long U-Channel Sign Post (Galvanized, wt/ft = 2 LB)		50	EA	\$	-
206		8' Long U-Channel Sign Post (Galvanized, wt/ft = 2 LB)		50	EA	\$	-
207		9' Long U-Channel Sign Post (Galvanized, wt/ft = 2 LB)		50	EA	\$	-
208		10' Long U-Channel Sign Post (Galvanized, wt/ft = 2 LB)		50	EA	\$	-
209		12' Long U-Channel Sign Post (Galvanized, wt/ft = 2 LB)		50	EA	\$	-
210		10' Long Sign Post with Anchor Plates (Galvanized, wt/ft = 2.5 LB)		50	EA	\$	-
211		Caps for U-Channel Post for Extruded Street Name Blanks (Die Cast Aluminum)		50	EA	\$	-
212		Crosses for Extruded Street Name Blanks (Die Cast Aluminum)		50	EA	\$	-
						TOTAL BID	\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
GENERAL LABOR ITEMS						
A- 1		TEMPORARY SILT FENCE	200	LF		\$ -
A- 2		SUPPLY & INSTALL SELECT BEDDING	50	CY		\$ -
A- 3		SUPPLY & INSTALL SELECT BACKFILL	50	CY		\$ -
A- 4		REMOVAL OF UNSUITABLE OR EXCESS MATERIAL (INCLUDES EXCAVATION, HAULING & DISPOSAL)	50	CY		\$ -
A- 5		LARGE TREE REMOVAL	10	EA		\$ -
A- 6		CLEARING & GRUBBING	1	AC		\$ -
A- 7		CONCRETE CURB & GUTTER REMOVAL	50	LF		\$ -
A- 8		CONCRETE PAVEMENT REMOVAL	10	SY		\$ -
A- 9		REMOVAL OF MISC. CONCRETE STRUCTURES	10	EA		\$ -
A- 10		ASPHALT PAVEMENT REMOVAL	100	SY		\$ -
A- 11		SOLID SOD	100	SY		\$ -
A- 12		SEED & FERTILIZE (INCLUDING MATERIAL)	1	AC		\$ -
A- 13		GRAVEL DRIVE REPAIR (INCLUDING MATERIAL)	100	SY		\$ -
A- 14		ASPHALT PAVEMENT REPAIR (INCLUDING MATERIAL)	100	SY		\$ -
A- 15		CONCRETE PAVEMENT REPAIR (INCLUDING MATERIAL)	10	SY		\$ -
A- 16		MINOR STRUCTURE CONCRETE REPAIR W/ STEEL REINFORCEMENT (INCLUDING MATERIAL)	5	CY		\$ -
A- 17		WOODEN FENCE REPAIR (INCLUDING MATERIAL)	200	LF		\$ -
A- 18		CHAIN LINK FENCE REPAIR (INCLUDING MATERIAL)	200	LF		\$ -
A- 19		CRUSHED LIMESTONE INSTALL W/ GEOTEXTILE FABRIC (INCLUDING MATERIAL)	50	TON		\$ -
A- 20		ASPHALT MILLING INSTALL W/ GEOTEXTILE FABRIC (INCLUDING MATERIAL)	50	TON		\$ -
REMOVAL OF EXISTING PIPE						

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	21	1" - 12" PIPE (0' - 6' DEPTH)	100	LF		\$ -
A-	22	1" - 12" PIPE (6' - 10' DEPTH)	100	LF		\$ -
A-	23	1" - 12" PIPE (10' - 20' DEPTH)	100	LF		\$ -
A-	24	12" - 24" PIPE (0' - 6' DEPTH)	100	LF		\$ -
A-	25	12" - 24" PIPE (6' - 10' DEPTH)	100	LF		\$ -
A-	26	12" - 24" PIPE (10'-20' DEPTH)	100	LF		\$ -
A-	27	24" - 48" PIPE (0' - 6' DEPTH)	100	LF		\$ -
A-	28	24" - 48" PIPE (6' - 10' DEPTH)	100	LF		\$ -
A-	29	24" - 48" PIPE (10'-20' DEPTH)	100	LF		\$ -
A-	30	> 48" PIPE (0' - 6' DEPTH)	100	LF		\$ -
A-	31	> 48" PIPE (6' - 10' DEPTH)	100	LF		\$ -
A-	32	> 48" PIPE (10' - 20' DEPTH)	100	LF		\$ -
WATER LABOR ITEMS						
A-	33	REMOVE & SALVAGE 4", 6" OR 8" GATE VALVE W/ BOX	1	EA		\$ -
A-	34	REMOVE & SALVAGE 10" OR 12" GATE VALVE W/ BOX	1	EA		\$ -
A-	35	REMOVE & SALVAGE 16" GATE VALVE W/ BOX	1	EA		\$ -
A-	36	REMOVE & SALVAGE 6" 3-WAY FIRE HYDRANT ASSEMBLY	1	EA		\$ -
A-	37	INSTALL 4", 6" OR 8" GATE VALVE W/ BOX	5	EA		\$ -
A-	38	INSTALL 10" OR 12" GATE VALVE W/ BOX	5	EA		\$ -
A-	39	INSTALL 16" GATE VALVE W/ BOX	1	EA		\$ -
A-	40	INSTALL 2'x2', POURED-IN-PLACE CONCRETE VALVE PADS	1	EA		\$ -
A-	41	INSTALL 6" 3-WAY FIRE HYDRANT ASSEMBLY	1	EA		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A- 42		INSTALL 4", 6" OR 8" TAPPING SLEEVE W/ VALVE & BOX	1	EA		\$ -
A- 43		INSTALL 10" OR 12" TAPPING SLEEVE W/ VALVE & BOX	1	EA		\$ -
A- 44		INSTALL 16" TAPPING SLEEVE W/ VALVE & BOX	1	EA		\$ -
A- 45		CONNECTION TO EXISTING WATER MAIN	2	EA		\$ -
A- 46		ABANDON EXISTING WATER MAIN W/ CUT,CAP & RESTRAINTS (INCLUDING MATERIAL)	2	EA		\$ -
A- 47		TRACER WIRE TERMINALS W/ CONC. PAD (INCLUDING MATERIAL)	5	EA		\$ -
A- 48		DUCTILE IRON FITTINGS	4000	LB		\$ -
A- 49		3/4" SERVICE ASSEMBLY	15	EA		\$ -
A- 50		1" SERVICE ASSEMBLY	3	EA		\$ -
A- 51		2" SERVICE ASSEMBLY	1	EA		\$ -
A- 52		3" SERVICE ASSEMBLY	1	EA		\$ -
A- 53		4" SERVICE ASSEMBLY	1	EA		\$ -
A- 54		6" SERVICE ASSEMBLY	1	EA		\$ -
A- 55		8" SERVICE ASSEMBLY	1	EA		\$ -
A- 56		12" SERVICE ASSEMBLY	1	EA		\$ -
A- 57		3/4" PVC OR HDPE SERVICE LINE (INCLUDING MATERIAL)	100	LF		\$ -
A- 58		1" PVC OR HDPE SERVICE LINE (INCLUDING MATERIAL)	100	LF		\$ -
A- 59		2" PVC OR HDPE SERVICE LINE (INCLUDING MATERIAL)	100	LF		\$ -
A- 60		3" PVC OR HDPE SERVICE LINE (INCLUDING MATERIAL)	100	LF		\$ -
A- 61		4, 6 OR 8" WATER MAIN (C-900, 0' - 5' CUT)	1000	LF		\$ -
A- 62		4, 6 OR 8" WATER MAIN (C-900, 5' - 10' CUT)	100	LF		\$ -
A- 63		4, 6 OR 8" WATER MAIN (C-900, 10' - 14' CUT)	100	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A- 64		10 OR 12" WATER MAIN (C-900, 0' - 5' CUT)	4000	LF		\$ -
A- 65		10 OR 12" WATER MAIN (C-900, 5' - 10' CUT)	100	LF		\$ -
A- 66		10 OR 12" WATER MAIN (C-900, 10' - 14' CUT)	100	LF		\$ -
A- 67		16" WATER MAIN (C-900, 0' - 5' CUT)	100	LF		\$ -
A- 68		16" WATER MAIN (C-900, 5' - 10' CUT)	100	LF		\$ -
A- 69		16" WATER MAIN (C-900, 10' - 14' CUT)	100	LF		\$ -
A- 70		4", 6" OR 8" WATER MAIN INSTALLED IN CASING	100	LF		\$ -
A- 71		10" OR 12" WATER MAIN INSTALLED IN CASING	50	LF		\$ -
A- 72		16" WATER MAIN INSTALLED IN CASING	50	LF		\$ -
A- 73		UNENCASED BORE FOR 3/4" OR 1" SERVICE LINES	100	LF		\$ -
A- 74		UNENCASED BORE FOR 2" SERVICE LINES	50	LF		\$ -
A- 75		UNENCASED BORE FOR 3" SERVICE LINES	50	LF		\$ -
A- 76		UNENCASED BORE FOR 4" & 6" WATER MAIN	50	LF		\$ -
A- 77		UNENCASED BORE FOR 8" WATER MAIN	50	LF		\$ -
A- 78		UNENCASED BORE FOR 10" WATER MAIN	50	LF		\$ -
A- 79		UNENCASED BORE FOR 12" WATER MAIN	50	LF		\$ -
A- 80		UNENCASED BORE FOR 16" WATER MAIN	50	LF		\$ -
A- 81		3/4" OR 1" SERVICE LINE HDPE BORE(INCLUDING MATERIAL)	100	LF		\$ -
A- 82		2" SERVICE LINE HDPE BORE (INCLUDING MATERIAL)	50	LF		\$ -
A- 83		3" SERVICE LINE HDPE BORE (INCLUDING MATERIAL)	50	LF		\$ -
A- 84		4" SERVICE LINE HDPE BORE (INCLUDING MATERIAL)	50	LF		\$ -
A- 85		2" STEEL CASING FOR SERVICE LINE (JACK&BORE, INCL. MATERIAL)	50	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
SEWER LABOR ITEMS						
A- 86		4" SANITARY SEWER SERVICE LINE (ALL CUTS)	100	LF		\$ -
A- 87		6" SANITARY SEWER SERVICE LINE (ALL CUTS)	100	LF		\$ -
A- 88		4" OR 6" FORCE MAIN (0' - 5' CUT)	100	LF		\$ -
A- 89		4" OR 6" FORCE MAIN (BORED)	100	LF		\$ -
A- 90		4" IPS DR11 HDPE SEWER SERVICE BORE(ALL LENGTHS, ON GRADE, INCL. MATERIAL)	100	LF		\$ -
A- 91		6" IPS DR11 HDPE SEWER SERVICE BORE(ALL LENGTHS, ON GRADE, INCL. MATERIAL)	100	LF		\$ -
		6", 8" OR 10" SANITARY SEWER PIPE				
A- 92		(0' - 6' CUT, PVC)	100	LF		\$ -
A- 93		(0' - 6' CUT, DIP)	100	LF		\$ -
A- 94		(6' - 8' CUT, PVC)	100	LF		\$ -
A- 95		(6' - 8' CUT, DIP)	100	LF		\$ -
A- 96		(8' - 10' CUT, PVC)	100	LF		\$ -
A- 97		(8' - 10' CUT, DIP)	100	LF		\$ -
A- 98		(10' - 12' CUT, PVC)	100	LF		\$ -
A- 99		(10' - 12' CUT, DIP)	100	LF		\$ -
A- 100		(12' - 14' CUT, PVC)	100	LF		\$ -
A- 101		(12' - 14' CUT, DIP)	100	LF		\$ -
A- 102		(14' - 16' CUT, PVC)	100	LF		\$ -
A- 103		(14' - 16' CUT, DIP)	100	LF		\$ -
A- 104		(16' - 18' CUT, PVC)	100	LF		\$ -
A- 105		(16' - 18' CUT, DIP)	100	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	106	(18' - 20' CUT, PVC)	100	LF		\$ -
A-	107	(18' - 20' CUT, DIP)	100	LF		\$ -
A-	108	(20' - 22' CUT, PVC)	100	LF		\$ -
A-	109	(20' - 22' CUT, DIP)	100	LF		\$ -
A-	110	(22' - 24' CUT, PVC)	100	LF		\$ -
A-	111	(22' - 24' CUT, DIP)	100	LF		\$ -
A-	112	(24' - 26' CUT, PVC)	100	LF		\$ -
A-	113	(24' - 26' CUT, DIP)	100	LF		\$ -
	12" OR 15" SANITARY SEWER PIPE					
A-	114	(0' - 6' CUT, PVC)	100	LF		\$ -
A-	115	(0' - 6' CUT, DIP)	100	LF		\$ -
A-	116	(6' - 8' CUT, PVC)	100	LF		\$ -
A-	117	(6' - 8' CUT, DIP)	100	LF		\$ -
A-	118	(8' - 10' CUT, PVC)	100	LF		\$ -
A-	119	(8' - 10' CUT, DIP)	100	LF		\$ -
A-	120	(10' - 12' CUT, PVC)	100	LF		\$ -
A-	121	(10' - 12' CUT, DIP)	100	LF		\$ -
A-	122	(12' - 14' CUT, PVC)	100	LF		\$ -
A-	123	(12' - 14' CUT, DIP)	100	LF		\$ -
A-	124	(14' - 16' CUT, PVC)	100	LF		\$ -
A-	125	(14' - 16' CUT, DIP)	100	LF		\$ -
A-	126	(16' - 18' CUT, PVC)	100	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	127	(16' - 18' CUT, DIP)	100	LF		\$ -
A-	128	(18' - 20' CUT, PVC)	100	LF		\$ -
A-	129	(18' - 20' CUT, DIP)	100	LF		\$ -
A-	130	(20' - 22' CUT, PVC)	100	LF		\$ -
A-	131	(20' - 22' CUT, DIP)	100	LF		\$ -
A-	132	(22' - 24' CUT, PVC)	100	LF		\$ -
A-	133	(22' - 24' CUT, DIP)	100	LF		\$ -
A-	134	(24' - 26' CUT, PVC)	100	LF		\$ -
A-	135	(24' - 26' CUT, DIP)	100	LF		\$ -
	18" OR 21" SANITARY SEWER PIPE					
A-	136	(0' - 6' CUT, DIP)	100	LF		\$ -
A-	137	(6' - 8' CUT, DIP)	100	LF		\$ -
A-	138	(8' - 10' CUT, DIP)	100	LF		\$ -
A-	139	(10' - 12' CUT, DIP)	100	LF		\$ -
A-	140	(12' - 14' CUT, DIP)	100	LF		\$ -
A-	141	(14' - 16' CUT, DIP)	100	LF		\$ -
A-	142	(16' - 18' CUT, DIP)	100	LF		\$ -
A-	143	(18' - 20' CUT, DIP)	100	LF		\$ -
A-	144	(20' - 22' CUT, DIP)	100	LF		\$ -
A-	145	(22' - 24' CUT, DIP)	100	LF		\$ -
A-	146	(24' - 26' CUT, DIP)	100	LF		\$ -
A-	147	(26' - 28' CUT, DIP)	100	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	148	(28' - 30' CUT, DIP)	100	LF		\$ -
A-	149	4-FT STANDARD SEWER MANHOLE (0' - 6' CUT, INCLUDING MATERIAL)	5	EA		\$ -
A-	150	4-FT STANDARD SEWER MANHOLE (6' - 8' CUT, INCLUDING MATERIAL)	5	EA		\$ -
A-	151	4-FT STANDARD SEWER MANHOLE (8' - 10' CUT, INCLUDING MATERIAL)	5	EA		\$ -
A-	152	4-FT STANDARD SEWER MANHOLE (10' - 12' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	153	4-FT STANDARD SEWER MANHOLE (12' - 14' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	154	4-FT STANDARD SEWER MANHOLE (14' - 16' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	155	4-FT STANDARD SEWER MANHOLE (16' - 18' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	156	4-FT STANDARD SEWER MANHOLE (18' - 20' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	157	4-FT STANDARD SEWER MANHOLE (20' - 22' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	158	4-FT STANDARD SEWER MANHOLE (22' - 24' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	159	4-FT STANDARD SEWER MANHOLE (24' - 26' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	160	4-FT STANDARD SEWER MANHOLE (26' - 28' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	161	4-FT STANDARD SEWER MANHOLE (28' - 30' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	162	6-FT STANDARD SEWER MANHOLE (0' - 6' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	163	6-FT STANDARD SEWER MANHOLE (6' - 8' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	164	6-FT STANDARD SEWER MANHOLE (8' - 10' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	165	6-FT STANDARD SEWER MANHOLE (10' - 12' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	166	6-FT STANDARD SEWER MANHOLE (12' - 14' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	167	6-FT STANDARD SEWER MANHOLE (14' - 16' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	168	6-FT STANDARD SEWER MANHOLE (16' - 18' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	169	6-FT STANDARD SEWER MANHOLE (18' - 20' CUT, INCLUDING MATERIAL)	1	EA		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	170	6-FT STANDARD SEWER MANHOLE (20' - 22' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	171	6-FT STANDARD SEWER MANHOLE (22' - 24' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	172	6-FT STANDARD SEWER MANHOLE (24' - 26' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	173	6-FT STANDARD SEWER MANHOLE (26' - 28' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	174	6-FT STANDARD SEWER MANHOLE (28' - 30' CUT, INCLUDING MATERIAL)	1	EA		\$ -
A-	175	CONNECTION TO EXISTING SEWER/MANHOLE	4	EA		\$ -
A-	176	REMOVAL OF EXISTING SEWER/MANHOLE	4	EA		\$ -
A-	177	REMOVAL OF EXISTING SEWER LIFT STATION	1	EA		\$ -
A-	178	4" INSIDE SANITARY MANHOLE DROP CONNECTION	1	EA		\$ -
A-	179	6" INSIDE SANITARY MANHOLE DROP CONNECTION	1	EA		\$ -
A-	180	8" INSIDE SANITARY MANHOLE DROP CONNECTION	1	EA		\$ -
A-	181	10" INSIDE SANITARY MANHOLE DROP CONNECTION	1	EA		\$ -
A-	182	12" INSIDE SANITARY MANHOLE DROP CONNECTION	1	EA		\$ -
A-	183	SEWER MANHOLE INVERT	4	EA		\$ -
A-	184	SUPPLY & INSTALL 8" PLUG	1	EA		\$ -
A-	185	SUPPLY & INSTALL 10" PLUG	1	EA		\$ -
A-	186	SUPPLY & INSTALL 12" PLUG	1	EA		\$ -
A-	187	SUPPLY & INSTALL 15" PLUG	1	EA		\$ -
A-	188	SUPPLY & INSTALL 18" PLUG	1	EA		\$ -
A-	189	DEWATERING TRENCH (MINIMUM OF 100-LF)	200	LF		\$ -
A-	190	SEWER SERVICE CONNECTION W/ WYE	10	EA		\$ -
A-	191	10" SEWER STREAM CROSSING	50	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	192	12" SEWER STREAM CROSSING	50	LF		\$ -
A-	193	15" SEWER STREAM CROSSING	50	LF		\$ -
A-	194	18" SEWER STREAM CROSSING	50	LF		\$ -
UNENCASED HDPE PIPE, ON GRADE, DIRECTIONAL DRILLED						
A-	195	6" IPS DR11 HDPE BORE (0'-100' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	196	6" IPS DR11 HDPE BORE (100'-500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	197	6" IPS DR11 HDPE BORE (>500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	198	8" IPS DR11 HDPE BORE (0'-100' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	199	8" IPS DR11 HDPE BORE (100'-500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	200	8" IPS DR11 HDPE BORE (>500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	201	10" IPS DR11 HDPE BORE (0'-100' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	202	10" IPS DR11 HDPE BORE (100'-500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	203	10" IPS DR11 HDPE BORE (>500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	204	12" IPS DR11 HDPE BORE (0'-100' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	205	12" IPS DR11 HDPE BORE (100'-500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	206	12" IPS DR11 HDPE BORE (>500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	207	14" IPS DR11 HDPE BORE (0'-100' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	208	14" IPS DR11 HDPE BORE (100'-500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	209	14" IPS DR11 HDPE BORE (>500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	210	16" IPS DR11 HDPE BORE (0'-100' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	211	16" IPS DR11 HDPE BORE (100'-500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	212	16" IPS DR11 HDPE BORE (>500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	600	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	213	18" IPS DR11 HDPE BORE (0'-100' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	214	18" IPS DR11 HDPE BORE (100'-500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	215	18" IPS DR11 HDPE BORE (>500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	216	20" IPS DR11 HDPE BORE (0'-100' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	217	20" IPS DR11 HDPE BORE (100'-500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	218	20" IPS DR11 HDPE BORE (>500' LENGTH, UNENCASED, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
UNENCASED HDPE PIPE, NO GRADE, DIRECTIONAL DRILLED						
A-	219	6" IPS DR11 HDPE BORE (0'-100' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	220	6" IPS DR11 HDPE BORE (100'-500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	221	6" IPS DR11 HDPE BORE (>500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	222	8" IPS DR11 HDPE BORE(0'-100' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	223	8" IPS DR11 HDPE BORE(100'-500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	224	8" IPS DR11 HDPE BORE(> 500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	225	10" IPS DR11 HDPE BORE(0'-100' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	226	10" IPS DR11 HDPE BORE(100'-500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	227	10" IPS DR11 HDPE BORE(> 500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	228	12" IPS DR11 HDPE BORE(0'-100' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	229	12" IPS DR11 HDPE BORE(100'-500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	230	12" IPS DR11 HDPE BORE(> 500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	231	14" IPS DR11 HDPE BORE(0'-100' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	232	14" IPS DR11 HDPE BORE(100'-500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	233	14" IPS DR11 HDPE BORE(> 500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	600	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	234	16" IPS DR11 HDPE BORE(0'-100' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	235	16" IPS DR11 HDPE BORE(100'-500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	236	16" IPS DR11 HDPE BORE(> 500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	237	18" IPS DR11 HDPE BORE(0'-100' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	238	18" IPS DR11 HDPE BORE(100'-500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	239	18" IPS DR11 HDPE BORE(> 500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	240	20" IPS DR11 HDPE BORE(0'-100' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	241	20" IPS DR11 HDPE BORE(100'-500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	242	20" IPS DR11 HDPE BORE(> 500' LENGTH, UNENCASED, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
STEEL CASING, ON GRADE, JACK & BORE						
A-	243	12" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 0' - 3' DEPTH	50	LF		\$ -
A-	244	12" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 3' - 6' DEPTH	50	LF		\$ -
A-	245	12" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 6' - 8' DEPTH	50	LF		\$ -
A-	246	12" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 8' - 10' DEPTH	50	LF		\$ -
A-	247	12" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 10' - 12' DEPTH	50	LF		\$ -
A-	248	12" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 12' - 14' DEPTH	50	LF		\$ -
A-	249	12" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 14' - 16' DEPTH	50	LF		\$ -
A-	250	12" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 16' - 18' DEPTH	50	LF		\$ -
A-	251	12" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 18' - 20' DEPTH	50	LF		\$ -
A-	252	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 0' - 3' DEPTH	50	LF		\$ -
A-	253	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 3' - 6' DEPTH	50	LF		\$ -
A-	254	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 6' - 8' DEPTH	50	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	255	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 8' - 10' DEPTH	50	LF		\$ -
A-	256	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 10' - 12' DEPTH	50	LF		\$ -
A-	257	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 12' - 14' DEPTH	50	LF		\$ -
A-	258	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 14' - 16' DEPTH	50	LF		\$ -
A-	259	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 16' - 18' DEPTH	50	LF		\$ -
A-	260	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 18' - 20' DEPTH	50	LF		\$ -
A-	261	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 20' - 22' DEPTH	50	LF		\$ -
A-	262	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 22' - 24' DEPTH	50	LF		\$ -
A-	263	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 24' - 26' DEPTH	50	LF		\$ -
A-	264	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 26' - 28' DEPTH	50	LF		\$ -
A-	265	16" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 28' - 30' DEPTH	50	LF		\$ -
A-	266	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 0' - 3' DEPTH	50	LF		\$ -
A-	267	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 3' - 6' DEPTH	50	LF		\$ -
A-	268	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 6' - 8' DEPTH	100	LF		\$ -
A-	269	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 8' - 10' DEPTH	100	LF		\$ -
A-	270	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 10' - 12' DEPTH	100	LF		\$ -
A-	271	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 12' - 14' DEPTH	100	LF		\$ -
A-	272	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 14' - 16' DEPTH	100	LF		\$ -
A-	273	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 16' - 18' DEPTH	100	LF		\$ -
A-	274	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 18' - 20' DEPTH	100	LF		\$ -
A-	275	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 20' - 22' DEPTH	100	LF		\$ -
A-	276	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 22' - 24' DEPTH	100	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	277	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 24' - 26' DEPTH	100	LF		\$ -
A-	278	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 26' - 28' DEPTH	100	LF		\$ -
A-	279	18" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 28' - 30' DEPTH	100	LF		\$ -
A-	280	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 0' - 3' DEPTH	100	LF		\$ -
A-	281	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 3' - 6' DEPTH	100	LF		\$ -
A-	282	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 6' - 8' DEPTH	100	LF		\$ -
A-	283	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 8' - 10' DEPTH	100	LF		\$ -
A-	284	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 10' - 12' DEPTH	100	LF		\$ -
A-	285	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 12' - 14' DEPTH	100	LF		\$ -
A-	286	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 14' - 16' DEPTH	100	LF		\$ -
A-	287	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 16' - 18' DEPTH	100	LF		\$ -
A-	288	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 18' - 20' DEPTH	100	LF		\$ -
A-	289	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 20' - 22' DEPTH	100	LF		\$ -
A-	290	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 22' - 24' DEPTH	100	LF		\$ -
A-	291	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 24' - 26' DEPTH	100	LF		\$ -
A-	292	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 26' - 28' DEPTH	100	LF		\$ -
A-	293	20" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 28' - 30' DEPTH	100	LF		\$ -
A-	294	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 0' - 3' DEPTH	100	LF		\$ -
A-	295	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 3' - 6' DEPTH	100	LF		\$ -
A-	296	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 6' - 8' DEPTH	100	LF		\$ -
A-	297	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 8' - 10' DEPTH	100	LF		\$ -
A-	298	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 10' - 12' DEPTH	100	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	299	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 12' - 14' DEPTH	100	LF		\$ -
A-	300	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 14' - 16' DEPTH	100	LF		\$ -
A-	301	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 16' - 18' DEPTH	100	LF		\$ -
A-	302	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 18' - 20' DEPTH	100	LF		\$ -
A-	303	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 20' - 22' DEPTH	100	LF		\$ -
A-	304	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 22' - 24' DEPTH	100	LF		\$ -
A-	305	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 24' - 26' DEPTH	100	LF		\$ -
A-	306	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 26' - 28' DEPTH	100	LF		\$ -
A-	307	24" STEEL CASING, INCLUDING MATERIAL, JACK&BORE, ON GRADE, 28' - 30' DEPTH	100	LF		\$ -
STEEL CASING, ON GRADE, OPEN CUT						
A-	308	12" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 0' - 3' DEPTH	50	LF		\$ -
A-	309	12" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 3' - 6' DEPTH	50	LF		\$ -
A-	310	12" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 6' - 8' DEPTH	50	LF		\$ -
A-	311	12" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 8' - 10' DEPTH	50	LF		\$ -
A-	312	12" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 10' - 12' DEPTH	50	LF		\$ -
A-	313	12" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 12' - 14' DEPTH	50	LF		\$ -
A-	314	12" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 14' - 16' DEPTH	50	LF		\$ -
A-	315	12" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 16' - 18' DEPTH	50	LF		\$ -
A-	316	12" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 18' - 20' DEPTH	50	LF		\$ -
A-	317	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 0' - 3' DEPTH	50	LF		\$ -
A-	318	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 3' - 6' DEPTH	50	LF		\$ -
A-	319	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 6' - 8' DEPTH	50	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	320	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 8' - 10' DEPTH	50	LF		\$ -
A-	321	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 10' - 12' DEPTH	50	LF		\$ -
A-	322	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 12' - 14' DEPTH	50	LF		\$ -
A-	323	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 14' - 16' DEPTH	50	LF		\$ -
A-	324	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 16' - 18' DEPTH	50	LF		\$ -
A-	325	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 18' - 20' DEPTH	50	LF		\$ -
A-	326	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 20' - 22' DEPTH	50	LF		\$ -
A-	327	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 22' - 24' DEPTH	50	LF		\$ -
A-	328	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 24' - 26' DEPTH	50	LF		\$ -
A-	329	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 26' - 28' DEPTH	50	LF		\$ -
A-	330	16" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 28' - 30' DEPTH	50	LF		\$ -
A-	331	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 0' - 3' DEPTH	50	LF		\$ -
A-	332	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 3' - 6' DEPTH	50	LF		\$ -
A-	333	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 6' - 8' DEPTH	50	LF		\$ -
A-	334	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 8' - 10' DEPTH	50	LF		\$ -
A-	335	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 10' - 12' DEPTH	50	LF		\$ -
A-	336	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 12' - 14' DEPTH	50	LF		\$ -
A-	337	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 14' - 16' DEPTH	50	LF		\$ -
A-	338	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 16' - 18' DEPTH	50	LF		\$ -
A-	339	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 18' - 20' DEPTH	50	LF		\$ -
A-	340	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 20' - 22' DEPTH	50	LF		\$ -
A-	341	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 22' - 24' DEPTH	50	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	342	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 24' - 26' DEPTH	50	LF		\$ -
A-	343	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 26' - 28' DEPTH	50	LF		\$ -
A-	344	18" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 28' - 30' DEPTH	50	LF		\$ -
A-	345	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 0' - 3' DEPTH	50	LF		\$ -
A-	346	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 3' - 6' DEPTH	50	LF		\$ -
A-	347	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 6' - 8' DEPTH	50	LF		\$ -
A-	348	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 8' - 10' DEPTH	50	LF		\$ -
A-	349	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 10' - 12' DEPTH	50	LF		\$ -
A-	350	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 12' - 14' DEPTH	50	LF		\$ -
A-	351	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 14' - 16' DEPTH	50	LF		\$ -
A-	352	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 16' - 18' DEPTH	50	LF		\$ -
A-	353	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 18' - 20' DEPTH	50	LF		\$ -
A-	354	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 20' - 22' DEPTH	50	LF		\$ -
A-	355	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 22' - 24' DEPTH	50	LF		\$ -
A-	356	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 24' - 26' DEPTH	50	LF		\$ -
A-	357	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 26' - 28' DEPTH	50	LF		\$ -
A-	358	20" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 28' - 30' DEPTH	50	LF		\$ -
A-	359	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 0' - 3' DEPTH	100	LF		\$ -
A-	360	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 3' - 6' DEPTH	100	LF		\$ -
A-	361	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 6' - 8' DEPTH	100	LF		\$ -
A-	362	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 8' - 10' DEPTH	100	LF		\$ -
A-	363	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 10' - 12' DEPTH	100	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	364	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 12' - 14' DEPTH	100	LF		\$ -
A-	365	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 14' - 16' DEPTH	100	LF		\$ -
A-	366	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 16' - 18' DEPTH	100	LF		\$ -
A-	367	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 18' - 20' DEPTH	100	LF		\$ -
A-	368	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 20' - 22' DEPTH	100	LF		\$ -
A-	369	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 22' - 24' DEPTH	100	LF		\$ -
A-	370	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 24' - 26' DEPTH	100	LF		\$ -
A-	371	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 26' - 28' DEPTH	100	LF		\$ -
A-	372	24" STEEL CASING, INCLUDING MATERIAL, OPEN CUT, ON GRADE, 28' - 30' DEPTH	100	LF		\$ -
HDPE CASING, ON GRADE, DIRECTIONAL DRILLED						
A-	373	14" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	374	14" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	375	14" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	376	16" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	377	16" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	378	16" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	379	18" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	380	18" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	381	18" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	382	20" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	383	20" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	384	20" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, ON GRADE, INCL. MATERIAL)	600	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	385	22" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	386	22" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	387	22" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	388	24" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	389	24" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	390	24" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
HDPE CASING, NO GRADE, DIRECTIONAL DRILLED						
A-	391	14" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	392	14" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	393	14" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	394	16" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	395	16" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	396	16" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	397	18" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	398	18" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	399	18" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	400	20" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	401	20" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	402	20" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	403	22" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	404	22" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	405	22" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, NO GRADE, INCL. MATERIAL)	600	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	406	24" IPS DR11 HDPE CASING PIPE BORE (0'-100' LENGTH, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	407	24" IPS DR11 HDPE CASING PIPE BORE (100'-500' LENGTH, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	408	24" IPS DR11 HDPE CASING PIPE BORE (>500' LENGTH, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
HDPE CARRIER PIPE, ON GRADE, INSTALLED IN CASING						
A-	409	8" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	410	8" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	411	8" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	412	10" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	413	10" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	414	10" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	415	12" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	416	12" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	417	12" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	418	14" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	419	14" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	420	14" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	421	16" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	422	16" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	423	16" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	424	18" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	425	18" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	426	18" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	600	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	427	20" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	428	20" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	429	20" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, ON GRADE, INCL. MATERIAL)	600	LF		\$ -
HDPE CARRIER PIPE, NO GRADE, INSTALLED IN CASING						
A-	430	8" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	431	8" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	432	8" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	433	10" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	434	10" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	435	10" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	436	12" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	437	12" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	438	12" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	439	14" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	440	14" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	441	14" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	442	16" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	443	16" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	444	16" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
A-	445	18" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	446	18" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	447	18" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	600	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	448	20" IPS DR11 HDPE CARRIER PIPE (0'-100' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	50	LF		\$ -
A-	449	20" IPS DR11 HDPE CARRIER PIPE (100'-500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	250	LF		\$ -
A-	450	20" IPS DR11 HDPE CARRIER PIPE (>500' LENGTH, INSTALLED IN CASING, NO GRADE, INCL. MATERIAL)	600	LF		\$ -
DRAINAGE LABOR ITEMS						
A-	451	15" Diameter RCP, 0'-5' Depth of Cut	480	LF		\$ -
A-	452	15" Diameter RCP, 5'-10' Depth of Cut	100	LF		\$ -
A-	453	15" Diameter RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	454	18" Diameter RCP, 0'-5' Depth of Cut	480	LF		\$ -
A-	455	18" Diameter RCP, 5'-10' Depth of Cut	100	LF		\$ -
A-	456	18" Diameter RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	457	24" Diameter RCP, 0'-5' Depth of Cut	480	LF		\$ -
A-	458	24" Diameter RCP, 5'-10' Depth of Cut	100	LF		\$ -
A-	459	24" Diameter RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	460	30" Diameter RCP, 0'-5' Depth of Cut	100	LF		\$ -
A-	461	30" Diameter RCP, 5'-10' Depth of Cut	100	LF		\$ -
A-	462	30" Diameter RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	463	36" Diameter RCP, 0'-5' Depth of Cut	100	LF		\$ -
A-	464	36" Diameter RCP, 5'-10' Depth of Cut	100	LF		\$ -
A-	465	36" Diameter RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	466	42" Diameter RCP, 0'-5' Depth of Cut	100	LF		\$ -
A-	467	42" Diameter RCP, 5'-10' Depth of Cut	100	LF		\$ -
A-	468	42" Diameter RCP, 10'-15' Depth of Cut	20	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	469	48" Diameter RCP, 0'-5' Depth of Cut	100	LF		\$ -
A-	470	48" Diameter RCP, 5'-10' Depth of Cut	100	LF		\$ -
A-	471	48" Diameter RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	472	18" x 11" Elliptical RCP, 0'-5' Depth of Cut	100	LF		\$ -
A-	473	18" x 11" Elliptical RCP, 5'-10' Depth of Cut	100	LF		\$ -
A-	474	18" x 11" Elliptical RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	475	22" x 13" Elliptical RCP, 0'-5' Depth of Cut	50	LF		\$ -
A-	476	22" x 13" Elliptical RCP, 5'-10' Depth of Cut	50	LF		\$ -
A-	477	22" x 13" Elliptical RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	478	29" x 18" Elliptical RCP, 0'-5' Depth of Cut	50	LF		\$ -
A-	479	29" x 18" Elliptical RCP, 5'-10' Depth of Cut	50	LF		\$ -
A-	480	29" x 18" Elliptical RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	481	36" x 23" Elliptical RCP, 0'-5' Depth of Cut	50	LF		\$ -
A-	482	36" x 23" Elliptical RCP, 5'-10' Depth of Cut	50	LF		\$ -
A-	483	36" x 23" Elliptical RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	484	44" x 27" Elliptical RCP, 0'-5' Depth of Cut	50	LF		\$ -
A-	485	44" x 27" Elliptical RCP, 5'-10' Depth of Cut	50	LF		\$ -
A-	486	44" x 27" Elliptical RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	487	51" x 31" Elliptical RCP, 0'-5' Depth of Cut	50	LF		\$ -
A-	488	51" x 31" Elliptical RCP, 5'-10' Depth of Cut	50	LF		\$ -
A-	489	51" x 31" Elliptical RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	490	58" x 36" Elliptical RCP, 0'-5' Depth of Cut	50	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	491	58" x 36" Elliptical RCP, 5'-10' Depth of Cut	50	LF		\$ -
A-	492	58" x 36" Elliptical RCP, 10'-15' Depth of Cut	20	LF		\$ -
A-	493	12" Diameter Polypropylene Pipe, 0-5' Depth of Cut	100	LF		\$ -
A-	494	12" Diameter Polypropylene Pipe, 5-10' Depth of Cut	100	LF		\$ -
A-	495	12" Diameter Polypropylene Pipe, 10'-15' Depth of Cut	100	LF		\$ -
A-	496	15" Diameter Polypropylene Pipe, 0-5' Depth of Cut	100	LF		\$ -
A-	497	15" Diameter Polypropylene Pipe, 5-10' Depth of Cut	100	LF		\$ -
A-	498	15" Diameter Polypropylene Pipe, 10'-15' Depth of Cut	100	LF		\$ -
A-	499	18" Diameter Polypropylene Pipe, 0-5' Depth of Cut	100	LF		\$ -
A-	500	18" Diameter Polypropylene Pipe, 5-10' Depth of Cut	100	LF		\$ -
A-	501	18" Diameter Polypropylene Pipe, 10'-15' Depth of Cut	100	LF		\$ -
A-	502	24" Diameter Polypropylene Pipe, 0-5' Depth of Cut	100	LF		\$ -
A-	503	24" Diameter Polypropylene Pipe, 5-10' Depth of Cut	100	LF		\$ -
A-	504	24" Diameter Polypropylene Pipe, 10'-15' Depth of Cut	100	LF		\$ -
A-	505	30" Diameter Polypropylene Pipe, 0-5' Depth of Cut	100	LF		\$ -
A-	506	30" Diameter Polypropylene Pipe, 5-10' Depth of Cut	100	LF		\$ -
A-	507	30" Diameter Polypropylene Pipe, 10'-15' Depth of Cut	100	LF		\$ -
A-	508	36" Diameter Polypropylene Pipe, 0-5' Depth of Cut	100	LF		\$ -
A-	509	36" Diameter Polypropylene Pipe, 5-10' Depth of Cut	100	LF		\$ -
A-	510	36" Diameter Polypropylene Pipe, 10'-15' Depth of Cut	100	LF		\$ -
A-	511	42" Diameter Polypropylene Pipe, 0-5' Depth of Cut	100	LF		\$ -
A-	512	42" Diameter Polypropylene Pipe, 5-10' Depth of Cut	100	LF		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	513	42" Diameter Polypropylene Pipe, 10'-15' Depth of Cut	100	LF		\$ -
A-	514	48" Diameter Polypropylene Pipe, 0-5' Depth of Cut	100	LF		\$ -
A-	515	48" Diameter Polypropylene Pipe, 5-10' Depth of Cut	100	LF		\$ -
A-	516	48" Diameter Polypropylene Pipe, 10'-15' Depth of Cut	100	LF		\$ -
A-	517	60" Diameter Polypropylene Pipe, 0-5' Depth of Cut	100	LF		\$ -
A-	518	60" Diameter Polypropylene Pipe, 5-10' Depth of Cut	100	LF		\$ -
A-	519	60" Diameter Polypropylene Pipe, 10'-15' Depth of Cut	100	LF		\$ -
A-	520	12 x 12 Catch Basin	1	EA		\$ -
A-	521	18 x 18 Catch Basin	1	EA		\$ -
A-	522	24 x 24 Catch Basin $\leq$ 4' 6"	1	EA		\$ -
A-	523	24 x 24 Riser Section Each Additional 1' Depth	1	EA		\$ -
A-	524	24 x 36 Catch Basin $\leq$ 4' 6"	1	EA		\$ -
A-	525	24 x 36 Riser Section Each Additional 1' Depth	1	EA		\$ -
A-	526	24 x 48 Catch Basin $\leq$ 4' 6"	1	EA		\$ -
A-	527	24 x 48 Riser Section Each Additional 1' Depth	1	EA		\$ -
A-	528	30 x 30 Catch Basin $\leq$ 4' 6"	1	EA		\$ -
A-	529	30 x 30 Riser Section Each Additional 1' Depth	1	EA		\$ -
A-	530	36 x 36 Catch Basin $\leq$ 4' 6"	1	EA		\$ -
A-	531	36 x 36 Riser Section Each Additional 1' Depth	1	EA		\$ -
A-	532	36 x 48 Catch Basin $\leq$ 4' 6"	1	EA		\$ -
A-	533	36 x 48 Riser Section Each Additional 1' Depth	1	EA		\$ -
A-	534	36 x 60 Catch Basin $\leq$ 4' 6"	1	EA		\$ -

WATER, SEWER, DRAINAGE SYSTEM LABOR (SCHEDULE A)

ITEM NUMBER		DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
A-	535	36 x 60 Riser Section Each Additional 1' Depth	1	EA		\$ -
A-	536	48 x 48 Catch Basin ≤ 4' 6"	1	EA		\$ -
A-	537	48 x 48 Riser Section Each Additional 1' Depth	1	EA		\$ -
A-	538	60 x 60 Catch Basin ≤ 4' 6"	1	EA		\$ -
A-	539	60 x 60 Riser Section Each Additional 1' Depth	1	EA		\$ -
A-	540	24 x 48 Type 1 Catch Basin	1	EA		\$ -
A-	541	36 x 60 SS-2 Curb Inlet (No Wings)	1	EA		\$ -
A-	542	36 x 60 SS-2 Curb Inlet (One Wing)	1	EA		\$ -
A-	543	36 x 60 SS-2 Curb Inlet (Two Wings)	1	EA		\$ -
A-	544	36 x 60 Curb Inlet Top Section (No Wings)	1	EA		\$ -
A-	545	36 x 60 SS-2 Top Section (One Wing)	1	EA		\$ -
A-	546	36 x 60 SS-2 Top Section (Two Wings)	1	EA		\$ -
A-	547	Supply & Install Select Bedding	150	CY		\$ -
A-	548	Supply & Install Select Backfill	300	CY		\$ -
A-	549	Removal of Unsuitable or Excess Material	300	CY		\$ -
A-	550	Connection to Existing Inlet	2	EA		\$ -
A-	551	Removal of Existing Pipe <12 in.	50	LF		\$ -
A-	552	Removal of Existing Pipe 12-36 in.	50	LF		\$ -
A-	553	Removal of Existing Pipe >36 in.	50	LF		\$ -
		Total All Items				\$ -

WATER SEWER DRAINAGE LABOR SCHEDULE B

ITEM NUMBER	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
B-01	BACKHOE & OPERATOR (CASE 500 OR EQUIVALENT)	80	HR		\$ -
B-02	TRACKHOE & OPERATOR (JOHN DEERE 690 OR EQUIVALENT)	40	HR		\$ -
B-03	SMALL DOZER & OPERATOR (CAT D3 OR EQUIVALENT)	60	HR		\$ -
B-04	LARGE DOZER & OPERATOR (CAT D7 OR EQUIVALENT)	60	HR		\$ -
B-05	FRONT END LOADER & OPERATOR	60	HR		\$ -
B-06	PICKUP TRUCK	80	HR		\$ -
B-07	FLATBED TRUCK W/ DRIVER	100	HR		\$ -
B-08	AIR COMPRESSOR W/ AIR TOOLS (175 CFM MIN.)	50	HR		\$ -
B-09	PIPE LAYER	160	HR		\$ -
B-10	LABORER	200	HR		\$ -
B-11	FOREMAN	80	HR		\$ -
B-12	TEN TON DUMP TRUCK AND DRIVER	40	HR		\$ -
B-13	ROAD PATROL & OPERATOR	50	HR		\$ -
B-14	PNEUMATIC RUBBER TIRE ROLLER & OPERATOR	50	HR		\$ -
B-15	BREAKDOWN STEEL WHEEL ROLLER & OPERATOR	50	HR		\$ -
B-16	3" BYPASSING PUMP SETUP	10	EA		\$ -
B-17	4" BYPASSING PUMP SETUP	8	EA		\$ -
B-18	6" BYPASSING PUMP SETUP	6	EA		\$ -
B-19	8" BYPASSING PUMP SETUP	4	EA		\$ -
B-20	3" BYPASSING PUMP OPERATION	200	HR		\$ -
B-21	4" BYPASSING PUMP OPERATION	160	HR		\$ -
B-22	6" BYPASSING PUMP OPERATION	120	HR		\$ -
B-23	8" BYPASSING PUMP OPERATION	80	HR		\$ -
TOTAL BID					\$ -

SEWER REHABILITATION LABOR AND MATERIALS					
ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	TOTAL PRICE
MOBILIZATION SERVICES – PIPE					
1	UP TO \$30,000 PER WORK ORDER	EA	1		\$ -
2	\$30,001 TO \$60,000 PER WORK ORDER	EA	1		\$ -
3	\$60,001 AND UP PER WORK ORDER	EA	1		\$ -
MOBILIZATION SERVICES – MANHOLES					
4	UP TO \$30,000 PER WORK ORDER	EA	1		\$ -
5	\$30,001 TO \$60,000 PER WORK ORDER	EA	1		\$ -
6	\$60,001 AND UP PER WORK ORDER	EA	1		\$ -
BYPASSING SETUP					
7	BYPASSING SETUP FOR EACH 3" PUMP	EA	10		\$ -
8	BYPASSING SETUP FOR EACH 4" PUMP	EA	8		\$ -
9	BYPASSING SETUP FOR EACH 6" PUMP	EA	6		\$ -
10	BYPASSING SETUP FOR EACH 8" PUMP	EA	4		\$ -
BYPASS PUMPING					
11	BYPASSING FOR EACH 3" PUMP	HR	200		\$ -
12	BYPASSING FOR EACH 4" PUMP	HR	160		\$ -
13	BYPASSING FOR EACH 6" PUMP	HR	120		\$ -
14	BYPASSING FOR EACH 8" PUMP	HR	80		\$ -
SANITARY SEWER LINE CLEANING					
15	NORMAL CLEANING, 6" SEWER	LF	20		\$ -
16	HEAVY CLEANING, 6" SEWER	LF	20		\$ -
17	NORMAL CLEANING, 8" & 10" SEWER	LF	100		\$ -
18	HEAVY CLEANING, 8" & 10" SEWER	LF	100		\$ -
19	NORMAL CLEANING, 12" & 15" SEWER	LF	100		\$ -
20	HEAVY CLEANING, 12" & 15" SEWER	LF	100		\$ -
21	NORMAL CLEANING, 18" & 21" SEWER	LF	20		\$ -
22	HEAVY CLEANING, 18" & 21" SEWER	LF	20		\$ -
23	NORMAL CLEANING, 24" SEWER	LF	20		\$ -
24	HEAVY CLEANING, 24" SEWER	LF	20		\$ -
25	NORMAL CLEANING, 27" SEWER	LF	20		\$ -
26	HEAVY CLEANING, 27" SEWER	LF	20		\$ -
27	NORMAL CLEANING, 30" SEWER	LF	20		\$ -
28	HEAVY CLEANING, 30" SEWER	LF	20		\$ -
29	NORMAL CLEANING, 36" SEWER	LF	20		\$ -
30	HEAVY CLEANING, 36" SEWER	LF	20		\$ -
ROOT REMOVAL					
31	ROOT REMOVAL IN 8" & 10" SEWERS	LF	1,500		\$ -
32	ROOT REMOVAL IN 12" & 15" SEWERS	LF	1,200		\$ -
33	ROOT REMOVAL IN 18" & 21" SEWERS	LF	750		\$ -
34	ROOT REMOVAL IN 24" SEWERS	LF	500		\$ -
35	ROOT REMOVAL IN 27" SEWERS	LF	400		\$ -
36	ROOT REMOVAL IN 30" SEWERS	LF	300		\$ -
37	ROOT REMOVAL IN 36" SEWERS	LF	200		\$ -
REMOTE REMOVAL OF PROTRUDING SERVICE LATERAL					
38	REMOTE REMOVAL OF PROTRUDING SERVICE LATERAL	EA	10		\$ -
TV INSPECTION					
39	TV INSPECTION OF 6" SEWERS	LF	1000		\$ -
40	TV INSPECTION OF 8" SEWERS	LF	1000		\$ -
41	TV INSPECTION OF 10" SEWERS	LF	400		\$ -
42	TV INSPECTION OF 12" SEWERS	LF	400		\$ -
43	TV INSPECTION OF 15" SEWERS	LF	400		\$ -
44	TV INSPECTION OF 18" SEWERS	LF	400		\$ -
45	TV INSPECTION OF 21" SEWERS	LF	400		\$ -
46	TV INSPECTION OF 24" SEWERS	LF	400		\$ -
47	TV INSPECTION OF 27" SEWERS	LF	400		\$ -
48	TV INSPECTION OF 30" SEWERS	LF	400		\$ -
49	TV INSPECTION OF 36" SEWERS	LF	400		\$ -
50	TV INSPECTION – ADDITIONAL SETUP	EA	5		\$ -
51	TV INSPECTION - REVERSE SETUP	EA	5		\$ -
SEWER PIPE LINING/CURED-IN-PLACE PIPE (CIPP)					
52	6" X 4.5 MM	LF	400		\$ -
53	8" X 6.0 MM	LF	1000		\$ -
54	10" X 6.0 MM	LF	1000		\$ -
55	12" X 6.0 MM	LF	400		\$ -
56	12" X 7.5 MM	LF	400		\$ -
57	15" X 6.0 MM	LF	400		\$ -
58	15" X 7.5 MM	LF	400		\$ -
59	18" X 6.0 MM	LF	400		\$ -
60	18" X 7.5 MM	LF	400		\$ -
61	21" X 7.5 MM	LF	400		\$ -
62	21" X 9.0 MM	LF	400		\$ -
63	24" X 9.0 MM	LF	400		\$ -
64	24" X 10.5 MM	LF	400		\$ -
65	27" X 9.0 MM	LF	400		\$ -
66	27" X 10.5 MM	LF	400		\$ -
67	30" X 10.5 MM	LF	400		\$ -
68	30" X 12.0 MM	LF	400		\$ -
69	36" X 10.5 MM	LF	400		\$ -
70	36" X 12.0 MM	LF	400		\$ -
ADDITIONAL THICKNESS CIPP (ALL LENGTHS)					

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71	6", ADDITIONAL 1.5 MM THICKNESS	LF	100		
72	8", ADDITIONAL 1.5 MM THICKNESS	LF	100		
73	10", ADDITIONAL 1.5 MM THICKNESS	LF	100		
74	12", ADDITIONAL 1.5 MM THICKNESS	LF	100		
75	15", ADDITIONAL 1.5 MM THICKNESS	LF	100		
76	18", ADDITIONAL 1.5 MM THICKNESS	LF	100		
77	21", ADDITIONAL 1.5 MM THICKNESS	LF	100		
78	24", ADDITIONAL 1.5 MM THICKNESS	LF	100		
79	27", ADDITIONAL 1.5 MM THICKNESS	LF	100		
80	30", ADDITIONAL 1.5 MM THICKNESS	LF	100		
81	36", ADDITIONAL 1.5 MM THICKNESS	LF	100		
INTERNAL RECONNECTION OF LATERAL SEWER SERVICE LINES (CIPP)					
82	INTERNAL RECONNECTION OF LAT. SEWER SERVICES	EA	10		
EXTERNAL RECONNECTION OF LATERAL SEWER SERVICE LINES (CIPP)					
83	4" or 6" LATERAL TO 6"-8" CIPP, 8'-12' DEEP	EA	5		
84	4" or 6" LATERAL TO 6"-8" CIPP, 12'-16' DEEP	EA	5		
85	4" or 6" LATERAL TO 6"-8" CIPP, 16'-20' DEEP	EA	5		
86	4" or 6" LATERAL TO 6"-8" CIPP, OVER 20' DEEP	EA	5		
87	4" or 6" LATERAL TO 10"-12" CIPP, 0'-8' DEEP	EA	5		
88	4" or 6" LATERAL TO 10"-12" CIPP, 8'-12' DEEP	EA	5		
89	4" or 6" LATERAL TO 10"-12" CIPP, 12'-16' DEEP	EA	5		
90	4" or 6" LATERAL TO 10"-12" CIPP, 16'-20' DEEP	EA	5		
91	4" or 6" LATERAL TO 10"-12" CIPP, OVER 20' DEEP	EA	5		
92	4" or 6" LATERAL TO 15"-18" CIPP, 0'-8' DEEP	EA	5		
93	4" or 6" LATERAL TO 15"-18" CIPP, 8'-12' DEEP	EA	5		
94	4" or 6" LATERAL TO 15"-18" CIPP, 12'-16' DEEP	EA	5		
95	4" or 6" LATERAL TO 15"-18" CIPP, 16'-20' DEEP	EA	5		
96	4" or 6" LATERAL TO 15"-18" CIPP, OVER 20' DEEP	EA	5		
PERFORMING POINT REPAIRS					
97	8" POINT REPAIR, 0-10' LONG, 0-10' DEEP	LF	1		\$ -
98	8" POINT REPAIR, 0-10' LONG, 10-14' DEEP	LF	1		\$ -
99	8" POINT REPAIR, 0-10' LONG, 14-18' DEEP	LF	1		\$ -
100	8" POINT REPAIR, GREATER THAN 10', 0-10' DEEP	LF	1		\$ -
101	8" POINT REPAIR, GREATER THAN 10', 10-14' DEEP	LF	1		\$ -
102	8" POINT REPAIR, GREATER THAN 10', 14-18' DEEP	LF	1		\$ -
103	10" POINT REPAIR, 0-10' LONG, 0-10' DEEP	LF	1		\$ -
104	10" POINT REPAIR, 0-10' LONG, 10-14' DEEP	LF	1		\$ -
105	10" POINT REPAIR, 0-10' LONG, 14-18' DEEP	LF	1		\$ -
106	10" POINT REPAIR, GREATER THAN 10', 0-10' DEEP	LF	1		\$ -
107	10" POINT REPAIR, GREATER THAN 10', 10-14' DEEP	LF	1		\$ -
108	10" POINT REPAIR, GREATER THAN 10', 14-18' DEEP	LF	1		\$ -
109	12" POINT REPAIR, 0-10' LONG, 0-10' DEEP	LF	1		\$ -
110	12" POINT REPAIR, 0-10' LONG, 10-14' DEEP	LF	1		\$ -
111	12" POINT REPAIR, 0-10' LONG, 14-18' DEEP	LF	1		\$ -
112	12" POINT REPAIR, GREATER THAN 10', 0-10' DEEP	LF	1		\$ -
113	12" POINT REPAIR, GREATER THAN 10', 10-14' DEEP	LF	1		\$ -
114	12" POINT REPAIR, GREATER THAN 10', 14-18' DEEP	LF	1		\$ -
115	15" POINT REPAIR, 0-10' LONG, 0-10' DEEP	LF	1		\$ -
116	15" POINT REPAIR, 0-10' LONG, 10-14' DEEP	LF	1		\$ -
117	15" POINT REPAIR, 0-10' LONG, 14-18' DEEP	LF	1		\$ -
118	15" POINT REPAIR, GREATER THAN 10', 0-10' DEEP	LF	1		\$ -
119	15" POINT REPAIR, GREATER THAN 10', 10-14' DEEP	LF	1		\$ -
120	15" POINT REPAIR, GREATER THAN 10', 14-18' DEEP	LF	1		\$ -
121	18" POINT REPAIR, 0-10' LONG, 0-10' DEEP	LF	1		\$ -
122	18" POINT REPAIR, 0-10' LONG, 10-14' DEEP	LF	1		\$ -
123	18" POINT REPAIR, 0-10' LONG, 14-18' DEEP	LF	1		\$ -
124	18" POINT REPAIR, GREATER THAN 10', 0-10' DEEP	LF	1		\$ -
125	18" POINT REPAIR, GREATER THAN 10', 10-14' DEEP	LF	1		\$ -
126	18" POINT REPAIR, GREATER THAN 10', 14-18' DEEP	LF	1		\$ -
127	21" POINT REPAIR, 0-10' LONG, 0-10' DEEP	LF	1		\$ -
128	21" POINT REPAIR, 0-10' LONG, 10-14' DEEP	LF	1		\$ -
129	21" POINT REPAIR, 0-10' LONG, 14-18' DEEP	LF	1		\$ -
130	21" POINT REPAIR, GREATER THAN 10', 0-10' DEEP	LF	1		\$ -
131	21" POINT REPAIR, GREATER THAN 10', 10-14' DEEP	LF	1		\$ -
132	24" POINT REPAIR, 0-10' LONG, 0-10' DEEP	LF	1		\$ -
133	24" POINT REPAIR, 0-10' LONG, 10-14' DEEP	LF	1		\$ -
134	24" POINT REPAIR, 0-10' LONG, 14-18' DEEP	LF	1		\$ -
135	24" POINT REPAIR, GREATER THAN 10', 0-10' DEEP	LF	1		\$ -
136	24" POINT REPAIR, GREATER THAN 10', 10-14' DEEP	LF	1		\$ -
137	24" POINT REPAIR, GREATER THAN 10', 14-18' DEEP	LF	1		\$ -
138	27" POINT REPAIR, 0-10' LONG, 0-10' DEEP	LF	1		\$ -
139	27" POINT REPAIR, 0-10' LONG, 10-14' DEEP	LF	1		\$ -
140	27" POINT REPAIR, 0-10' LONG, 14-18' DEEP	LF	1		\$ -
141	27" POINT REPAIR, GREATER THAN 10', 0-10' DEEP	LF	1		\$ -
142	27" POINT REPAIR, GREATER THAN 10', 10-14' DEEP	LF	1		\$ -
143	27" POINT REPAIR, GREATER THAN 10', 14-18' DEEP	LF	1		\$ -
144	30" POINT REPAIR, 0-10' LONG, 0-10' DEEP	LF	1		\$ -
145	30" POINT REPAIR, 0-10' LONG, 10-14' DEEP	LF	1		\$ -
146	30" POINT REPAIR, 0-10' LONG, 14-18' DEEP	LF	1		\$ -
147	30" POINT REPAIR, GREATER THAN 10', 0-10' DEEP	LF	1		\$ -
148	30" POINT REPAIR, GREATER THAN 10', 10-14' DEEP	LF	1		\$ -
149	30" POINT REPAIR, GREATER THAN 10', 14-18' DEEP	LF	1		\$ -
150	36" POINT REPAIR, 0-10' LONG, 0-10' DEEP	LF	1		\$ -

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151	36" POINT REPAIR, 0-10' LONG, 10-14' DEEP	LF	1		\$ -
152	36" POINT REPAIR, 0-10' LONG, 14'-18' DEEP	LF	1		\$ -
153	36" POINT REPAIR, GREATER THAN 10', 0-10' DEEP	LF	1		\$ -
154	36" POINT REPAIR, GREATER THAN 10', 10-14' DEEP	LF	1		\$ -
155	36" POINT REPAIR, GREATER THAN 10', 14'-18' DEEP	LF	1		\$ -
REPLACING EXISTING SERVICE CONNECTIONS WITH NEW TEE AND 6 FEET OF NEW SERVICE LATERAL (4" OR 6" SCH 40 OR SDR 35 PVC)					
156	AT MAIN SEWER - 0' TO 10' DEEP	EA	15		\$ -
157	AT MAIN SEWER - 10' TO 14' DEEP	EA	5		\$ -
158	AT MAIN SEWER - 14' TO 18' DEEP	EA	5		\$ -
INSTALLING NEW 4" SERVICE LATERAL (SDR 35) FROM NEW TEE CONNECTION TO PROPERTY LINE					
159	0' TO 10' DEEP	LF	500		\$ -
160	10' TO 14' DEEP	LF	100		\$ -
161	14' TO 18' DEEP	LF	50		\$ -
INSTALLING NEW 6" SERVICE LATERAL (SDR 35) FROM NEW TEE CONNECTION TO PROPERTY LINE					
162	0' TO 10' DEEP	LF	200		\$ -
163	10' TO 14' DEEP	LF	50		\$ -
164	14' TO 18' DEEP	LF	20		\$ -
SAWCUTTING, REMOVING AND REPLACING ASPHALT PAVEMENT					
165	SAWCUTTING, REMOVING AND REPLACING ASPHALT PAVEMENT	SY	4,500		\$ -
SAWCUTTING, REMOVING AND REPLACING CONCRETE DRIVEWAYS (4" THICK)					
166	SAWCUTTING, REMOVING AND REPLACING CONCRETE DRIVEWAYS (4" THICK)	SY	300		\$ -
SAWCUTTING, REMOVING AND REPLACING CONCRETE DRIVEWAYS (6" THICK)					
167	SAWCUTTING, REMOVING AND REPLACING CONCRETE DRIVEWAYS (6" THICK)	SY	300		\$ -
RESTORING GRAVEL DRIVEWAY					
168	RESTORING GRAVEL DRIVEWAY	SY	300		\$ -
SAWCUTTING, REMOVING AND REPLACING CONCRETE CURB AND GUTTER					
169	SAWCUTTING, REMOVING AND REPLACING CONCRETE CURB AND GUTTER	LF	1,000		\$ -
FERTILIZING, SEEDING AND MULCHING					
170	FERTILIZING, SEEDING AND MULCHING	SY	4,500		\$ -
REMOVING AND REPLACING SOD AND MULCHING OR INSTALLING NEW SOD					
171	REMOVING AND REPLACING SOD AND MULCHING OR INSTALLING NEW SOD	SY	300		\$ -
48" MANHOLE OR WETWELL REHABILITATION					
172	48" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 1 FROM SPECIFICATIONS	VF	100		\$ -
173	48" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 2 FROM SPECIFICATIONS	VF	100		\$ -
174	48" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 3 FROM SPECIFICATIONS	VF	100		\$ -
175	48" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 4 FROM SPECIFICATIONS	VF	100		\$ -
176	48" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 5 FROM SPECIFICATIONS	VF	100		\$ -
177	48" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 6 FROM SPECIFICATIONS	VF	100		\$ -
178	48" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 7 FROM SPECIFICATIONS	VF	100		\$ -
60" MANHOLE OR WETWELL REHABILITATION					
179	60" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 1 FROM SPECIFICATIONS	VF	100		\$ -
180	60" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 2 FROM SPECIFICATIONS	VF	100		\$ -
181	60" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 3 FROM SPECIFICATIONS	VF	100		\$ -
182	60" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 4 FROM SPECIFICATIONS	VF	100		\$ -
183	60" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 5 FROM SPECIFICATIONS	VF	100		\$ -
184	60" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 6 FROM SPECIFICATIONS	VF	100		\$ -
185	60" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 7 FROM SPECIFICATIONS	VF	100		\$ -
72" MANHOLE OR WETWELL REHABILITATION					
186	72" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 1 FROM SPECIFICATIONS	VF	100		\$ -
187	72" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 2 FROM SPECIFICATIONS	VF	100		\$ -
188	72" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 3 FROM SPECIFICATIONS	VF	100		\$ -
189	72" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 4 FROM SPECIFICATIONS	VF	100		\$ -
190	72" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 5 FROM SPECIFICATIONS	VF	100		\$ -
191	72" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 6 FROM SPECIFICATIONS	VF	100		\$ -
192	72" DIA MANHOLE OR WETWELL REHABILITATION WITH SYSTEM 7 FROM SPECIFICATIONS	VF	100		\$ -
MANHOLE OR WETWELL INSPECTION					
193	MANHOLE OR WETWELL INSPECTION	EACH	1		\$ -
INSTALLING NEW 4-FOOT DIAMETER PRECAST CONCRETE MANHOLES WITH SOLID FRAMES AND COVERS (INTERIOR COATED WITH 40 MIL					
194	0 TO 10 FEET DEEP INCLUDING ALL MATERIALS	EA	5		\$ -
195	10 TO 14 FEET DEEP INCLUDING ALL MATERIALS	EA	3		\$ -
196	14 TO 18 FEET DEEP INCLUDING ALL MATERIALS	EA	2		\$ -
RESETTING EXISTING FRAMES AND COVERS					
197	RESETTING EXISTING FRAMES AND COVERS	EA	10		\$ -
BENCH & INVERT REPAIR					
198	BENCH & INVERT REPAIR 48" MANHOLE	EACH	5		\$ -
199	BENCH & INVERT REPAIR 60" MANHOLE	EACH	5		\$ -
200	BENCH & INVERT REPAIR 72" MANHOLE	EACH	5		\$ -
FLAGMEN					
201	FLAGMEN	HR	150		\$ -

TRAFFIC STRIPING (THERMOPLASTIC)

ITEM NUMBER	DESCRIPTION	QTY	ITEM UNIT	UNIT COST	TOTAL COST
GENERAL					
1	Mobilization for projects up to \$10,000	1	EA		\$ -
2	Mobilization for projects \$10,001-\$25,000	1	EA		\$ -
3	Mobilization for projects \$25,001-50,000	1	EA		\$ -
4	Mobilization for projects \$50,001-\$100,000	1	EA		\$ -
5	Mobilization for projects over \$100,000	1	EA		\$ -
ROADWAY					
6	4" Thermoplastic Traffic Stripe - Skip White, 90 mil (measurement includes skips)	3000	LF		\$ -
7	4" Thermoplastic Traffic Stripe - Continuous White, 90 mil	500	LF		\$ -
8	4" Thermoplastic Traffic Stripe - Skip Yellow, 90 mil (measurement includes skips)	500	LF		\$ -
9	4" Thermoplastic Traffic Stripe - Continuous Yellow, 90 mil	8000	LF		\$ -
10	4" Thermoplastic Detail Stripe - White/Yellow, 120 mil	1000	LF		\$ -
11	Thermoplastic Legend, 4-inch equivalent, White, 120 mil	1500	SF		\$ -
12	6" Thermoplastic Traffic Stripe - Skip White, 90 mil	3000	LF		\$ -
13	6" Thermoplastic Traffic Stripe - Continuous White, 90 mil	500	LF		\$ -
14	6" Thermoplastic Traffic Stripe - Skip Yellow, 90 mil	500	LF		\$ -
15	6" Thermoplastic Traffic Stripe - Continuous Yellow, 90 mil	8000	LF		\$ -
16	6" Thermoplastic Detail Stripe - White/Yellow, 120 mil	1000	LF		\$ -
17	Thermoplastic Legend, 6-inch equivalent, White, 120 mil	1500	SF		\$ -
18	Removal of 4-inch Stripe	200	LF		\$ -
19	Removal of 6-inch Stripe	200	LF		\$ -
20	Red-Clear Reflective Raised Pavement Marker	300	EA		\$ -
21	Two-Way Yellow Reflective Raised Pavement Marker	150	EA		\$ -
PARKING LOT					
22	4" Thermoplastic Detail Stripe - White, 120 mil	3000	LF		\$ -
23	4" Thermoplastic Detail Stripe - Yellow, 120 mil	500	LF		\$ -
24	4" Thermoplastic Detail Stripe - Blue, 120 mil	500	LF		\$ -
25	Thermoplastic Legend 4-inch Equivalent - White	500	SF		\$ -
26	Thermoplastic Legend 4-inch Equivalent - Yellow	100	SF		\$ -
27	Thermoplastic Legend 4-inch Equivalent - Blue	500	SF		\$ -
28	Removal of 4-inch Stripe	50	LF		\$ -
29	Removal of 6-inch Stripe	50	LF		\$ -
30	Red-Clear Reflective Raised Pavement Marker	10	EA		\$ -
31	Two-Way Yellow Reflective Raised Pavement Marker	10	EA		\$ -
				TOTAL BID \$ -	